

WEST VIRGINIA
SECRETARY OF STATE

JOE MANCHIN III
ADMINISTRATIVE LAW DIVISION

Form #5

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2001 DEC 18 P 3:24

OFFICE WEST VIRGINIA
SECRETARY OF STATE

NOTICE OF AGENCY ADOPTION OF A PROCEDURAL OR INTERPRETIVE RULE
OR A LEGISLATIVE RULE EXEMPT FROM LEGISLATIVE REVIEW

AGENCY: West Virginia Board of Education TITLE NUMBER: 126

CITE AUTHORITY: W.Va. Constitution, Article XII, §2, W.Va. Code §18-2-5 and §18-9A-22

RULE TYPE: PROCEDURAL INTERPRETIVE

EXEMPT LEGISLATIVE RULE X
CITE STATUTE(S) GRANTING EXEMPTION FROM LEGISLATIVE REVIEW
W.Va. Code §§29A-3B-1, et seq.; W.Va. Board of Education
v. Hechler, 180 W.Va. 451; 376 S.E.2d 839 (1988).

AMENDMENT TO AN EXISTING RULE: YES X NO

IF YES, SERIES NUMBER OF RULE BEING AMENDED: 44

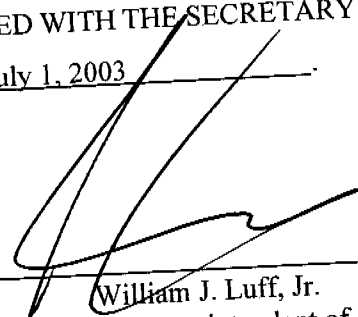
TITLE OF RULE BEING AMENDED: Content Standards and Objectives for West Virginia

Schools (2520)

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED:

TITLE OF RULE BEING PROPOSED:

THE ABOVE RULE IS HEREBY ADOPTED AND FILED WITH THE SECRETARY OF STATE. THE
EFFECTIVE DATE OF THIS RULE IS July 1, 2003


William J. Luff, Jr.
Deputy State Superintendent of Schools

SCANNED

\$3.20 w/out manual
till 2001/2002

EXECUTIVE SUMMARY

POLICY 2520 CONTENT STANDARDS AND OBJECTIVES FOR WEST VIRGINIA SCHOOLS

Background:

Policy 2520 defines the content standards (or instructional goals) and objectives for the programs of study required by Policy 2510 and establishes a standardized format for such. The original effective date of the policy was July 1997. From April through August 2001, committees of educators from across the state gathered to work on curriculum refinement in the content areas of mathematics, reading and English language arts, science and social studies. The committees incorporated content based on the most current research, national standards and best teaching practices in the field. In addition, comments received from teachers throughout West Virginia during focus group sessions conducted during Summer 2001 were considered and included when possible. Primary issues that have been addressed in the current revision work are building a rigorous and challenging curriculum, ensuring a curriculum that is accessible to every student, and designing a format that can easily be used and understood. Policy 2520 was presented to the West Virginia Board of Education on October 11, 2001, and was placed on public comment until November 23, 2001.

Purpose:

The purpose of this Board item is to seek approval for Policy 2520 as it has been revised.

Summary of Comments and Revisions:

There were many positive comments received on the conciseness, clarity and decrease in number of objectives. Suggestions for changes included numbering the document for electronic use and concentrating more on reading and math in the early grades. There were also concerns expressed about end-of-course exams and how to document that students are at mastery level.

As a result of comments received, the format of the content standards, objectives and performance descriptors remained the same. In response to the Office of Technology, each standard and each group of performance descriptors were assigned numbers, the objective numbers were changed to include a content area designation, and the concept of Unique Electronic Numbers was introduced. These changes are more fully explained in the Explanation of Terms section at the beginning of Policy 2520.

Mathematics

The comments received from educators across West Virginia concerning Mathematics were limited. Comments were received from six counties. A total of 57 comments were submitted with 43 coming from the same county. There were many positive statements such as: fewer objectives are better, the objectives are clear and concise, and the objectives are appropriate for the particular grade level or course.

There were some excellent comments that provided the opportunity to make needed changes. For example, the objectives for counting in early grades (K-1) were changed based on the comments. There were objectives repeated unnecessarily and those were eliminated. The concept of odd and even numbers was eliminated from grade 1. Multiplication and division were skills moved from grade 2 to grade 3. The objectives in K-5 dealing with analysis of change were deleted because they were too vague. Finally, the Website for the National Council of Teachers of Mathematics was added to the introduction. The inclusion of the Website provides teachers the opportunity to go directly to the national standards.

Reading/English Language Arts

During the public comment period for Reading/English Language Arts, there were 57 comments received--49 from individuals, 3 from schools, 2 from Faculty Senates, 2 from Curriculum Teams, and 1 from a county. The vast majority of the comments were positive and favorable to the draft changes for Policy 2520. These comments defined the format and content as concise, manageable, clear, understandable and precise to ensure student mastery of Reading and English language arts content K-12.

There were no substantial changes made to the content standards or performance descriptors. Minor changes were made within the objectives. The bulk of changes were of an editorial nature. Some objectives were reworded for clarity. A few objectives at various grade levels were rearranged to provide a more cohesive sequence. Specific objective revisions were the incorporation of additional grammar and study skills. A few comprehension objectives were separated into two separate objectives for clarity. Additional examples were provided for some objectives.

Science

The comments received concerning Science were limited. Comments were received from 8 counties and one organization. A total of 52 comments were received with 36 educators submitting comments from the same county. The vast majority of the comments addressed the elementary content standards and objectives. Most comments were positive with the major concern in the number of objectives. Comments drew attention to missing objectives (e.g., 9.1-9.4), repetitive objectives, and desired clarification. Comments also posed questions that will be addressed through professional development and technical assistance.

As a result of comments, the number of objectives was decreased in K-4. To a much lesser extent, objectives in 5-10 were modified or deleted. Standard 4 objectives for Advanced Biology, Biology - Technical Conceptual, Human Anatomy & Physiology, and Physics - Technical Conceptual were clustered to be consistent with other elective offerings. The number of objectives for Advanced Chemistry was decreased to be consistent with other elective offerings. The remaining changes were of an editorial nature.

Social Studies

The comment period produced Social Studies comments from 8 elementary schools, 3 middle/junior high schools, one high school and two retired teachers. The comments were generally positive. The content standards and objectives were well received with such comments as thanks for including citizenship as a goal, good explanation, well done, and much improved. Other comments included concerns such as not enough time to teach the objectives, too many objectives at the elementary level, questions about assessment and materials/text books. The largest volume of the comments and the most positive suggestions concerned editing and refining the social studies document.

As a result of the comments, editorial changes were made, thus creating a more refined social studies document. Elementary objectives were reviewed, giving careful consideration to the cognitive demand, relevance and educational need for each item. The middle/junior high school and high school comments provided editing comments and alignment concern. The concern of time for teaching was consistently the issue that was commented on most often. Teachers and students need more time to teach and learn the world class social studies standards developed by a committee of teachers.

Technology

The West Virginia Department of Education, Office of Technology received 38 comment forms. Faculty Senate or departmental groups submitted 9 of these forms, and the collected forms represent teachers from 13 West Virginia schools.

A team of instructional technology coordinators carefully reviewed the comments. In evaluating possible revisions to the standards and objectives, a primary consideration was given to maintaining alignment with the International Society for Technology in Education (ISTE) National Educational Technology Standards for Students (NETS-S). These standards address the age-appropriateness of the technology skills and provide a framework that supports learning, personal productivity and decision making. In addition, the technology coordinator cross-referenced the comments with the curriculum standards and objectives and noted that some comments were adequately addressed in other subject standards.

Many of the comments centered around the following technology areas: databases, keyboarding competency levels, the age appropriateness for importing pictures into text, the staff development requirements for the new standards, and various word processing skills. In response to these comments, appropriate changes were made.

126CSR44

FILED

TITLE 126
LEGISLATIVE RULE
BOARD OF EDUCATION

2001 DEC 18 P 3:25

OFFICE WEST VIRGINIA
SECRETARY OF STATE

SERIES 44
CONTENT STANDARDS AND OBJECTIVES FOR
WEST VIRGINIA SCHOOLS (2520)

§126.44.1 General.

1.1. Scope. – West Virginia Board of Education Policy 2510 provides a definition of a delivery system for, and an assessment and accountability system for, a thorough and efficient education for West Virginia public school students. Policy 2520 defines the content standards (or instructional goals) and objectives for the programs of study required by Policy 2510.

1.2. Authority. – W. Va. Constitution, Article XII, §2, W. Va. Code §§18-2-5, 18-9A-22.

1.3. Filing Date. – December 18, 2001

1.4. Effective Date – July 1, 2003

1.5. Repeal of former rule – This legislative rule amends WV 126CSR44 (Policy 2520).

§126-44-2. Purpose.

2.1. This policy defines the content standards (or instructional goals) and objectives for the programs of study required by Policy 2510 in reading and English language arts, mathematics, science, social studies, health, dance, music, theatre, visual art, geography, foreign languages, driver education, physical education, and the Robert C. Beach Vocational Agriculture Credit.

§126-44-3. Incorporation by Reference.

3.1. A copy of Content Standards and Objectives for West Virginia Schools is attached and incorporated by reference into this policy. Copies may be obtained in the Office of the Secretary of State and in the West Virginia Department of Education, Office of Instructional Services.

126CSR44

§126.44.4. Summary of the Content Standards (or Instructional Goals) and Objectives

4.1. The West Virginia Board of Education has the responsibility for establishing high quality standards pertaining to all educational standards pertaining to all education programs (W.Va. Code §18-9A-22). The content standards and objectives provide a focus for teachers to teach and students to learn those skills and competencies essential for future success in the workplace and further education. The document includes: content standards for reading and English language arts, mathematics, social studies, science, health, dance, music, theatre, visual art, geography, foreign languages, driver education, physical education, and the Robert C. Beach Vocational Agriculture Credit. Also included are program charts for K-2, 3-4, 5-8, and 9-12; instructional practices for K-12; an explanation of terms; objectives that reflect a rigorous and challenging curriculum, process/workplace objectives and computer/technology objectives.

Policy 2520: Content Standards and Objectives for West Virginia Schools

**David Stewart
State Superintendent of Schools**

December 2001

Foreword

The West Virginia Board of Education and the West Virginia Department of Education are pleased to present Policy 2520: *Content Standards and Objectives for West Virginia Schools*.

Committees of educators from across the state gathered to work on curriculum refinement. The committees incorporated content based on the most current research, national standards and best teaching practices in the field. Primary issues that have been addressed in the current revision work are building a rigorous and challenging curriculum, ensuring a curriculum that is accessible to every student, and designing a format that can easily be used and understood.

West Virginia educators have played a key role in shaping the content standards. Their contribution was critical in creating a policy that is meaningful for the classroom.

A primary change in Policy 2520 is that each content area begins with a set of content standards. Grade-level objectives are then organized under the standards, so that the focus stays on helping students achieve the comprehensive goals, not just mastering the incremental steps. The objectives (those incremental steps) are still there--curriculum committees worked very hard to consolidate, delete, sequence, and clarify as needed to produce a picture of the curriculum that is clear in its intent and manageable in its implementation.

Another change is the addition of performance descriptors. Performance descriptors answer the question "How well does the student perform on the content standards at any given grade level?" (See "Explanation of Terms" section for further discussion of this topic.)

The content standards, objectives and performance descriptors combine to give teachers a powerful resource for planning instruction. The sequencing of the grade level objectives and the levels of performance descriptors acknowledge that students acquire skills and knowledge in increments and at different rates. The focus throughout the document remains on achieving at a high level and on offering all students in West Virginia rigor and challenge.



David Stewart
State Superintendent of Schools

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Explanation of Terms

Content Standards (or Instructional Goals) are broad descriptions of what students should know and be able to do in a content area. Content standards describe what students' knowledge and skills should be at the end of a K-12 sequence of study.

Objectives are incremental steps toward accomplishment of content standards. Objectives are listed by grade level and are organized around the content standards. Objectives build across grade levels as students advance in their knowledge and skills.

Performance Descriptors describe in narrative format how students demonstrate achievement of the content standards. Three performance levels have been proposed for West Virginia: distinguished, mastery, and partial mastery. A general description of each of these categories is listed below:

- **Distinguished:** Superior performance that goes beyond grade level or course expectations.
- **Mastery:** Solid academic performance at the grade level or in the course. Students demonstrate competency in challenging subject matter, can apply knowledge and skills to real-world situations, and can use analytical skills appropriate to the subject matter.
- **Partial Mastery:** Incomplete mastery of prerequisite knowledge and skills that are necessary for success at the grade level or in the course.

Performance Descriptors serve two functions. Instructionally, they give teachers more information about the level of knowledge and skills they are building in their students. Performance levels and descriptors are also used to categorize and explain student performance on statewide assessment instruments.

Numbering of Standards

The number for each content standard is composed of three parts, each part separated by a period:

- The content area code (e.g., MA for Mathematics, RLA for Reading and English Language Arts);
- The letter S, for Standard; and
- The standard number.

Illustration: RLA.S.1 refers to Reading and English Language Arts content standard #1.

Numbering of Objectives

The number of each objective is composed of four parts, each part separated by a period:

- The content area code or course code (e.g., PS for Probability and Statistics, HAP for Human Anatomy and Physiology);
- The grade level (Exceptions are elementary West Virginia Studies, which uses WV instead of grade level; and high school mathematics courses and grades 11-12 science courses, which use no grade designation);
- The number of the content standard addressed; and
- The objective number.

Illustration: RLA.6.2.3 refers to a Reading and English Language Arts sixth grade objective that addresses standard #2 in Reading and English Language Arts, and that is the third objective listed under that standard.

Numbering of Performance Descriptors

The number for each group of three performance descriptors is composed of four parts, each part separated by a period:

- The content area code;
- The letters PD, for Performance Descriptors;
- The grade level; and
- The standard number.

Illustration: SS.PD.9.2 refers to Social Studies performance descriptors for ninth grade, content standard 2.

Unique Electronic Numbers (UENs)

Unique Electronic Numbers (or UENs) are numbers that help to electronically identify, categorize and link specific bits of information. Once Policy 2520 is available on the Web, each standard, each objective, and each group of three performance descriptors will have a Unique Electronic Number (UEN) that will always remain the same.

The codes printed in Policy 2520 form the basis of the UENs. The only additional set of numbers that will be added to each code to formulate its UEN will be a prefix that indicates the year and month that a particular version of Policy 2520 is approved by the State Board of Education. The date is not explicitly printed in the document but it is assumed to be part of every UEN. As sections of 2520 are revised, UENs will be changed to reflect the new approval date.

The prefix for the UENs in this version of Policy 2520 is "200112.", indicating that the Board approval date is December 2001.

UENs (Unique Electronic Numbers) are unique numbers that facilitate implementation of WV Standards into Electronic formats such as Databases and XML Files. The WV Department of Education encourages everyone who is going to use the WV Content Standards in any kind of electronic distribution, alignment, or software development to use the UENs so that all efforts can be cross-referenced and there is consistency across initiatives.

Illustration: The UEN for performance descriptors for fifth grade science, standard #2 will be "200112.SC.PD.5.2".

Abbreviations

Content Areas

MA	Mathematics
RLA	Reading and English Language Arts
SC	Science
SS	Social Studies
TEC	Technology

Elementary School

WW	West Virginia Studies, K-4

High School Courses

Mathematics

AGP	Algebra/Geometry Preparation
AI	Algebra
AM1	Applied Mathematics I
AM2	Applied Mathematics II
G	Geometry and Applied Geometry
A2	Algebra II
CM	Conceptual Mathematics
T	Trigonometry
PS	Probability and Statistics
PC	Pre-calculus

Science

AB	Advanced Biology (11/12)
BTC	Biology - Technical Conceptual (11/12)
HAP	Human Anatomy and Physiology (11/12)
AC	Advanced Chemistry (11/12)
CTC	Chemistry - Technical Conceptual (11/12)
AES	Advanced Environmental Earth Science (11/12)
AP	Advanced Physics (11/12)
PTC	Physics - Technical Conceptual (11/12)

Other Abbreviations

PD	Performance Descriptors
S	Standard (Content Standard)

MATHEMATICS

Mathematics standards have been written in response to the need to better prepare students for college, other post-secondary education, and gainful employment. The five mathematics standards, Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability, are aligned directly with the National Council of Teachers of Mathematics document, *Principles and Standards for School Mathematics* released in 2000. See <http://www.nctm.org> to access the NCTM document. The curriculum is designed to be ambitious and rigorous at all grade levels. This rigor is required to achieve a society that has the capability to think and reason mathematically.

The standards describe what each student of mathematics should be able to accomplish in K-12. The objectives spiral upward through the grade levels, eliminating repetition of content and increasing in rigor throughout the student's academic career. It is important that all students value mathematics, become confident in their ability to do mathematics, become mathematical problem solvers, communicate mathematically, make connections to other content areas and to the real world application of mathematics, and learn to reason mathematically.

West Virginia's vision for education includes the integration of technology throughout the curriculum so that all West Virginia students have the opportunity to develop technology skills that support learning. Successful learning environments provide opportunities for students to use technology interwoven with relevant curricular content. West Virginia teachers are responsible for integrating technology appropriately in the students' learning environment.

The content and character of school mathematics provide a vision to guide educators as they strive for continual improvement of mathematics education. The following six principles for school mathematics are the major influences on the improvement of classrooms, schools and educational systems.

1. **Equity:** High expectations and strong support for all students.
2. **Curriculum:** Coherent, focused on important mathematics, and well articulated across the grades.
3. **Teaching:** Understanding what students know and need to learn and then challenging and supporting them to learn it well.
4. **Learning:** Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.
5. **Assessment:** Assessment should support the learning of important mathematics and furnish useful information to both teachers and students.
6. **Technology:** Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning.

Mathematics Content Standards K-12

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Kindergarten Mathematics Content Standards and Objectives

Kindergarten objectives emphasize the use of manipulatives, concrete materials, and appropriate technology so that students explore and develop ideas that are fundamental to the study of mathematics: number, counting, ordering, comparing, classifying, patterning, shape, size, position, numeration, measuring, and problem solving. The emphasis is on experience and growth in mathematics. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.K.1.1 count forward to 20 and backward from 10 with and without objects.
- MA.K.1.2 read, write, order, and compare numbers to 20.
- MA.K.1.3 count and group concrete items by ones and tens.
- MA.K.1.4 identify place value of each digit utilizing standard and expanded form through 20.
- MA.K.1.5 identify ordinal positions 1st – 10th and directionality.
- MA.K.1.6 estimate the number of objects in a group of 20 or less and count to determine reasonableness.
- MA.K.1.7 identify and name halves and whole using concrete items.
- MA.K.1.9 model addition and subtraction of whole numbers using 10 or less items and write the corresponding number sentence.
- MA.K.1.9 understand meanings of operations and the relationship between addition and subtraction (e.g., identity element of addition, commutative property).
- MA.K.1.10 solve grade level appropriate problems using a variety of strategies.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.K.2.1 sort and classify objects by one attribute.
- MA.K.2.2 identify, describe, and extend a repeating pattern found in common objects, sound, and movement.
- MA.K.2.3 model and identify patterns of counting by 5's and 10's.

First Grade Mathematics Content Standards and Objectives

The first grade objectives continue the emphasis on the use of manipulatives, concrete material, and appropriate technologies to give students the foundation needed to explore new mathematical concepts. Development of mathematical language allows students to explain such concepts as: addition and subtraction of whole numbers; knowing the value of coins; knowing addition and subtraction facts; identifying two- and three- dimensional figures; and gathering, organizing, and explaining data. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.1.1.1 count forward to 100 and backward from 20 with and without objects.
- MA.1.1.2 read, write, order, and compare numbers to 100.
- MA.1.1.3 model and identify odd and even numbers to 20 with and without objects.
- MA.1.1.4 count and group concrete items by ones, tens, and hundreds.
- MA.1.1.5 identify place value of each digit utilizing standard and expanded form through 100.
- MA.1.1.6 identify and read ordinal numbers 1st - 20th.
- MA.1.1.7 estimate the number of objects in a group of 100 or less and count to determine reasonableness of estimate.
- MA.1.1.8 identify and name halves, thirds, and fourths as part of a whole and as part of a group using models.
- MA.1.1.9 model addition and subtraction of whole numbers using 18 or less items and write the corresponding number sentence.
- MA.1.1.10 understand meanings of operations and the relationship between addition and subtraction (e.g., identity element of addition, commutative property, fact families, inverse operations)
- MA.1.1.11 memorize basic addition facts with sums to 10 and corresponding subtraction facts.
- MA.1.1.12 model 2-digit addition and subtraction without regrouping to solve the algorithm.
- MA.1.1.13 add three numbers with a sum of 18 or less.
- MA.1.1.14 solve grade level appropriate picture and story problems using multiple strategies.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.1.2.1 sort and classify objects by more than one attribute.
- MA.1.2.2 analyze and create a repeating pattern using common objects and numbers.
- MA.1.2.3 use input/output model with grade appropriate functions.
- MA.1.2.4 identify and write number patterns by 2's, 5's, and 10's.
- MA.1.2.5 identify and represent number patterns using words, AB form, and T-charts.
- MA.1.2.6 use models to demonstrate that the quantities on each side of a number sentence are equivalent.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

- MA.1.3.1 draw and describe triangles, squares, circles, and rectangles according to number of sides and vertices.
- MA.1.3.2 use physical materials to construct, identify, and classify three-dimensional figures: cube, cone, sphere, rectangular solid, pyramid, and cylinder.
- MA.1.3.3 identify three-dimensional shapes in the environment.
- MA.1.3.4 identify and draw open and closed figures.
- MA.1.3.5 identify, determine, and draw a line of symmetry.
- MA.1.3.6 identify and draw plane shapes that are congruent.
- MA.1.3.7 describe spatial relationships: over/under, left/right.
- MA.1.3.8 find and name locations with simple relationships on a coordinate system.
- MA.1.3.9 describe the shape created by combining two or more two-dimensional shapes.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.1.4.1 estimate, measure, compare and order using customary, metric, and nonstandard units to determine length to nearest whole unit.
- MA.1.4.2 understand appropriate grade level conversions within a system of measurement.
- MA.1.4.3 compare two objects or events according to one or more of the following attributes: length, height, weight, time, temperature and volume.
- MA.1.4.4 name the months of the year and find a date on a monthly calendar.
- MA.1.4.5 explain time concept in context of personal experience.
- MA.1.4.6 read time to the half hour using an analog and digital clock.
- MA.1.4.7 calculate elapsed time to the hour.
- MA.1.4.8 identify the name and value of quarter and dollar.
- MA.1.4.9 count and trade a collection of pennies, nickels, and dimes with a total value of 100 cents or less.
- MA.1.4.10 role-play making change up to a dime.
- MA.1.4.11 select the appropriate tools of measurement to determine length, weight, volume and temperature.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.1.5.1 identify and investigate various forms of data collection.
- MA.1.5.2 read and interpret a pictograph with each picture representing a single unit.
- MA.1.5.3 conduct simple experiments and use the data to predict which of the events is more likely or less likely to occur if the experiment is repeated.
- MA.1.5.4 discuss events related to students' experiences as likely or unlikely.
- MA.1.5.5 tally by one's, organize the data in a chart/table, and construct a bar graph; read and interpret tally charts and tables.
- MA.1.5.6 analyze data represented on a graph using grade level appropriate questions.

Second Grade Mathematics Content Standards and Objectives

The second grade objectives help a student to become a more independent problem solver through concrete and technology related experiences which explore new problem solving strategies, everyday use of mathematical language, and reasonableness and interrelationships of mathematics. These concepts include: place value through thousands, estimation, introduction of properties of mathematics, and measurement which includes spatial perception. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.2.1.1 read, write, order, and compare numbers to 1000.
- MA.2.1.2 identify any number as odd or even.
- MA.2.1.3 count and group concrete items by 1's, 10's, 100's, and 1000's.
- MA.2.1.4 identify place value of each digit utilizing standard and expanded form through 1000.
- MA.2.1.5 identify and read any ordinal number.
- MA.2.1.6 round to nearer 10 and 100 to better understand place value.
- MA.2.1.7 identify and name fractions as part of a whole and as part of a group using models.
- MA.2.1.8 understand meaning of operations and the relationship between addition and subtraction (e.g., identity element of addition, associative property, commutative property, inverse operations, fact families).
- MA.2.1.9 memorize basic addition facts with sums to 18 and corresponding subtraction facts.
- MA.2.1.10 model 2- and 3-digit addition and subtraction without and with regrouping to solve the algorithm.
- MA.2.1.11 use rounding to determine the reasonableness of a sum or a difference.
- MA.2.1.12 solve grade level appropriate story problems that require one or two-step solutions using multiple strategies.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.2.2.1 analyze, describe, extend and create a growing pattern.
- MA.2.2.2 use input/output model with grade appropriate functions.
- MA.2.2.3 model and identify patterns of counting by 3's and 4's.
- MA.2.2.4 given the rule, complete the pattern.
- MA.2.2.5 use models to demonstrate equivalency of two numerical expressions written as a number sentence.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.2.3.1 identify and describe a cube, rectangular solid, cylinder, cone, and pyramid according to the number of faces and edges.
- MA.2.3.2 compare and contrast plane and solid geometric shapes.
- MA.2.3.3 given a design with a line of symmetry, draw the mirror image.
- MA.2.3.4 model line segments and angles.
- MA.2.3.5 identify the congruent shape that has been rotated and/or reflected.
- MA.2.3.6 plot locations with simple relationships on a coordinate plane.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.2.4.1 use a ruler to draw and compare lengths given lengths in centimeters and inches.
- MA.2.4.2 estimate and determine the perimeter of a polygon.
- MA.2.4.3 estimate and count the number of square units needed to cover a given area.
- MA.2.4.4 understand appropriate grade level conversions within a system of measurement.
- MA.2.4.5 estimate and determine weight/mass of familiar objects in pounds and kilograms.
- MA.2.4.6 order events in relation to time.
- MA.2.4.7 given a calendar, determine past and future dates of the week and identify specific dates.
- MA.2.4.8 read time to the nearest quarter hour using an analog and digital clock.
- MA.2.4.9 calculate elapsed time to the half hour.
- MA.2.4.10 read and write amounts of money to a dollar.
- MA.2.4.11 role-play making change to a dollar.
- MA.2.4.12 read Celsius and Fahrenheit thermometers.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.2.5.1 create, read, and interpret a pictograph with each picture representing greater than or less than a simple unit.
- MA.2.5.2 conduct simple experiments with more than two outcomes and use the data to predict which event is more, less, or equally likely to occur if the experiment is repeated.
- MA.2.5.3 analyze data represented on a graph using grade level appropriate questions.
- MA.2.5.4 formulate questions, collect data, organize and display as a chart/graph.

Third Grade Mathematics Content Standards and Objectives

The third grade objectives extend the students' mathematical skills and concepts through concrete experiences and appropriate technology. These concepts and operations include: whole number operations; comparing and ordering numbers to hundredths and ten thousands; fractions and decimals; multiplication facts through five with corresponding division facts. Additional concepts include gathering and organizing data, estimating and performing measurements. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.3.1.1 read, write, order, and compare numbers to 10,000.
- MA.3.1.2 read, write, order, and compare decimals to hundredths with models.
- MA.3.1.3 identify place value of each digit utilizing standard and expanded form through 10,000.
- MA.3.1.4 estimate to nearer 1000 using rounding, benchmarks, and compatible numbers to determine reasonableness of an answer.
- MA.3.1.5 identify fractions as part of a whole/one and as part of a group using models and pictorial representations.
- MA.3.1.6 compare and order fractions with like and unlike denominators using concrete models.
- MA.3.1.7 add and subtract fractions with like denominators using concrete models and pictorial representations.

- MA.3.1.8 recognize and model equivalent fractions using concrete materials.
- MA.3.1.9 recognize and model proper and improper fractions and mixed numbers.
- MA.3.1.10 add and subtract 2- and 3-digit whole numbers and money without and with regrouping.
- MA.3.1.11 understand multiplication as repeated addition and division as repeated subtraction.
- MA.3.1.12 understand meanings of operations and the relationship between multiplication and division (e.g., identity element of multiplication, commutative property, property of zero, fact families, associative property).
- MA.3.1.13 memorize basic multiplication facts 0-5 and the corresponding division facts.
- MA.3.1.14 model multiplication of 2- and 3-digit numbers by a 1-digit number.
- MA.3.1.15 model division of 2- and 3-digit numbers by a 1-digit number.
- MA.3.1.16 solve grade level appropriate story problems using multiple strategies.

Performance Descriptors (MA.PD.3.1)

- **Distinguished**

Third grade students performing at the distinguished level choose the operation, solve problems, and justify answers. Students apply their knowledge of benchmarks to solve problems involving comparing, adding, and subtracting decimals and fractions with like denominators; and know multiplication facts through 9's and the corresponding division facts.

- **Mastery**

Third grade students performing at mastery level represent fractions and decimals using number lines, models and pictures, memorize multiplication facts through 5's and the corresponding division facts, compare numbers from 100ths to 10,000, estimate, add and subtract whole numbers, and use estimation to determine the reasonableness of an answer.

- **Partial Mastery**

Third grade students performing at the partial mastery level represent fractions and decimals using models and pictures, recall multiplication facts through 5's and the corresponding division facts, read and write numbers from 100ths to 10,000, and estimate, add, and subtract whole numbers without regrouping.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.3.2.1 analyze and complete a geometric pattern.
- MA.3.2.2 use input/output model with grade appropriate functions.
- MA.3.2.3 identify and write number patterns of 3's and 4's.
- MA.3.2.4 identify and write the rule of a given pattern.
- MA.3.2.5 write equivalent numerical expressions.
- MA.3.2.6 represent the idea of a variable as an unknown quantity using a symbol.

Performance Descriptors (MA.PD.3.2)

- **Distinguished**

Third grade students performing at the distinguished level determine the input, when given the output of a function and use algebraic methods to generalize and write the rules for patterns.

■ **Mastery**

Third grade students performing at mastery level use algebraic methods to generalize and write the rules for patterns.

■ **Partial Mastery**

Third grade students performing at the partial mastery level use algebraic methods to extend a pattern.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.3.3.1 identify basic polygons and their components through decagon.
- MA.3.3.2 identify and describe a cube, rectangular solid, cylinder, cone and pyramid according to the number of faces, edges and vertices.
- MA.3.3.3 from a plane drawing, construct and identify the solid figure.
- MA.3.3.4 identify, determine and draw lines of symmetry.
- MA.3.3.5 describe lines and rays.
- MA.3.3.6 identify and draw right, obtuse and acute angles.
- MA.3.3.7 given a model, draw an example of a flip, slide and turn.
- MA.3.3.8 name the location of a point on a one-quadrant grid.

Performance Descriptors (MA.PD.3.3)

■ **Distinguished**

Third grade students performing at the distinguished level generalize the similarities and differences among plane and solid figures; describe spatial relationships using coordinate geometry; and draw acute, right, and obtuse angles.

■ **Mastery**

Third grade students performing at mastery level identify basic polygons and their components; describe geometric solids according to faces, edges and vertices; and draw acute, right and obtuse angles. Students name the location of a point in the first quadrant.

■ **Partial Mastery**

Third grade students performing at the partial mastery level identify basic polygons and their components, describe geometric solids, and identify angles. Students name the location of a point in the first quadrant.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
 - apply appropriate techniques, tools and formulas to determine measurements
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.3.4.1 estimate, measure, compare, order and draw lengths using inches (to the nearest $\frac{1}{2}$ inch), feet, yards, centimeters and meters.
- MA.3.4.2 estimate and count the number of cubes in a rectangular solid to determine volume.
- MA.3.4.3 discover the formula for determining the area of a rectangle.
- MA.3.4.4 understand appropriate grade level conversions within a system of measure.
- MA.3.4.5 estimate and measure results of mass/weight in ounces, pounds, grams, and kilograms.
- MA.3.4.6 read time to 5-minute intervals using analog and digital clocks.
- MA.3.4.7 calculate elapsed time to quarter-hour.
- MA.3.4.8 read and write amounts of money to \$100.00.
- MA.3.4.9 role-play making change up to \$10.00.
- MA.3.4.10 estimate, read, and recognize common temperatures of Celsius and Fahrenheit.

Performance Descriptors (MA.PD.3.4)

- **Distinguished**

Third grade students performing at the distinguished level estimate and compare measures of length, weight, and temperature, tell time to the nearest five minutes, calculate elapsed time to the quarter hour, and make change up to \$10.00 in problem solving situations.

- **Mastery**

Third grade students performing at mastery level estimate and compare measures of length, weight, and temperature, tell time to nearest 5 minutes and calculate elapsed time to the quarter hour, and make change up to \$10.00.

- **Partial Mastery**

Third grade students performing at the partial mastery level measure length, weight, and temperature, tell time to nearest 5 minutes, and calculate change.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.3.5.1 collect data from observation, surveys, and experiments, and construct and label the graph.
- MA.3.5.2 use a timeline to determine a sequence of events.
- MA.3.5.3 experiment and describe concepts of probability and chance and list possible outcomes from a sampling.
- MA.3.5.4 analyze data represented on a graph by generating questions using grade level appropriate questions.

Performance Descriptors (MA.PD.3.5)

- **Distinguished**

Third grade students performing at distinguished level analyze data from a graph or an experiment by generating questions and calculate the mean.

■ **Mastery**

Third grade students performing at the mastery level organize collected data, calculate the mean, and draw conclusions from a graph or an experiment.

■ **Partial Mastery**

Third grade students performing at the partial mastery level collect, organize, and display data.

Fourth Grade Mathematics Content Standards and Objectives

The fourth grade objectives emphasize critical thinking skills to create independent problem solvers who possess a personalized set of skills and strategies to solve problems in everyday life. Concepts which are stressed include: multiplication and division of two-and three-digit numbers, construction and description of objects from different perspectives, estimation, reading temperatures, description of possible outcomes in a given situation, use of calculators and computers, and describing mathematical relationships and patterns in other content areas and the real world. Additional concepts include adding and subtracting like fractions, and adding and subtracting decimals. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.4.1.1 read, write, order, and compare numbers to 1,000,000.
- MA.4.1.2 read, write, order, and compare decimals to thousandths with and without models and pictorial representations.
- MA.4.1.3 identify place value of each digit utilizing standard and expanded form through 1,000,000.
- MA.4.1.4 estimate to nearer 10,000 using rounding, benchmarks, and compatible numbers and identify over and under estimates to determine reasonableness of an answer.
- MA.4.1.5 compare and order fractions with like and unlike denominators using pictorial representations.
- MA.4.1.6 add and subtract fractions with like and unlike denominators using pictorial representations.
- MA.4.1.7 recognize and model equivalent fractions using pictorial representations.
- MA.4.1.8 model addition and subtraction of mixed numbers without and with regrouping to solve the algorithm.
- MA.4.1.9 understand the relationship of fractions to decimals using concrete objects and pictorial representations.
- MA.4.1.10 round decimals to the nearest whole, 10^{th} , or 100^{th} .
- MA.4.1.11 add and subtract decimals to the 1000^{th} place.
- MA.4.1.12 apply the distributive property of multiplication over addition.
- MA.4.1.13 memorize basic multiplication facts and corresponding division facts.
- MA.4.1.14 multiply 2-and 3-digit numbers by 1- and 2-digit numbers.
- MA.4.1.15 divide 2-and 3-digit numbers by 1-and 2-digit numbers.
- MA.4.1.16 apply the order of operations in solving problems.

MA.4.1.17 solve grade level appropriate story problems using multiple strategies.

Performance Descriptors (MA.PD.4.1)

■ **Distinguished**

Fourth grade students performing at the distinguished level choose the operation, solve problems, and justify answers. Students add and subtract fractions and decimals; multiply and divide whole numbers in problem solving situations; compare numbers from 1000ths to 1,000,000; and apply order of operations to solve problems.

■ **Mastery**

Fourth grade students performing at mastery level demonstrate mastery of all basic facts, add and subtract fractions and decimals with pictorial representation, multiply and divide whole numbers in problem solving situations, compare numbers from 1000ths to 1,000,000, and apply order of operations to solve problems.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level add and subtract fractions and decimals with pictorial representation, multiply and divide whole numbers in problem solving situations, and compare numbers from 1000ths to 1,000,000.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.4.2.1 solve problems, involving patterns.
- MA.4.2.2 use input/output model with grade appropriate functions.
- MA.4.2.3 understand the relationship between number patterns and multiples.
- MA.4.2.4 use patterns to predict the nth term.
- MA.4.2.5 represent the idea of a variable as an unknown quantity using a letter.

Performance Descriptors (MA.PD.4.2)

■ **Distinguished**

Fourth grade students performing at the distinguished level write an expression using a variable to represent the unknown quantity in problem-solving situations and predict a pattern to the nth term.

■ **Mastery**

Fourth grade students performing at mastery level predict a pattern to the nth term.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level use algebraic methods to extend a pattern.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.4.3.1 identify plane figures and their components.
- MA.4.3.2 compare and contrast quadrilateral shapes.
- MA.4.3.3 describe three-dimensional objects from different perspectives.
- MA.4.3.4 identify and draw intersecting, parallel, and perpendicular lines.
- MA.4.3.5 draw, label, compare, and classify acute, right, and obtuse angles.
- MA.4.3.6 draw a design with one line of symmetry.
- MA.4.3.7 graph/plot ordered pairs on a one-quadrant grid.
- MA.4.3.8 draw and identify parts of a circle: center point, diameter, and radius.

Performance Descriptors (MA.PD.4.3)

■ Distinguished

Fourth grade students performing at the distinguished level match orthogonal drawings and nets to three-dimensional figures, create figures that include given geometric properties, and plot and graph ordered pairs in the first quadrant.

■ Mastery

Fourth grade students performing at mastery level compare and contrast quadrilaterals, describe three-dimensional objects from different perspectives, classify angles, and draw lines that are parallel, perpendicular, and intersecting. Students draw and label parts of a circle and plot and graph ordered pairs in the first quadrant.

■ Partial Mastery

Fourth grade students performing at the partial mastery level classify lines, angles, and quadrilaterals and identify three-dimensional objects from different perspectives; plot and graph ordered pairs in the first quadrant.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement;
- apply appropriate techniques, tools and formulas to determine measurements

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.4.4.1 estimate, measure, compare, order and draw lengths using customary and metric units.
- MA.4.4.2 determine and compare areas of rectangles and squares by multiplying length and width.
- MA.4.4.3 discover the formula for volume of a rectangular prism.
- MA.4.4.4 understand appropriate grade level conversions within a system of measure.
- MA.4.4.5 read scales of weight, capacity, and temperature and select appropriate unit.
- MA.4.4.6 read time to nearest minute.

- MA.4.4.7 determine elapsed time in hours/ minutes within a 24-hour period.
MA.4.4.8 count coins and bills and determine correct change.

Performance Descriptors (MA.PD.4.4)

- **Distinguished**
Fourth grade students performing at the distinguished level solve problems involving measures of volume and capacity, perimeter and area, elapsed time and money, and convert units within a system of measurement.
- **Mastery**
Fourth grade students performing at mastery level estimate and compare measures of volume and capacity, estimate and compare areas of rectangles, tell time to the nearest minute and calculate elapsed time in a 24-hour period, and calculate change in problem solving situations using money.
- **Partial Mastery**
Fourth grade students performing at the partial mastery level measure volume and capacity, determine the area of rectangles, tell time to the nearest minute, and calculate change.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.4.5.1 understand and reason about the use and misuse of statistics in our society.
MA.4.5.2 read and interpret information represented on a circle graph.
MA.4.5.3 collect, organize, display, read and interpret data from a problem solving situation in line graphs, bar graphs, tally charts and tables with scale increments greater than one.
MA.4.5.4 list all possible outcomes for an experiment using a tree diagram.
MA.4.5.5 determine mean, median, mode and range from collected data.

Performance Descriptors (MA.PD.4.5)

- **Distinguished**
Fourth grade students performing at distinguished level calculate the mode, median and range; and make inferences and predictions based on data from line graphs, circle graphs and tree diagrams.
- **Mastery**
Fourth grade students performing at the mastery level collect (whole number) data and calculate the mode, median, and range. Students read and interpret data represented by line graphs, circle graphs, and tree diagrams.
- **Partial Mastery**
Fourth grade students performing at the partial mastery level read data represented with line graphs, circle graphs, and tree diagrams.

Fifth Grade Mathematics Content Standards and Objectives

Building on mastery of the basic facts of addition, subtraction, multiplication, and division, the fifth grade objectives place emphasis on developing proficiency in using whole numbers, fractions, and decimals to solve problems. Students will collect, display and analyze data in a variety of ways and solve probability problems. Students will solve problems involving area and perimeter, will classify polygons, plot points on a coordinate plane, and write a number sentence using a variable to solve problems. Students should be actively engaged, continuing to use concrete materials and appropriate technologies such as calculators and computers. Problem solving should be integrated throughout all the strands. The development of a variety of problem-solving strategies should be a major goal of mathematics at this grade level. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
 - demonstrate meanings of operations and how they relate to one another; and
 - compute fluently and make reasonable estimates
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.5.1.1 read, write, order and compare all whole numbers.
- MA.5.1.2 read, write, order and compare all decimals.
- MA.5.1.3 identify place value of each digit utilizing standard and expanded form in any whole number.
- MA.5.1.4 estimate with whole numbers and decimals, including money, to determine reasonableness of an answer.
- MA.5.1.5 identify and use the divisibility rules of 2, 3, 5, 9 and 10.
- MA.5.1.6 compare and order fractions, improper fractions and mixed numbers with like and unlike denominators (e.g., greatest common factor, lowest common multiple).
- MA.5.1.7 model and write equivalencies of fractions, decimals, percents, and ratios.
- MA.5.1.8 add and subtract fractions and mixed numbers.
- MA.5.1.9 model multiplication and division of fractions to solve the algorithm.
- MA.5.1.10 model multiplication of decimals and division of decimals by a whole number divisor to solve the algorithm.
- MA.5.1.11 develop fluency in addition, subtraction, multiplication and division of whole numbers.
- MA.5.1.12 solve grade level appropriate story problems using multiple strategies.
- MA.5.1.13 state fractions in lowest terms.

Performance Descriptors (MA.PD.5.1)

- **Distinguished**
Fifth grade students performing at the distinguished level choose the operation, solve problems, and justify answers, multiply and divide fractions and decimals with pictorial representation, add and subtract fractions and mixed numbers and give answers in lowest terms.
- **Mastery**
Fifth grade students performing at mastery level multiply and divide fractions and decimals with pictorial representation, add and subtract fractions and mixed numbers and give answers in lowest terms, and choose the appropriate operation and solve problems.

- **Partial Mastery**

Fifth grade students performing at the partial mastery level multiply and divide fractions and decimals with pictorial representation, add and subtract fractions and mixed numbers terms, and choose the appropriate operation to solve problems.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.5.2.1 explore a variety of patterns with missing elements (e.g., square numbers, powers, triangular numbers, arithmetic sequences).
- MA.5.2.2 use input/output model with grade appropriate functions.
- MA.5.2.3 write a number sentence using a variable to solve problems.
- MA.5.2.4 evaluate an expression given a value for the variable.

Performance Descriptors (MA.PD.5.2)

- **Distinguished**

Fifth grade students performing at the distinguished level describe how a change in one variable relates to a change in another and write number sentences using a variable to solve problems.

- **Mastery**

Fifth grade students performing at the mastery level write number sentences using a variable to solve problems.

- **Partial Mastery**

Fifth grades students performing at the partial mastery level use algebraic methods to extend a pattern and evaluate an expression.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.5.3.1 classify and compare polygons.
- MA.5.3.2 construct a 3-dimensional figure from different views (orthogonal drawings).
- MA.5.3.3 measure angles using a protractor.
- MA.5.3.4 draw a design with more than one line of symmetry.
- MA.5.3.5 recognize the images of figures after reflections, translations and rotations.
- MA.5.3.6 draw a similar figure using a scale.

Performance Descriptors (MA.PD.5.3)

- **Distinguished**

Fifth grade students performing at the distinguished level draw angles using a protractor, create a net when given a solid, and describe a series of motions to show that two shapes are congruent.

- **Mastery**

Fifth grade students performing at mastery level classify and compare polygons, measure angles using a protractor, and draw a design with more than one line of symmetry.

- **Partial Mastery**

Fifth grade students performing at the partial mastery level classify polygons, measure angles using a protractor, and identify more than one line of symmetry when given a figure.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.5.4.1 estimate, measure, compare, order and draw lengths of real objects in parts of an inch up to $\frac{1}{8}$ of an inch and millimeters.
- MA.5.4.2 determine and compare area of triangles and parallelograms using appropriate formula.
- MA.5.4.3 solve problems using the formulas for determining volume of a rectangular prism.
- MA.5.4.4 understand the relationship between area and perimeter of a plane figure.
- MA.5.4.5 understand appropriate grade level conversions within a system of measure and apply to problem solving situations.
- MA.5.4.6 evaluate and/or measure the weight/mass of real objects in ounces, pounds, tons, grams, and kilograms.
- MA.5.4.7 calculate elapsed time.
- MA.5.4.8 select appropriate customary and metric units and the tools for measuring to desired degree of precision.
- MA.5.4.9 determine actual measurement from scale drawings.

Performance Descriptors (MA.PD.5.4)

- **Distinguished**

Fifth grade students performing at the distinguished level apply appropriate tools, techniques, and formulas to determine measurements in problem solving situations. Students apply simple unit conversions within a system of measurement to solve problems.

- **Mastery**

Fifth grade students performing at mastery level determine and compare area and perimeter of triangles and quadrilaterals using formulas, calculate elapsed time involving more than a 24-hour span, and select appropriate tools, formulas, and/or units of measure in problem solving situations.

- **Partial Mastery**

Fifth grade students performing at the partial mastery level determine area and perimeter of triangles and quadrilaterals and calculate elapsed time within a 24-hour span.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.5.5.1 collect, organize, display, read and interpret data from a problem-solving situation in a stem and leaf plot.
- MA.5.5.2 identify probabilities and solve problems involving the probability of an event by using tree diagrams or by construction of a sample space representing all possible results.
- MA.5.5.3 construct, read, or interpret tables, charts, and graphs to draw reasonable inferences or verify predictions.
- MA.5.5.4 model situations by carrying out experiments to determine probability.
- MA.5.5.5 construct a circle graph.

Performance Descriptors (MA.PD.5.5)

- **Distinguished**
Fifth grade students performing at distinguished level make inferences and predictions based on data from stem and leaf plots and circle graphs, and carry out probability experiments, interpret a sample space, and compare their predictions to their results.
- **Mastery**
Fifth grade students performing at the mastery level interpret stem and leaf plots and construct circle graphs. Students make predictions, carry out probability experiments, interpret a sample space, and compare their predictions to their results.
- **Partial Mastery**
Fifth grade students performing at the partial mastery level read a stem and leaf plot and verify predictions based on probability experiments.

Sixth Grade Mathematics Content Standards and Objectives

The sixth grade objectives place continued emphasis on the study of whole numbers, decimals and fractions. However, students need opportunities to apply their skills to real life applications. Calculators and computers may be used to solve problems. Decreased attention should be given to paper and pencil computations. Sixth graders will continue to use manipulatives whenever new material is introduced or whenever it is needed to review previously taught material. The areas of probability, statistics, geometry, and pre-algebra will be stressed. Students will use ratios to compare data sets, make geometric constructions of three-dimensional figures, explore thoroughly the algebra strand, and solve problems involving circles, volume and surface area. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
 - demonstrate meanings of operations and how they relate to one another; and
 - compute fluently and make reasonable estimates
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.6.1.1 read, write, order, and compare numbers using scientific notation.
- MA.6.1.2 identify prime and composite numbers up to 100.
- MA.6.1.3 use prime factorization to determine the greatest common factor and least common multiple.
- MA.6.1.4 identify and represent integers on a number line.
- MA.6.1.5 use estimation to solve problems with whole numbers, fractions and decimals.
- MA.6.1.6 solve problems in context involving addition, subtraction, multiplication, and division of whole numbers, fractions, mixed numbers and decimals.
- MA.6.1.7 identify, demonstrate, and apply the distributive, commutative, associative and identity properties.
- MA.6.1.8 convert between fractions, mixed numbers, decimals and percents.
- MA.6.1.9 find the percent of a number.

Performance Descriptors (MA.PD.6.1)

■ **Distinguished**

Sixth grade students performing at the distinguished level solve problems involving fractions, decimals, and percents less than one and greater than 100, and relatively prime numbers, and use the commutative, associative, identity, and distributive properties to solve problems. Students compare integers and represent numbers with prime factors in exponential form.

■ **Mastery**

Sixth grade students performing at mastery level solve problems involving fractions, decimals and percents. Students use the commutative, associative, identity, and distributive properties to solve problems. Students represent integers with manipulatives and on a number line. Students represent numbers with prime factorizations.

■ **Partial Mastery**

Sixth grade students performing at partial mastery level solve problems involving fractions and decimals and identify commutative, associative, and identity properties and find prime factorization of a number using a factor tree.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
 - represent and analyze mathematical situations and structures using algebraic symbols;
 - use mathematical models to represent and understand quantitative relationships; and
 - analyze change in various contexts
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.6.2.1 simplify numerical expressions using order of operations.
- MA.6.2.2 identify missing elements in arithmetic and geometric patterns.

- MA.6.2.3 explore a variety of patterns, including perfect squares, square roots and exponents.
- MA.6.2.4 use input/output models and spreadsheets to evaluate functions.
- MA.6.2.5 solve a proportion using cross multiplication.
- MA.6.2.6 identify like terms and monomials.
- MA.6.2.7 model addition, subtraction, multiplication and division of integers.
- MA.6.2.8 locate and plot points within the four quadrants.
- MA.6.2.9 use variables to represent and solve real world problems appropriate for the 6th grade using multiple strategies.

Performance Descriptors (MA.PD.6.2)

- **Distinguished**
Sixth grade students performing at distinguished level solve proportions, plot points in four quadrants, and simplify numerical expressions using order of operations. Students use manipulatives and/or drawings to model monomials, algebraic expressions, patterns, and equations. Students explain patterns in a clear concise manner.
- **Mastery**
Sixth grade students performing at mastery level solve proportions, plot points in four quadrants, and simplify numerical expressions using order of operations. Students use manipulatives and/or drawings to model monomials, algebraic expressions, patterns, and equations.
- **Partial Mastery**
Sixth grade students performing at partial mastery level solve a proportion by cross-multiplying, plot points in the first quadrant, simplify numerical expressions using order of operations, and use manipulatives and/or drawings to model monomials, algebraic expressions and equations.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.6.3.1 classify lines as parallel, intersecting, perpendicular or skew.
- MA.6.3.2 determine the sum of measures of angles in polygons.
- MA.6.3.3 bisect a line segment using a compass and straightedge.
- MA.6.3.4 draw an angle of a given measure.
- MA.6.3.5 identify line symmetry and rotational symmetry in plane figures.
- MA.6.3.6 define and sketch similar and congruent plane geometric figures.

Performance Descriptors (MA.PD.6.3)

- **Distinguished**
Sixth grade students performing at distinguished level solve problems involving congruence and similarity of plane figures, calculate the sum of measures of angles in polygons, and compare and contrast line and rotational symmetry in plane figures.

- **Mastery**
Sixth grade students performing at mastery level solve problems involving congruence and similarities of plane figures and calculate the sum of the measures of angles of polygons. Students identify rotational symmetry in plane figures.
- **Partial Mastery**
Sixth grade students performing at the partial mastery level identify and describe congruence and similarity of plane figures, calculate the sum of the measures of the angles of a triangle and quadrilaterals. Students identify rotational symmetry in plane figures.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.6.4.1 derive approximation for pi using actual measurements.
- MA.6.4.2 apply formulas to determine perimeter, circumference and/or area of plane figures including compound figures.
- MA.6.4.3 investigate and model volume and surface area.
- MA.6.4.4 select appropriate units and determine length, weight/mass and capacity/volume using metric and customary systems.
- MA.6.4.5 construct scale drawings.

Performance Descriptors (MA.PD.6.4)

- **Distinguished**
Sixth grade students performing at distinguished level calculate circumference, area, perimeter of plane figures, volume and surface area of three-dimensional figures, and give solutions in appropriate units. Students determine scale factor of similar plane figures and solve application problems related to measurement. Students convert between units of measure within the metric and customary systems.
- **Mastery**
Sixth grade students performing at mastery level calculate circumference, area, perimeter of plane figures, volume and surface area of three-dimensional figures, and give solutions in appropriate units. Students determine scale factor of similar plane figures and solve problems related to measurement. Students convert between units of measure within the metric and customary systems.
- **Partial Mastery**
Sixth grade students performing at partial mastery level calculate perimeter and area of plane figures, the circumference of circles and the volume of a rectangular prism. Students determine the scale factor of similar figures, solve simple problems related to measurement and give solutions in appropriate units. Students convert between units of measure within the customary system.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.6.5.1 use spreadsheet software and graphing calculators to collect, organize, display, and read data using appropriate graphs and tables.
- MA.6.5.2 interpret data using mean, median, mode, and range.
- MA.6.5.3 determine the probability of a given event and express that probability as a ratio, decimal or percent.
- MA.6.5.4 determine combinations, permutations and probability using sample spaces (by listing and tree diagrams).

Performance Descriptors (MA.PD.6.5)

- **Distinguished**
Sixth grade students performing at distinguished level make conjectures about the outcomes of events based on simulations, and construct and interpret graphs, and interpret measures of central tendency and dispersion involving fractions and decimals. Students find combinations and permutations.
- **Mastery**
Sixth grade students performing at mastery level calculate measures of central tendency and dispersion involving fractions and decimals. Students find the probability of an event, use combinations and permutations, and interpret graphs.
- **Partial Mastery**
Sixth grade students performing at the partial mastery level read a histogram and record data; calculate measures of central tendency and dispersion. Students find the probability of an event, and determine combinations.

Seventh Grade Mathematics Content Standards and Objectives

The seventh grade year is an introduction to high school subjects such as algebra, geometry, probability and statistics. With less emphasis on paper/pencil computation, calculators are emphasized in all facets of the mathematics daily work as well as test situations. Students should, by this time, have a mastery of general mathematics topics; however, review of all basic mathematics skills occurs in a relevant context. Problem solving is embedded in the curriculum utilizing a variety of new concepts, while cooperative learning promotes communication skills. Students are routinely permitted to use available technology. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.7.1.1 compare and order integers, decimals, and fractions using symbols ($<$, $>$, $=$) manipulatives and graphing on a number line.

- MA.7.1.2 find powers, squares, and square roots using manipulatives, models, calculators, tables and mental math.
- MA.7.1.3 define absolute value and determine its effect on a number or expression.
- MA.7.1.4 recognize and write rational numbers in the form a/b .
- MA.7.1.5 perform operations with integers (e.g., addition, subtraction, multiplication, division).
- MA.7.1.6 apply the commutative, associative, distributive, identity and inverse properties.
- MA.7.1.7 solve application problems with whole numbers, decimals, fractions and percents.
- MA.7.1.8 use appropriate estimation strategies in problem situations including evaluating the reasonableness of a solution.

Performance Descriptors (MA.PD.7.1)

- **Distinguished**
Seventh grade students performing at the distinguished level calculate powers, square roots, and absolute values and perform operations with integers. Students solve complex application problems and evaluate the reasonableness of solutions.
- **Mastery**
Seventh grade students performing at mastery level calculate powers, square roots, and absolute values and perform operations with integers. Students solve application problems and evaluate the reasonableness of solutions.
- **Partial Mastery**
Seventh grade students performing at partial mastery level calculate powers, and absolute values; perform addition, multiplication and division with integers; and solve simple application problems.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.7.2.1 find missing elements in a variety of arithmetic and geometric patterns including algebraic sequences and series.
- MA.7.2.2 simplify and evaluate numerical and algebraic expressions with whole numbers, integers, absolute value and exponents using the order of operations and exponential rules.
- MA.7.2.3 add, subtract, multiply and divide monomials.
- MA.7.2.4 find and use the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of a set of monomials or algebraic fractions using prime factorization and exponent rules.
- MA.7.2.5 input data into a spreadsheet to create input/output function tables.
- MA.7.2.6 use ratios and proportions to represent and solve application problems.
- MA.7.2.7 write and evaluate complex algebraic expressions for word phrases.
- MA.7.2.8 use and apply scientific notation containing positive and negative exponents in problem solving situations.
- MA.7.2.9 solve linear equations containing whole numbers, fractions, decimals and integers.
- MA.7.2.10 solve inequalities using inverse operations and graph solutions.
- MA.7.2.11 plot lines within the Cartesian coordinate plane from a table of values using the graphing calculator and dynamic geometry software.
- MA.7.2.12 determine the slope of a line from its graphical representation.
- MA.7.2.13 represent and solve real world problems appropriate for 7th grade using multiple strategies.

Performance Descriptors (MA.PD.7.2)

- **Distinguished**
Seventh grade students performing at distinguished level solve linear equations and inequalities, graph solutions, and graph lines within the coordinate plane. Students use ratio and proportion, scientific notation, and absolute value in solving complex problems.
- **Mastery**
Seventh grade students performing at mastery level solve linear equations and inequalities, graph solutions, and graph lines within the coordinate plane. Students use ratio and proportion, scientific notation, and absolute value in solving problems.
- **Partial Mastery**
Seventh grade students performing at partial mastery level solve linear equations, graph lines within the coordinate plane, and solve simple problems using ratio and proportion.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.7.3.1 identify and construct angle-pairs (e.g., adjacent, complementary, supplementary, vertical).
- MA.7.3.2 use a formula to determine the sum of the measures of the interior angles of a polygon.
- MA.7.3.3 use 2-dimensional representations of 3-dimensional objects to visualize and solve problems.
- MA.7.3.4 construct congruent segments and angles, perpendicular bisectors of segments and angle-bisectors.
- MA.7.3.5 apply and demonstrate line symmetry.
- MA.7.3.6 apply transformations (rotations, reflections, translations) to plane figures using graph paper.
- MA.7.3.7 solve ratio and proportion problems including scale drawings and similar polygons.

Performance Descriptors (MA.PD.7.3)

- **Distinguished**
Seventh grade students performing at distinguished level solve practical problems involving similar figures, construct and bisect congruent segments and angles using a compass and straightedge. Students identify angle pairs and calculate measures of interior angles of a polygon. Students determine types of symmetry and transformations on a coordinate plane.
- **Mastery**
Seventh grade students performing at mastery level identify angle pairs and use formulas to calculate measures of interior angles of a polygon. Students determine types of symmetry and transformations on a coordinate plane and construct congruent segments and angles using a compass and straightedge. Students solve practical problems involving scale models.
- **Partial Mastery**
Seventh grade students performing at the partial mastery level identify angle pairs, determine types of symmetry and transformations on a coordinate plane, and construct congruent segments and angles using a compass and straightedge.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.7.4.1 use and apply formulas in problem solving situations involving perimeter, circumference, area, surface area, distance and temperature (Celsius, Fahrenheit).
- MA.7.4.2 use the concept of volume for prisms, pyramids, and cylinders as the relationship between the area of the base and height.
- MA.7.4.3 use the Pythagorean Theorem to find the length of any side of a right triangle.
- MA.7.4.4 convert units of measurement between customary and metric systems.

Performance Descriptors (MA.PD. 7.4)

- **Distinguished**
Seventh grade students performing at distinguished level solve problems involving perimeter, circumference, area of two-dimensional figures, and surface area and volume of prisms, pyramids, cones and cylinders and give solutions in appropriate units. Students select the correct formula from a list to solve distance, temperature, and Pythagorean Theorem problems.
- **Mastery**
Seventh grade students performing at mastery level solve problems involving perimeter, circumference, area of two-dimensional figures, and surface area and volume of prisms and pyramids and give solutions in appropriate units. Students use the substitution property to solve distance, temperature, and Pythagorean Theorem problems.
- **Partial Mastery**
Seventh grade students performing at partial mastery level solve problems using given formulas involving perimeter, circumference, area of regular polygons, circles, volume of prisms, and surface area of rectangular prisms. Students calculate slope of a line.

Standard 5: Data Analysis and Probability

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives (MA.S.5)

Students will:

- MA.7.5.1 make and test conjectures based on probability results of experiments and simulations using appropriate technology.
- MA.7.5.2 construct sample spaces by listing, tree diagrams, and frequency distribution tables to determine combinations and permutations.
- MA.7.5.3 collect, organize, graphically represent, and interpret data displays including: frequency distributions, line-plots, scatter plots, box and whiskers, and multiple-line graphs using spreadsheet and graphing calculators.

- MA.7.5.4 solve application problems involving measures of central tendency (mean, median, mode) and dispersion (range) from data, graphs, tables, and experiments using appropriate technology.

Performance Descriptors (MA.PD.7.5)

- **Distinguished**

Seventh grade students performing at distinguished level find, use, and interpret interquartile range of a data set; and solve application problems involving measures of central tendency and dispersion. Students collect, organize, and graphically represent frequency distributions, line-plots, scatter plots, box and whisker and multiple-line graphs. Students determine if an event is dependent or independent, calculate the probability, and describe the outcome.

- **Mastery**

Seventh grade students performing at mastery level solve application problems involving measures of central tendency and dispersion. Students collect, organize, and graphically represent frequency distributions, line-plots, scatter plots, box and whisker, and multiple-line graphs.

- **Partial Mastery**

Seventh grade students performing at the partial mastery level calculate measures of central tendency and dispersion; collect, organize, and graphically represent data in frequency distributions, line plots and scatter plots; and compute probability of an independent event.

Eighth Grade Mathematics Content Standards and Objectives

Pre-Geometry with Algebra provides an alternative course for students who do not elect to take Algebra I in the eighth grade or who have not successfully mastered the new skills from *Pre-Algebra with Geometry* in the seventh grade. In addition to reinforcing the concepts presented in *Pre-Algebra with Geometry*, this course extends problem solving to a more sophisticated level. Students will continue to apply integer operations, properties, expressions and equations so as to reinforce these concepts in varied applications. Lessons involving cooperative learning, manipulatives, or technology will strengthen students' understanding of concepts while fostering communication and reasoning skills. Calculator use is emphasized for all mathematical tasks including assessment. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Number and Operations Objectives

Students will:

- MA.8.1.1 compare and order rational and irrational numbers.
- MA.8.1.2 utilize the properties of terminating, repeating, and non-repeating decimals, and conversions between fractions, mixed numbers, and decimals.
- MA.8.1.3 extend scientific notation to numbers with a wide range of values using a calculator when appropriate.

- MA.8.1.4 use powers, squares, and square roots to solve problems.
- MA.8.1.5 solve consumer application problems including rates, tips, discounts, sales tax and interest.
- MA.8.1.6 use estimation techniques with whole numbers, decimals, percent, fractions and mixed numbers to solve and verify solutions in application problems.
- MA.8.1.7 solve application problems with whole numbers, decimals, fractions, percents and integers.
- MA.8.1.8 develop computational strategies based on the commutative, associative, and identity properties with emphasis on the inverse and distributive properties.

Performance Descriptors (MA.PD.8.1)

- **Distinguished**
Eighth grade students performing at the distinguished level apply properties and solve problems involving pi, non-repeating decimals, scientific notation, powers, and square roots. Students solve complex application problems and justify solutions in a clear concise manner.
- **Mastery**
Eighth grade students performing at mastery level apply properties and solve problems involving pi, non-repeating decimals, scientific notation, powers, and square roots. Students solve consumer application problems.
- **Partial Mastery**
Eighth grade students performing at partial mastery level identify properties and solve problems involving rational numbers and solve simple application problems.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
 - represent and analyze mathematical situations and structures using algebraic symbols;
 - use mathematical models to represent and understand quantitative relationships; and
 - analyze change in various contexts
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra Objectives

Students will:

- MA.8.2.1 use order-of-operations and exponents rules to solve application problems with numerical and algebraic expressions containing whole numbers, integers, absolute value, fractions and exponents.
- MA.8.2.2 solve one and two step linear equations and inequalities with integers, fractions, and decimal solutions using paper and pencil, and graphing calculators.
- MA.8.2.3 use ratio and proportion to create and solve equations.
- MA.8.2.4 add and subtract polynomials.
- MA.8.2.5 apply algebraic equations and expressions to solve application problems.
- MA.8.2.6 apply inductive and deductive reasoning to write a rule from data in a function table.
- MA.8.2.7 graph linear equations and inequalities within the Cartesian coordinate plane using ordered pairs, table of values, graphing calculators and dynamic geometry software.
- MA.8.2.8 formulate and apply a rule to generate an arithmetic, geometric and algebraic pattern.
- MA.8.2.9 determine the slope of a line given two-points or slope/y-intercept equation ($y=mx+b$).
- MA.8.2.10 represent and solve real world problems appropriate for 8th grade using multiple strategies.

Performance Descriptors (MA.PD.8.2)

- **Distinguished**
Eighth grade students performing at distinguished level solve two-step linear equations and inequalities, and graph linear equations and inequalities. Students select and apply algebraic equations, ratio and proportion, and function rules to solve complex application problems and explain solutions in a clear concise manner.

- **Mastery**
Eighth grade students performing at mastery level solve two-step linear equations and inequalities, and graph linear equations and inequalities. Students select and apply algebraic equations, ratio and proportion, and function rules to solve application problems.
- **Partial Mastery**
Eighth grade students performing at partial mastery level solve two-step linear equations, graph linear equations, and solve problems using ratio and proportion.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- MA.8.3.1 investigate the relationship between corresponding, alternate interior, and alternate exterior angles when parallel lines are cut by a transversal using models, pencil/paper and graphing calculator.
- MA.8.3.2 classify polyhedrons according to the number and shape of faces; determine the relationship between vertices, faces and edges.
- MA.8.3.3 construct perpendicular and angle bisectors.
- MA.8.3.4 create geometric patterns including tiling, art design, tessellations and scaling using transformations (rotations, reflections, translations).
- MA.8.3.5 use coordinate geometry to represent and examine properties of similar and congruent figures and graph transformations.
- MA.8.3.6 create scale models including transformations, ratio, proportion and similar figures using pencil/paper and dynamic geometry software.

Performance Descriptors (MA.PD.8.3)

- **Distinguished**
Eighth grade students performing at distinguished level create and describe scale models and geometric patterns, solve problems using angle relationships formed by parallel lines cut by a transversal, construct angle bisectors and transformations, and identify relationships between faces, vertices and edges in polyhedra.
- **Mastery**
Eighth grade students performing at mastery level solve problems involving scale models, similar figures, and geometric patterns. Students determine angle relationships when parallel lines are cut by a transversal and construct angle bisectors and transformations. Students identify relationships between faces, vertices and edges in regular polyhedra.
- **Partial Mastery**
Eighth grade students performing at the partial mastery level solve problems with scale models and simple geometric patterns, and determine angle relationships when parallel lines are cut by a transversal.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Measurement Objectives

Students will:

- MA.8.4.1 estimate and solve application problems involving perimeter, area, surface area and volume of plane and solid geometric figures.
- MA.8.4.2 use the concept of volume for cone and pyramids as one-third the product of the area of the base and the height.
- MA.8.4.3 solve problems involving missing measurements in plane and solid geometric figures using formulas and drawings including irregular figures, models or definitions.
- MA.8.4.4 solve right triangle problems using the Pythagorean Theorem, indirect measurement and definitions.

Performance Descriptors (MA.PD.8.4)

■ **Distinguished**

Eighth grade students performing at distinguished level solve complex application problems involving perimeter, area, surface area, volume, and missing measurements of geometric figures and give solutions in appropriate units explaining solutions in a clear concise manner. Students determine slope of a line given two points and the slope-intercept form of an equation of a line. Students apply the Pythagorean Theorem to solve problems explaining solutions in a clear concise manner.

■ **Mastery**

Eighth grade students performing at mastery level solve application problems involving perimeter, area, surface area, volume, and missing measurements of geometric figures and give solutions in appropriate units. Students determine slope of a line given two points and the slope-intercept form of an equation of a line. Students apply the Pythagorean Theorem to solve problems.

■ **Partial Mastery**

Eighth grade students performing at partial mastery level solve simple application problems involving perimeter, area, surface area and volume of geometric figures; calculate slope of a line given two points or slope intercept form of an equation of a line; and calculate length of a side using the Pythagorean Theorem.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Data Analysis and Probability Objectives

Students will:

- MA.8.5.1 use appropriate technology to solve application problems involving combinations and permutations.
- MA.8.5.2 investigate the experimental probability and theoretical probability of an event.
- MA.8.5.3 create and extrapolate information from multiple-bar graphs, box and whisker plots, and other data displays using appropriate technology.

- MA.8.5.4 analyze problem situations, games of chance, and consumer applications using statistical samplings to determine odds and make predictions.
- MA.8.5.5 draw inferences and construct convincing arguments, including misuses of statistical or numeric information, based on data analysis.

Performance Descriptors (MA.PD.8.5)

- **Distinguished**
Eighth grade students performing at distinguished level extrapolate information to make predictions about data samples and calculate probabilities for compound events.
- **Mastery**
Eighth grade students performing at mastery level solve application problems involving combinations, permutations, games of chance, and statistical samplings. Students, given the results of experiments, calculate the experimental and theoretical probabilities of simple events.
- **Partial Mastery**
Eighth grade students performing at the partial mastery level calculate factorials and theoretical probability of a simple event. Students collect data from a probability experiment.

Algebra/Geometry Preparation Objectives

Algebra/Geometry preparation is an elective course designed to be a bridge between the concrete elementary curriculum and the more formal mathematics curriculum ahead. In this course students will explore algebraic concepts in an informal way to build a foundation for subsequent formal study of algebra. Such informal explorations should emphasize physical models, data, graphs, and other mathematical representations rather than facility with formal algebraic manipulations. The study of geometry is to assist students to represent and make sense of the world. Geometric models will provide a perspective from which students are to analyze and solve problems, and geometric interpretations are to help make abstract representations more easily understood. The study of geometry at this level should simply provide increased opportunities for students to engage in more systematic explorations. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Number and Operations (MA.S.1)

Students will:

- demonstrate understanding of numbers, ways of representing numbers, and relationships among numbers and number systems;
- demonstrate meanings of operations and how they relate to one another; and
- compute fluently and make reasonable estimates

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra/Geometry Preparation Objectives

Students will:

- AGP.1.1 identify and use properties of numbers (commutative, associative, distributive, etc).
- AGP.1.2 add, subtract, multiply, and divide decimals, integers, fractions and mixed numbers.
- AGP.1.3 use order relations to compare, order, or locate whole numbers, integers, fractions, and decimals on a number line.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

AGP.2.1 substitute values, evaluate expressions involving variables, and calculate formulas to solve application problems.

AGP.2.2 solve equations with at least two operations.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

AGP.3.1 use a compass to construct congruent angles, bisect angles, and bisect line segments.

AGP.3.2 estimate and find circumference and area of a circle.

AGP.3.3 estimate and find the area and perimeter of polygons

AGP.3.4 estimate and find the surface area and the volume of three-dimensional figures.

AGP.3.5 identify angle relationships: complementary, supplementary, vertical, and adjacent.

AGP.3.6 identify angle relationships; involving parallel lines and apply in solving problems (corresponding angles, alternate interior angles, and alternate exterior angles).

AGP.3.7 investigate similar triangles and apply proportions in problem solving situations.

AGP.3.8 develop and explore circle relationships, emphasizing the vocabulary of circles.

Standard 4: Measurement (MA.S.4)

Students will:

- demonstrate understanding of measurable attributes of objects and the units, systems, and processes of measurement; and
- apply appropriate techniques, tools and formulas to determine measurements

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

AGP.4.1 estimate, measure, and perform operations involving length, mass, and capacity using customary and metric units.

AGP.4.2 use a protractor to measure and draw angles.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
 - select and use appropriate statistical methods to analyze data;
 - develop and evaluate inferences and predictions that are based on models; and
 - apply and demonstrate an understanding of basic concepts of probability
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

AGP.5.1 read, interpret, and construct graphs to solve problems.

AGP.5.2 use data to determine mean, median, mode, and range.

AGP.5.3 find the probability of complementary events and exclusive events.

Algebra I Objectives

Algebra I is a course that provides the gateway to all higher mathematics courses. This course uses a conceptual approach to mathematics and does not focus on algorithmic methods. Algebraic representations will be used to generalize, and the algebraic method will be viewed as a problem-solving tool. In planning for instruction, consideration should be given to the student's readiness for abstract concepts. Manipulatives, such as algeblocks, should be used to bridge the gap from the concrete to the abstract. Available technology such as calculators, computers, and graphing utilities are to be used as tools to enhance learning. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
 - represent and analyze mathematical situations and structures using algebraic symbols;
 - use mathematical models to represent and understand quantitative relationships; and
 - analyze change in various contexts
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra I Objectives

Students will:

- Al.2.1 evaluate algebraic expressions using grouping symbols, order of operations and properties of real numbers with justification of steps.
- Al.2.2 solve multi-step linear equations in one variable and apply skills toward solving practical problems.
- Al.2.3 solve multi-step linear inequalities in one variable, interpret the results on a number line and apply the skills toward solving practical problems.
- Al.2.4 solve literal equations for a given variable and apply the skills toward solving practical problems.
- Al.2.5 analyze a given set of data for the existence of a pattern numerically, algebraically and graphically; determine the domain and range; and determine if the relation is a function.
- Al.2.6 solve absolute value equations in one variable and interpret the results on a number line.
- Al.2.7 use the laws of exponents to perform operations on expressions with integral exponents.

AI.2.8	determine the slope of a line given an equation of a line, the graph of a line and two points to be identified.
AI.2.9	graph linear equations using slope-intercept, point slope, and x- and y-intercepts.
AI.2.10	write an equation of a line given a graph of a line, two points on the line, the slope and a point, and the slope and y-intercept.
AI.2.11	solve systems of linear equations numerically and graphically, by the elimination method and by the substitution method.
AI.2.12	add and subtract polynomials.
AI.2.13	multiply and divide binomials by binomials or monomials.
AI.2.14	factor polynomials by using appropriate methods.
AI.2.15	estimate and simplify square roots into both exact and approximate forms.
AI.2.16	solve quadratic equations by graphing, factoring and quadratic formula.
AI.2.17	add, subtract, multiply and divide simple rational expressions.
AI.2.18	collect, organize, interpret data and predict outcomes using the mean, mode, median, range and standard deviation.
AI.2.19	perform a linear regression and use the results to predict specific values of a variable, and identify the equation for the line of regression.
AI.2.20	predict the outcomes of simple events using the rules of probability.
AI.2.21	use process (flow) charts and histograms, scatter diagrams and normal distribution curves in order to perform statistical process (quality) control.

Applied Mathematics I Objectives

Applied Mathematics I and Applied Mathematics II reflect the content of a complete course in Applied Mathematics. Applied Mathematics I is the first half of the Applied Mathematics course. One Applied Mathematics credit will be given for successful completion of this course. Upon successful completion of both courses, Algebra I credit will be given. Applied Mathematics I is a lab-based course taught with teacher-led, concrete activities. This course is designed to develop algebraic concepts applicable in the work place as well as in traditional areas. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Applied Mathematics I Objectives

Students will:

AM1.2.1	solve practical problems involving computation using estimation.
AM1.2.2	write numbers in scientific notation and combine numbers written in scientific notation to solve practical problems.
AM1.2.3	distinguish between counting and measuring using micrometers, calipers and other precision tools to make measurements.
AM1.2.4	solve practical problems and interpret results using rational numbers and vectors.

- AM1.2.5 evaluate algebraic expressions using grouping symbols, order of operations and properties of real numbers with justification of steps.
- AM1.2.6 translate word phrases into algebraic expressions or word sentences into equations and inequalities.
- AM1.2.7 justify steps in the solving of equations based on the properties of real numbers.
- AM1.2.8 solve literal equations for a given variable and apply the skills toward solving practical problems.
- AM1.2.9 solve practical problems using a four-step problem solving approach.
- AM1.2.10 solve multi-step linear equations in one variable and apply skills toward solving practical problems.
- AM1.2.11 solve multi-step linear inequalities in one variable, interpret the results on a number line and apply the skills toward solving practical problems.
- AM1.2.12 solve absolute value equations in one variable and interpret the results on a number line.
- AM1.2.13 collect, organize, interpret data, and predict outcomes using the mean, mode, median, range and standard deviation.
- AM1.2.14 estimate and simplify square roots into both exact and approximate forms.
- AM1.2.15 use the laws of exponents to perform operations on expressions with integral exponents.
- AM1.2.16 predict the outcomes of simple events using the rules of probability.

Applied Mathematics II Objectives

Applied Mathematics II is the second half of the Applied Mathematics course. Upon successful completion of both courses, Algebra I credit will be given. Algebraic concepts will be taught using laboratory activities based on several strategies that include the use of the graphing calculator. Working in groups will be used to develop problem solving skills and social skills needed in the work place as well as in traditional areas. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Applied Mathematics II Objectives

Students will:

- AM2.2.1 analyze a given set of data for the existence of a pattern numerically, algebraically and graphically; determine the domain and range; and determine if the relation is a function.
- AM2.2.2 determine the slope of a line given an equation of a line, the graph of a line and two points to be identified.
- AM2.2.3 graph linear equations using slope-intercept, point slope, and x- and y-intercepts.
- AM2.2.4 write an equation of a line given graph of a line, two points on the line, the slope and a point, and the slope and y-intercept.
- AM2.2.5 solve systems of linear equations numerically and graphically, by the elimination method and by the substitution method.
- AM2.2.6 add and subtract polynomials.
- AM2.2.7 multiply and divide binomials by binomials or monomials.

- AM2.2.8 factor polynomials by using appropriate methods.
- AM2.2.9 solve quadratic equations by graphing, factoring and quadratic formula.
- AM2.2.10 add, subtract, multiply and divide simple rational expressions.
- AM2.2.11 use process (flow) charts and histograms, scatter diagrams, and normal distribution curves in order to perform statistical process (quality) control.
- AM2.2.12 perform a linear regression and use the results to predict specific values of a variable. Identify the equation for the line of regression.

Geometry and Applied Geometry Objectives

Geometry is a course designed for students who have successfully completed the objectives for Algebra I. The study of geometry should include experiences and activities that foster in students a feeling for the value of geometry in their lives. Students should be encouraged to develop conjectures by inductive processes using manipulatives and computer software. Cooperative learning groups are particularly effective in allowing students to become proficient in analyzing conjectures and in formulating proofs. Emphasis should be placed on applications to the work place and everyday life and on connections to other branches of mathematics and other disciplines. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Applied Geometry is a course for students who have successfully completed the objectives of Algebra I. Upon completion of this course a geometry credit will be given. Applied Geometry will use manipulatives to enhance the understanding of geometric concepts and terminology. Working in groups will allow students to analyze applications of geometry in their lives and in the work place. Concepts will be taught using laboratory activities including the use of technology as a learning tool. The objectives for Applied Geometry will be the same as those for Geometry. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Geometry Objectives

Students will:

- G.3.1 represent points, lines, and planes pictorially with proper identification, as well as basic concepts derived from these undefined terms, such as segments, rays and angles.
- G.3.2 differentiate between inductive and deductive reasoning.
- G.3.3 use the basic concepts of symbolic logic including identifying the converse, inverse, and contrapositive of a conditional statement and testing the validity of conclusions with Venn Diagrams.
- G.3.4 construct logical arguments in formal and informal methods with direct and indirect reasoning.
- G.3.5 apply definitions, theorems, and postulates related to such topics as complementary, supplementary, and vertical angles and angles formed by perpendicular lines.

- G.3.6 explore the relationship between angles formed by two lines cut by a transversal when lines are and are not parallel, and use the results to develop methods to show parallelism.
- G.3.7 investigate and verify congruence relationships in triangles.
- G.3.8 explore and identify properties of quadrilaterals and verify the properties for parallelograms, rectangles, rhombuses, squares, and trapezoids.
- G.3.9 investigate measures of angles and lengths of segments to determine the existence of triangles (triangle inequality) and the order of sides and angles.
- G.3.10 apply properties of similar triangles to determine inaccessible heights and distances, construct scaled drawings, and derive the basis for the trigonometric ratios.
- G.3.11 using trigonometric ratios, determine lengths of sides and measures of angles in right triangles.
- G.3.12 apply the Pythagorean Theorem and its converse in solving practical problems and in deriving the special right triangle relationships.
- G.3.13 investigate measures of angles formed by chords, tangents, and secants of a circle and the relationship to its arcs.
- G.3.14 given a polygon, find angle measures of interior and exterior angles; find length of sides from given data; and use properties of regular polygons to find missing data.
- G.3.15 develop properties of tessellating figures and use those properties to tessellate the plane.
- G.3.16 develop and apply formulas for area, perimeter, surface area, and volume and apply them in the modeling of practical problems.
- G.3.17 develop concepts of analytical geometry such as formulas for distance, slope, and midpoint and apply these to finding dimensions of polygons on the coordinate plane.
- G.3.18 using various methods, construct a triangle's medians, altitudes, angle and perpendicular bisectors; make conjectures and develop mathematical arguments about their relationships.
- G.3.19 using transformational geometry, create a reflection, translation, rotation, glide reflection and dilation of a figure; and apply transformations and use symmetry to analyze mathematical situations.
- G.3.20 compare and contrast other geometry to Euclidean geometry.
- G.3.21 find or approximate the area of irregularly shaped regions.
- G.3.22 using the Cartesian coordinate system, find the dimensions of a polygon, given the coordinates of the polygon.

Algebra II Objectives

Listed below are the objectives for Algebra II. It is an underlying assumption that a mastery of Algebra I has been achieved since Algebra II continues the study of concepts introduced in Algebra. Graphing calculators are an integral part of instruction in the Algebra II objectives. Students will have the opportunity to make conjectures and test them by using any graphing utility. Manipulatives and other available technology will be used as appropriate. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
 - represent and analyze mathematical situations and structures using algebraic symbols;
 - use mathematical models to represent and understand quantitative relationships; and
 - analyze change in various contexts
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Algebra II Objectives

Students will:

- A2.2.1 write equations of lines given various information including parallel and perpendicular lines and vertical and horizontal lines.
- A2.2.2 factor higher order polynomials by applying various methods including factoring by grouping and the sum and difference of two cubes.
- A2.2.3 define and use i to develop the complex number system; simplify powers and products of i .
- A2.2.4 perform basic operations with complex numbers and give answers in simplest form.
- A2.2.5 simplify radicals and expressions involving fractional exponents and convert between the two forms.
- A2.2.6 solve quadratic equations over the set of complex numbers: apply the techniques of factoring and completing the square and the quadratic formula; use the discriminant to determine the nature of the roots; confirm the solutions numerically and graphically; and apply to practical problems.
- A2.2.7 define the components of a matrix: develop and use the appropriate field properties by adding, subtracting, and multiplying; solve a system of linear equations using matrices; and apply skills toward solving practical problems.
- A2.2.8 solve equations containing radicals and exponents.
- A2.2.9 define a function: find the domain, range, zeros; find the inverse of a function; find the value of a function for a given element in its domain; and perform basic operations on functions including composition of functions.
- A2.2.10 explore basic families of functions: recognize linear, quadratic, absolute value, step, and exponential functions; and convert among graphs, tables and equations.
- A2.2.11 solve quadratic inequalities and graph their solution sets.
- A2.2.12 solve and graph the solution set of systems of linear inequalities in two variables by finding the maximum and minimum values of a function over a region using linear program techniques.
- A2.2.13 solve practical problems involving direct, inverse, and joint variation.
- A2.2.14 explore the conic sections: recognize, identify, and sketch the graphs of a parabola, circle, ellipse, and hyperbola; and convert between graphs and equations.
- A2.2.15 solve absolute value equations and inequalities graphically, numerically, and algebraically.
- A2.2.16 define a logarithmic function: transform equations from exponential form into logarithmic form; and apply the basic properties of logarithms to simplify or expand an expression.
- A2.2.17 perform a quadratic regression and use the results to predict specific values of a variable. Identify the regression equation.

Conceptual Mathematics Objectives

Conceptual Mathematics is a one-year course for students who have successfully completed the objectives for geometry. This course will include major topics from algebra and geometry and will extend these ideas to practical usage. Basic ideas of probability and statistics and the mathematics of finance will also be included. These, along with other ideas, will be presented in the context of their historical development. Students will be encouraged to be active learners either in cooperative groups or as individuals. It is the purpose of this course to expose students to topics in mathematics that are relevant to any educated person. Full integration of graphing calculators and computer applications such as spreadsheets, database, and Internet use, is essential to effectively master the objectives of this course. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
- represent and analyze mathematical situations and structures using algebraic symbols;
- use mathematical models to represent and understand quantitative relationships; and
- analyze change in various contexts

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Conceptual Mathematics Objectives

Students will:

- CM.2.1 develop a variety of problem solving strategies (e.g., draw a diagram, look for a pattern, and work backwards).
- CM.2.2 interpret graphs of functions (i.e., linear, quadratic, exponential).
- CM.2.3 solve application problems using linear, quadratic and exponential functions with emphasis on data collection and analysis.
- CM.2.4 use appropriate formulas to solve workplace problems.
- CM.2.5 calculate costs, simple and compound interest, finance charges, loan payments and taxes.
- CM.2.6 compare various methods of investing money.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
- specify locations and describe spatial relationships using coordinate geometry and other representational systems;
- apply transformations and use symmetry to analyze mathematical situations; and
- solve problems using visualization, spatial reasoning, and geometric modeling

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

- CM.3.1 apply concepts of geometry including the Pythagorean Theorem, similar triangles, and right triangle trigonometry.
- CM.3.2 solve workplace problems involving perimeter, area, surface area and volume.
- CM.3.3 investigate the applications of various geometric shapes and patterns to art, architecture, and nature.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
- select and use appropriate statistical methods to analyze data;
- develop and evaluate inferences and predictions that are based on models; and
- apply and demonstrate an understanding of basic concepts of probability

through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

- CM.5.1 relate mathematical content to its historical development.
- CM.5.2 integrate other disciplines into the study of mathematics through simulations, research, and projects
- CM.5.3 determine possible outcomes using tree diagrams and the counting principles of permutations and combinations.
- CM.5.4 apply the basic probability rules in expressing the chances of events occurring using technology when appropriate.

- CM.5.5 create and interpret data using various methods of displaying numerical data, including frequency distributions, graphs, histograms, stem-and-leaf plots, and box-and-whiskers plots, using technology when appropriate.
- CM.5.6 relate the measures of central tendency and the measures of dispersion to a normal distribution.
- CM.5.7 apply the measures of central tendency and the measures of dispersion to workplace situations.
- CM.5.8 use statistical tools for workplace applications such as quality control, marketing and predicting trends.

Trigonometry Objectives

Trigonometry is designed for students who have successfully completed Algebra II. Connections between right triangle trigonometry and circular functions should be emphasized. Graphing utilities such as calculators and computers will be used to enhance student learning and to aid in finding the values of trigonometric functions and their inverses. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Trigonometry Objectives

Students will:

- T.3.1 define the six trigonometric functions in terms of a right triangle and find the values of the functions of an angle in standard position, given a point on the terminal side of the angle. Circular function definitions will be connected with trigonometric function definitions.
- T.3.2 find the values of the other trigonometric functions, given the value of one trigonometric function.
- T.3.3 develop recall of the values of the six trigonometric functions of special angles as related to the unit circle.
- T.3.4 use a calculator to find the values of the trigonometric functions for any angle and to find the measure of an angle given the value of one of its trigonometric functions.
- T.3.5 convert angle measures from radians to degrees and vice versa.
- T.3.6 verify trigonometric identities by making substitutions and recalling basic identities.
- T.3.7 solve trigonometric equations that include both infinite solutions and solutions with a restricted domain.
- T.3.8 find the value of inverse trigonometric functions.
- T.3.9 find the area of a triangle given the measures of two sides and the included angle or the measures of three sides (Heron's formula).
- T.3.10 express complex numbers in polar form: perform operations including adding, subtracting, multiplying, and dividing; evaluate powers and roots of complex numbers using De Moivre's Theorem; and graph complex numbers.
- T.3.11 solve practical problems involving triangles using the trigonometric functions, the Pythagorean Theorem, the Law of Sines, and the Law of Cosines.

- T.3.12 recognize the graph of the six trigonometric functions. Given an equation in the form of $y=a\sin(bx+c)+d$, identify the domain and range; determine the period, phase shift, amplitude and vertical shift; and sketch at least one period of the graph.
- T.3.13 model periodic data sets using graphs, tables, and equations.
- T.3.14 recognize and graph the inverse of trigonometric functions. Restrictions on the domain will be included.
- T.3.15 develop and use formulas such as sum or difference of two angles, double-angle, and half-angle.
- T.3.16 perform mathematical operations with vectors and use vectors to solve practical problems.

Probability and Statistics Objectives

Probability and Statistics is one of the most important branches of the mathematical sciences. Knowledge of these topics is critical to decision-making and to the analysis of data. Using concepts of probability and statistics, individuals are able to predict the likelihood of an event occurring, organize and evaluate data, and identify the significance of statements. Connections between content and applications to the students' world will be emphasized. Graphing utilities such as calculators and computers will be used to enhance student learning and to aid in the solution of practical problems. Prerequisites for this course are successful completion of Algebra II and Geometry. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
 - select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on models; and
 - apply and demonstrate an understanding of basic concepts of probability
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Probability and Statistics Objectives

Students will:

- PS.5.1 distinguish between experimental and theoretical probability.
- PS.5.2 create and interpret data using various methods of displaying circle graphs, histograms, and frequency curves, and make predictions about outliers.
- PS.5.3 determine possible outcomes using tree diagrams and the counting principles of permutations and combinations.
- PS.5.4 express the chances of events occurring either in terms of a probability or odds.
- PS.5.5 use the normal distribution and the binomial distribution including pascal's triangle, to determine probability of events.
- PS.5.6 interpret and calculate measures of central tendency (mean, median, and mode) from data presented in a variety of forms such as charts, tables, and graphs or from data created through experimentation.
- PS.5.7 interpret and calculate measures of dispersions (range and standard deviation) from data presented in a variety of forms such as charts, tables and graphs or from data created through experimentation.
- PS.5.8 describe individual performances in terms of percentiles, z-scores, and t-scores.
- PS.5.9 describe the role of sampling, randomness, bias, and sample size in data collection and interpretation.

- PS.5.10 explain and illustrate the use and misuse of statistics.
- PS.5.11 test the validity of a hypothesis using appropriate statistical concepts.
- PS.5.12 determine the correlation values for given data or for data generated by students and use the results to describe the association of the variables within the given data. Identify whether this association is systematic or predictable.
- PS.5.13 calculate the Chi-Square values for a given population.
- PS.5.14 perform a t-test for a designated set of data, and use the results to test the validity of a hypothesis.
- PS.5.15 perform a regression analysis on a set of data, either given or created through experimentation, and use the results to predict specific values of a variable. Identify the regression equation.
- PS.5.16 perform an analysis of variance (ANOVA) and interpret the results.

Pre-calculus Objectives

Pre-calculus is intended for students who have mastered the concepts of Algebra II. It will extend students' knowledge of functions as well as provide appropriate preparation for a calculus course. Available technology will be used by students and teachers to enhance learning. Graphing utilities are powerful tools for solving and verifying equations and inequalities. They also aid in investigating functions and their inverses. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 2: Algebra (MA.S.2)

Students will:

- demonstrate understanding of patterns, relations, and functions;
 - represent and analyze mathematical situations and structures using algebraic symbols;
 - use mathematical models to represent and understand quantitative relationships; and
 - analyze change in various contexts
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Pre-calculus Objectives

Students will:

- PC.2.1 investigate and sketch the graphs of polynomials and rational functions using the characteristics of zeros, upper and lower bounds, y-intercepts, symmetry, asymptotes and end behavior, maximum and minimum points and domain and range.
- PC.2.2 solve higher order polynomial equations utilizing techniques such as Descartes' Rule of Signs, upper and lower bounds, and Rational Root Theorem.
- PC.2.3 expand binomials with positive integral exponents by the use of Pascal's triangle and the Binomial Theorem.
- PC.2.4 establish the relationship between exponential and logarithmic functions; graph related functions and include their domain and range.
- PC.2.5 solve equations and practical problems involving exponential and logarithmic expressions: include natural and common logarithms; use laws of exponents; and confirm solutions graphically and numerically.
- PC.2.6 solve problems involving the sum of finite and infinite sequences and series. Sigma (summation) notation will be included.
- PC.2.7 find the limit of a function, a sequence, or a series by graphing, intuitive reasoning, algebraic methods, and numerical substitution.
- PC.2.8 perform mathematical operations with vectors and use vectors to solve practical problems.
- PC.2.9 apply the method of mathematical induction to prove formulas and statements.

Standard 3: Geometry (MA.S.3)

Students will:

- analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships;
 - specify locations and describe spatial relationships using coordinate geometry and other representational systems;
 - apply transformations and use symmetry to analyze mathematical situations; and
 - solve problems using visualization, spatial reasoning, and geometric modeling
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

PC.3.1 graph functions and conic sections using translation.

PC.3.2 investigate properties and solve practical problems of the conic sections.

Standard 5: Data Analysis and Probability (MA.S.5)

Students will:

- formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them;
 - select and use appropriate statistical methods to analyze data;
 - develop and evaluate inferences and predictions that are based on models; and
 - apply and demonstrate an understanding of basic concepts of probability
- through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

PC.5.1 perform a regression analysis on a set of data and use the results to predict specific values of a variable. Identify the regression equation.

READING AND ENGLISH LANGUAGE ARTS

The Reading and English Language Arts content standards, objectives and performance descriptors develop in three major strands: 1) reading, 2) writing, 3) listening, speaking and viewing. Each strand provides a clear description of what the student in each grade K-12 should know and be able to do. The curriculum through the grade levels is sequential to allow for foundational content and continues in a spiraling effect in order to ensure a rigorous and challenging program of studies for all students.

References to support the development of the Reading and English Language Arts curriculum include International Reading Association, National Council of Teachers of English, West Virginia Instructional Goals and Objectives, and a multitude of national research. Each reference was reviewed and its relevance was determined in order to produce a solid curriculum for West Virginia students.

Considerations in the development of the Reading and English Language Arts K-12 curriculum included the rigor and challenge that the curriculum would provide students. The curriculum through the grade levels is sequential to allow for foundational content and continues in a spiraling effect in order to ensure a complete mastery of each strand. The Reading and English Language Arts program emphasizes attention to multicultural education, which is particularly evident throughout the reading strand. A crucial component of the curriculum involves use of the language arts across all curriculum disciplines as these skills are essential in comprehending any curricular area.

West Virginia's vision for education includes the integration of technology throughout the curriculum so that all West Virginia students have the opportunity to develop technology skills that support learning. Successful learning environments provide opportunities for students to use education technology interwoven with relevant curricular content. West Virginia teachers are responsible for integrating technology appropriately in the students' learning environment.

The three major content standards have defined objectives which explain what the student should know. The examples (e.g.) provided with many of the objectives further clarify skills appropriate to that objective. The examples are not intended to be all inclusive but serve as a guide for the mastery of the objective at the particular grade level. The teacher is strongly encouraged to review the objectives of the previous grade level to serve as a starting point for review and maintenance in the sequential, spiraling curriculum.

The content standards, objectives and performance descriptors defined herein will serve to ultimately promote a more literate West Virginia society.

Reading and English Language Arts Content Standards K-12

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with:

- a variety of audiences; and
- for different purposes.

Kindergarten Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts for the kindergarten student will be an immersion in a print-rich environment to develop an awareness and understanding of spoken and written language. This awareness will be explored through reading, writing, listening, speaking and viewing which will begin to develop lifelong learning skills. Appropriate literature and language experience, coupled with active student participation, will support this development. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.K.1.1 identify that words are made of phonemes (c/a/t).
- RLA.K.1.2 identify the sounds in a one-syllable word (play = p/l/a).
- RLA.K.1.3 recognize and manipulate onset and rime (word families).
- RLA.K.1.4 use basic elements of phonetic analysis (e.g., common letter/sound relationships; beginning/ending consonant sounds; short/long vowel sounds; word patterns).
- RLA.K.1.5 recognize and name all lower/upper case letters in random order.
- RLA.K.1.6 identify level-appropriate sight words and vocabulary words (e.g., color words; number words; positional words - top, bottom, in, out; high frequency words - I, it; words for person, places, things and actions).
- RLA.K.1.7 recognize basic comprehension concepts (e.g., main idea; setting; characters; sequence; retelling; predicting).
- RLA.K.1.8 recognize that print conveys meaning (e.g., know that printed letters and words represent spoken language).
- RLA.K.1.9 recognize how print is organized and read (e.g., front of book; title; hold book correctly; follow words from left to right and top to bottom of page; turn pages left to right; one to one match - print and voice; know the difference between words and letters).
- RLA.K.1.10 establish a purpose for reading (e.g., for information, for pleasure).
- RLA.K.1.11 identify author's purpose (e.g., to persuade, to inform).
- RLA.K.1.12 make connections between literary work and people in own life and other cultures (e.g. characters; events).
- RLA.K.1.13 use reading skills and strategies to understand a variety of informational resources to support literacy learning (e.g. environmental print, written directions; signs; captions; labels; technology).
- RLA.K.1.14 increase amount of independent reading.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.K.2.1 demonstrate knowledge of conventions of print (e.g., correct directionality; proper writing position; print some upper/lower case letters of the alphabet and numerals 0-9; uniformity in print; write own first and/or last name).
- RLA.K.2.2 begin to compose written works using appropriate parts of the writing process (e.g., initial attention to planning and drafting; class and individual publishing).
- RLA.K.2.3 use writing and other methods for self-expression (e.g., drawing pictures; using letters or phonetically spelled words; telling; dictating; making lists).
- RLA.K.2.4 use a variety of sources to gather information in sharing thoughts and ideas (e.g., pictures; charts; videos; television programs; graphs; computers).
- RLA.K.2.5 use conventions of spelling in written compositions (e.g., use letter/sound relationships to spell independently; spell some high frequency words appropriate to grade level).
- RLA.K.2.6 use conventions of capitalization in written compositions (e.g., first and last names; first word of sentence; pronouns).
- RLA.K.2.7 recognize and use conventions of punctuation in written composition (e.g., period and question mark).

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.K.3.1 listen, recite, and respond to familiar stories, poems, nursery rhymes, songs and stories with repeated patterns.
- RLA.K.3.2 understand the main idea or message in visual media (e.g. pictures; cartoons; weather reports; newspaper photos; visual narratives.)

First Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts for the first grade student will be an immersion in a literature-rich environment to develop an awareness of print materials as sources of information and enjoyment. The student will grow in language development through reading, writing, listening, speaking and viewing that will become lifelong skills. First grade students will learn from reading authentic literature such as fiction, non-fiction and poetry that reflects cultures, experiences and ideas. The curriculum will encourage and support active participation by the learner. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.1.1.1 blend or segment the phonemes of most one-syllable words.
- RLA.1.1.2 substitute, delete and manipulate beginning and ending phonemes.
- RLA.1.1.3 develop a rhythm and rhyme of words (e.g., nursery rhymes; songs; poems; tongue twisters).
- RLA.1.1.4 use basic elements of phonetic analysis to decode unknown words (e.g., sound relationships; beginning/ending consonants; vowel sounds; blends).
- RLA.1.1.5 use basic elements of structural analysis to decode unknown words (e.g., basic prefixes/suffixes; compound words; root words; spelling patterns; contractions).
- RLA.1.1.6 understand level appropriate sight words and vocabulary (e.g., high frequency words such as said, was and where; antonyms - hot, cold; synonyms - rock, stone; multiple meaning words - ball).
- RLA.1.1.7 use a variety of context clues to determine word meanings (e.g., prior knowledge; reading ahead).
- RLA.1.1.8 recognize basic comprehension concepts (e.g., story elements; main idea; sequence; cause/effect; prediction).
- RLA.1.1.9 respond to both literal and interpretive comprehension questions after reading a short story selection that is developmentally appropriate.
- RLA.1.1.10 explain how print is organized and read (e.g., author; illustrator; difference between letters - words - sentences; aware of the use of capitalization and punctuation as text boundaries).
- RLA.1.1.11 use meaning clues to aid comprehension and make predictions about content (e.g., pictures; picture captions; title; cover; story structure; story topic; action; events).
- RLA.1.1.12 read with accuracy and comprehension instructional level texts designed for the first grade to use self-correction strategies (e.g., search for cues; identify miscues; reread; ask for help).
- RLA.1.1.13 read aloud familiar stories, poems and passages with fluency and expression (e.g., rhythm, flow, meter, tempo, pitch, tone, intonation) and self-select a variety of literary works.
- RLA.1.1.14 establish purpose for reading (e.g., for information; for pleasure; to identify a specific viewpoint).
- RLA.1.1.15 make connections in literary work and people in own life and other cultures (e.g., events; characters; conflicts).
- RLA.1.1.16 use reading skills and strategies to understand a variety of informational resources to support literacy learning (e.g., environmental print; written directions; signs; captions; labels; informational books).
- RLA.1.1.17 increase amount of independent reading.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.1.2.1 use conventions of print (e.g. correct directionality; proper writing position; print upper/lower case letters of the alphabet and numerals; demonstrate uniformity in print; write own first and last name).
- RLA.1.2.2 compose written works using appropriate parts of the writing process (e.g. initial attention to planning; drafting; rereading for meaning; some self correction; class and individual publishing).
- RLA.1.2.3 develop a simple story with appropriate sequence (e.g. beginning; middle; end).

- RLA.1.2.4 write in a variety of forms or genres (e.g. journal writing; written response to literature; writing poems).
- RLA.1.2.5 use a variety of sources to gather information to share thoughts and ideas (e.g. informational books; pictures; charts; indexes; videos; television programs; graphs; computers).
- RLA.1.2.6 alphabetize to the first letter.
- RLA.1.2.7 use conventions of spelling in written composition (e.g. letter/sound relationships; high frequency words from appropriate grade level list; transition from invented spelling to conventional spelling).
- RLA.1.2.8 use conventions of capitalization in written composition (e.g. days of week; months of year; names of people; special places; differentiation between common and proper nouns).
- RLA.1.2.9 use conventions of punctuation in written composition (e.g. period; question mark; exclamation mark).
- RLA.1.2.10 use the mechanics of grammar in written composition (e.g. nouns; verbs; declarative and interrogative sentences).
- RLA.1.2.11 use conventions of complete sentences in written composition (e.g. capitalize first word; include a noun and verb; ending punctuation).

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.1.3.1 identify the main idea of messages in visual media (e.g. pictures; cartoons; weather reports; newspaper photos; visual narratives.)
- RLA.1.3.2 listen, recite and respond to familiar stories, poems, nursery rhymes, songs and stories with repeated patterns (e.g. retell in sequence; relate information to own life; describe character - setting - plot; engage in creative and dramatic play; imagine beyond the story).

Second Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts second grade students will continue to be immersed in a literature-rich environment to encourage exploration of various literary forms. The student will apply skills of reading, writing, listening, speaking and viewing across the curriculum. Students will be able to read with comprehension to write, speak and listen effectively and to develop both literal and critical thinking skills. Second graders will develop from dependent to independent readers and will begin to make their own choice for recreational and informative reading. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.2.1.1 use basic elements of phonetic analysis (e.g., syllabication; diphthongs; digraphs; variant vowel sounds such as r-controlled).
- RLA.2.1.2 use basic elements of structural analysis to decode unknown words (e.g., syllables; prefixes; suffixes; root words; compound words; spelling patterns; contractions).
- RLA.2.1.3 identify and use grade level appropriate sight words and reading vocabulary (e.g., high frequency words; homonyms - I, eye; homophones - read, read; multiple meaning words; synonyms; antonyms).
- RLA.2.1.4 use a variety of context clues to decode unknown words (e.g., prior knowledge; read ahead; reread).
- RLA.2.1.5 use reading skills and strategies to understand a variety of familiar literary passages and texts (e.g., fairy tales; folk-tales; fiction; nonfiction; poems; legends; fables; fantasies; chapter books).
- RLA.2.1.6 use basic comprehension skills to understand a story (e.g., story elements; main idea; sequence; cause/effect; predicting; drawing conclusions; fact or opinion; summarizing; responding creatively to texts).
- RLA.2.1.7 respond to both literal and interpretive comprehension questions after reading a short story selection that is developmentally appropriate.
- RLA.2.1.8 use meaning clues to aid comprehension and make predictions about content (e.g., pictures; pictures captions; title; cover; heading; story structure; story topic; action; events; character's behavior).
- RLA.2.1.9 read with accuracy and comprehension instructional level texts designed for the second grade and use self-correction strategies (e.g., search for cues; identify miscues; reread; ask for help).
- RLA.2.1.10 read familiar stories, poems and passages with fluency.
- RLA.2.1.11 establish a purpose for reading (e.g., for information; for pleasure; to understand specific viewpoints; to follow directions).
- RLA.2.1.12 describe author's purpose (e.g., to persuade, to inform).
- RLA.2.1.13 make connections between characters or simple events in a literary work and in own life and other cultures (e.g., events; characters; simple conflicts; themes).
- RLA.2.1.14 use reading skills and strategies to understand a variety of informational resources to support literacy learning (e.g., environmental print; written directions; signs; captions; labels; informational books).
- RLA.2.2.15 increase amount of independent reading.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.2.2.1 use conventions of print (e.g., maintain proper handwriting position; maintain appropriate position of hand/pencil and paper/desk for the correct transition between manuscript and cursive writing).
- RLA.2.2.2 develop a story with proper sequence (e.g., beginning - middle - end containing a main idea and supporting details).
- RLA.2.2.3 begin to use the five step writing process (e.g., graphic organizers for pre-writing; descriptive words and details for drafting and revising; use of age appropriate dictionaries for editing and publishing; conferencing to edit: punctuation; capitalization; spelling at developmentally appropriate level).
- RLA.2.2.4 use a variety of sources to gather information to communicate with others (e.g., dictionaries; informational book; pictures; charts; indexes; videos; television programs; guest speakers; graphic organizers).
- RLA.2.2.5 alphabetize to the second letter and use simple guide words.

- RLA.2.2.6 use conventions of spelling in written composition (e.g., spell high frequency words from appropriate grade level list; use letter/sound relationships to spell independently; spell phonetically irregular words - one, could, they; transition from invented to conventional spelling).
- RLA.2.2.7 use conventions of capitalization in written composition (e.g., titles; initials; titles of written works; greeting and closing of a letter).
- RLA.2.2.8 recognize and use conventions of punctuation in written composition: period (e.g., abbreviations, initials); comma (e.g., dates, greeting/closing of a letter, separate city - state - country, separate items in a list); quotation marks for direct quotes; apostrophe (e.g., contractions, singular possessives).
- RLA.2.2.9 use the mechanics of grammar in written composition (e.g., correct subject/verb agreement; simple adjectives and adverbs).
- RLA.2.2.10 write correctly formed and punctuated simple sentences (e.g., declarative; interrogative; exclamation).

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.2.3.1 recognize the main idea or intended messages in visual media (e.g., pictures; cartoons; weather reports; newspaper photos; visual narratives).
- RLA.2.3.2 listen, recite and respond to familiar stories, poems and songs (e.g., retell in sequence; relate information to own life; describe character - setting - plot; engage in creative and dramatic play; imagine beyond the story).

Third Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts third grade students will learn, practice and apply strategies focusing on preparing literate, independent and self-motivated learners. Students will be engaged in reading and responding to a variety of literature using literal and critical comprehension skills. These learners will develop and, as critical thinkers, take responsibility for their own learning. The student will interact with and respond to text in purposeful situations across the curriculum. Proficiency in reading, writing, listening, speaking and viewing will foster an appreciation for literature and will allow students to make connections between their personal experiences and academic disciplines. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.3.1.1 recognize level appropriate sight words and content vocabulary.
- RLA.3.1.2 recognize level appropriate reading vocabulary (e.g. synonyms, antonyms, homonyms, multi-meaning words).
- RLA.3.1.3 use reading skills and strategies to comprehend a variety of literary passages and texts (e.g. fairy tales, folk-tales; fiction; nonfiction; myths; poems; fables; fantasies; historical fiction; biographies; autobiographies; chapter books).
- RLA.3.1.4 use comprehension skills to understand a story (e.g. story elements; sequence; expository works; drawing conclusions; compare/contrast; predict; summarize; infer; paraphrase; main idea; story topic).
- RLA.3.1.5 recognize the ways in which language is used in literary text (e.g. simile; metaphor; idioms).
- RLA.3.1.6 use graphic organizers and visualization techniques to interpret information (e.g. charts; graphs; diagrams).
- RLA.3.1.7 use meaning clues to aid comprehension and make predictions about content across the curriculum (e.g. action; events; story topic; behaviors).
- RLA.3.1.8 read with accuracy and comprehension instructional level texts designed for third grade and use self-correction strategies (e.g. search for cues; identify miscues; reread).
- RLA.3.1.9 read familiar stories, poems and passages with fluency and expression (e.g. rhythm; flow; meter; tempo; pitch; tone; intonation) and self-select a variety of literary works.
- RLA.3.1.10 explain a purpose for reading (e.g. for information; for pleasure; to understand a specific viewpoint).
- RLA.3.1.11 recognize author's purpose (e.g. to persuade; to inform).
- RLA.3.1.12 compare connections between characters or simple events in a literary work in own life and other cultures (e.g. events; characters; conflicts; themes).
- RLA.3.1.13 use reading skills and strategies to identify a variety of informational resources to support literacy learning (e.g. environmental print; written directions; signs; captions; labels; informational books).
- RLA.3.1.14 increase amount of independent reading.

Performance Descriptors (RLA.PD.3.1)

■ Distinguished

Third grade students performing at the distinguished level read independently above grade level passages/texts to establish a purpose for reading, identify author's purpose, compare connections between characters or simple events in a literary work and use reading skills and strategies to identify a variety of informational resources to support literacy learning.

■ Mastery

Third grade students performing at the mastery level read independently grade level literary texts using comprehension skills to identify story elements, sequence, expository works, draw conclusions, compare/contrast, predict, summarize, make inferences, paraphrase and recognize author's purpose.

■ Partial Mastery

Third grade students performing at the partial mastery level read grade level passages/texts using basic comprehension skills to interpret a story. Students use meaning clues to aid comprehension and make predictions about content; apply self-correction strategies such as searching for cues, identifying miscues, reread, self-question and asking for help.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.3.2.1 demonstrate proper manuscript and full transition to cursive writing techniques (e.g., posture; paper placement; pencil grip; letter formation; slant; letter size; spacing; rhythm; alignment).
- RLA.3.2.2 use the five step writing process (e.g., graphic organizers for prewriting; descriptive words and details for drafting and revising; use of simple dictionaries for editing and publishing; conferencing to edit; punctuation; capitalization; and spelling at developmentally appropriate level).
- RLA.3.2.3 use paragraph format to write compositions (e.g., beginning - middle - end; main ideas with relevant details; sentence variety - declarative, interrogative; descriptive and transitional words; indentations).
- RLA.3.2.4 use a variety of strategies to plan simple research (e.g., identify possible topic by brainstorming; list questions; use idea webs; organize prior knowledge about a topic; develop a course of action for writing; determine how to locate necessary information).
- RLA.3.2.5 use a variety of sources to gather information (e.g., use dictionaries; encyclopedias; newspapers).
- RLA.3.2.6 alphabetize to the third letter and use simple dictionary skills (e.g., guide words, pronunciation).
- RLA.3.2.7 use conventions of spelling in written composition (e.g., spell high frequency words from appropriate grade level list; use letter/sound relationships to spell independently; make structural changes to spell words correctly: spell irregular verbs and irregular plural nouns).
- RLA.3.2.8 use conventions of capitalization in written composition (e.g., greeting - heading - closing of a letter; first word of a direct quotation).
- RLA.3.2.9 use conventions of punctuation in written composition (e.g., commas in dates and addresses; greeting/closing of a letter; quotation marks around titles and direct quotations; apostrophes for contractions and possessive nouns).
- RLA.3.2.10 write a grammatically correct sentence (e.g., correct subject/verb agreement with singular and plural nouns and verbs; correct use of regular and irregular verbs).
- RLA.3.2.11 use specific mechanics of grammar in written composition (e.g., substitute pronouns for nouns; use pronoun agreements; adjectives; adverbs).
- RLA.3.2.12 write correctly formed sentences avoiding run-on sentences.

Performance Descriptors (RLA.PD.3.2)

■ Distinguished

Third grade students performing at the distinguished level write a descriptive composition that details a beginning, middle and ending using advanced language mechanics and grammar, such as a variety of sentence structure, punctuation and capitalization.

■ Mastery

Third grade students performing at the mastery level write a descriptive paragraph consisting of a beginning, middle and end using language mechanics and grammar at grade level.

■ Partial Mastery

Third grade students performing at the partial mastery level write a three simple sentence paragraph consisting of a beginning, middle and end using beginning capitalization, ending punctuation and subject-verb agreement.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.3.3.1 listen and respond to familiar stories and poems (e.g., summarize and paraphrase to confirm comprehension; recount personal experiences; imagine beyond the literary form).
- RLA.3.3.2 define different messages conveyed through visual media (e.g., main ideas and supporting details; facts and opinions; main characters; setting; sequence of events).

Performance Descriptors (RLA.PD.3.3)

- **Distinguished**
Third grade students performing at the distinguished level listen and respond to stories and poems to paraphrase and experience beyond the literary form. Students analyze the characters, setting and plot to determine the message through visual media.
- **Mastery**
Third grade students performing at the mastery level listen and respond to familiar stories and poems to summarize and recount personal experiences. Students determine messages through visual media to identify main idea and supporting details, fact and opinion and sequence of events.
- **Partial Mastery**
Third grade students performing at the partial mastery level listen, recite and respond to familiar stories and poems to retell the story in sequence and relate text to self. Students recognize the main idea or messages in visual media.

Fourth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts fourth grade students will develop as readers and writers who are independent, self-motivated and critical thinkers and take responsibility for their own learning. Students will learn to critically evaluate what they read; to express themselves clearly in speaking and writing; to gather and use information through a variety of sources; and to use listening as a reading strategy. Each of these strategies is to be applied in the content areas. At this level, children are provided with a variety of opportunities to interact with a wide range of literary forms, building the foundation for lifelong reading. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.4.1.1 identify level appropriate vocabulary (e.g., multiple meaning words; synonyms; antonyms; homonyms; content area vocabulary; context clues).
- RLA.4.1.2 apply structural analysis and context clues to decode and encode words.
- RLA.4.1.3 recognize the defining characteristics of a variety of literary forms and genres (e.g., fairy tales; folk-tales; fiction; nonfiction; myths; poems; fables; fantasies; biographies; autobiographies; chapter books).
- RLA.4.1.4 use comprehension skills to understand literary works (e.g., summarize; story elements; skim and scan; define expository text; compare/contrast; imagery; paraphrase; compose personal response; infer; fact and opinion; sequence).
- RLA.4.1.5 recognize the ways in which language is used in literary texts (e.g., simile; metaphor; idioms; analogies; and puns).
- RLA.4.1.6 use graphic organizers and visualization techniques to interpret information (e.g., charts; graphs; diagrams; non-verbal symbols).

- RLA.4.1.7 use meaning clues to aid comprehension and make predictions about content across the curriculum (e.g., pictures; picture captions; titles; headings; story structure; story topic; action - events - character behaviors).
- RLA.4.1.8 read with accuracy and comprehension instructional level texts designed for the fourth grade and use self-correction strategies (e.g., search for cues; identify miscues; reread).
- RLA.4.1.9 read orally and silently literary texts across the curriculum with fluent expression.
- RLA.4.1.10 determine a purpose for reading across the curriculum.
- RLA.4.1.11 summarize the author's purpose (e.g., to persuade; to inform; to determine a specific viewpoint).
- RLA.4.1.12 compare self to text in making connections between characters or simple events in a literary work with people and events in one's own and other cultures.
- RLA.4.1.13 increase amount of independent reading.

Performance Descriptors (RLA.PD.4.1)

- **Distinguished**
Fourth grade students performing at the distinguished level read independently above grade level passages/texts to explain the purpose for reading, identify figurative language, employ meaning clues to aid comprehension and predict content across the curriculum.
- **Mastery**
Fourth grade students performing at the mastery level read independently grade level literary texts using comprehension skills to scan and skim, identify imagery, compose a response and distinguish fact/opinion.
- **Partial Mastery**
Fourth grade students performing at the partial mastery level read grade level passages/texts to compare self to text and apply pre-reading strategies such as accessing prior knowledge, previewing and setting a purpose.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.4.2.1 use conventions of print (e.g., legibility; uniformity in all written work).
- RLA.4.2.2 use the five step writing process (e.g., focused composition; coherent and logical progression of ideas; correct page format - title - paragraphs - margins - indentations).
- RLA.4.2.3 use proper paragraph form in written composition (e.g., indent the first word of a paragraph; use topic sentence; recognize a paragraph as a group of sentences about one main idea; use an introductory and concluding paragraph; write at least two related paragraphs).
- RLA.4.2.4 use strategies to gather and record information for research topics (e.g., notes- maps - charts - graphs - tables; summarize - paraphrase - describe in narrative form; gather direct quotes).
- RLA.4.2.5 use reference skills to identify words (e.g., alphabetical order, guide words, pronunciation, glossary).
- RLA.4.2.6 use strategies to compile information into written reports or summaries (e.g., incorporate notes into a finished product; include simple facts - details - explanations - examples; draw conclusions from relationships and patterns that emerge from data of different sources; use appropriate visual aids and media).
- RLA.4.2.7 use conventions of spelling in written composition (e.g., spell high frequency words; spell commonly misspelled words from appropriate grade level list; use dictionary and other resources to spell words; use syllable constructions to spell words; use vowel combinations for correct spelling; use contractions - compound words - roots - suffixes - prefixes in spelling).

- RLA.4.2.8 use conventions of capitalization in written composition (e.g., titles of people; proper nouns such as towns - cities - counties - countries - names of streets - holidays; first word of a direct quote; heading - salutation - closing of a letter).
- RLA.4.2.9 use conventions of punctuation in written composition (e.g., use colons in business letter salutations; use quotation marks in the title of poems - songs - chapters; underline book titles).
- RLA.4.2.10 use a variety of sentence structure correctly in writing (e.g., simple - compound - complex sentences; avoid sentence run-ons and fragments).
- RLA.4.2.11 use the mechanics of grammar in written composition (e.g., avoid double negatives; correct verb tenses; use conjunctions - interjections - prepositions; correct subject verb agreement with regular and irregular verbs).

Performance Descriptors (RLA.PD.4.2)

- **Distinguished**

Fourth grade students performing at the distinguished level write a multiple paragraph composition that displays a focused, coherent and logical progression of ideas; and considers page format, titles, margins and indentations. Students apply advanced language mechanics and grammar such as the rules of capitalization, punctuation and compound complex-sentences.

- **Mastery**

Fourth grade students performing at the mastery level develop and write a multiple paragraph composition using language mechanics and grammar at grade level.

- **Partial Mastery**

Fourth grade students performing at the partial mastery level write a paragraph with a topic sentence, supporting sentences and a concluding sentence.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.4.3.1 listen and respond to different literary forms (e.g., summarize and paraphrase to confirm understanding; recount personal experiences; listen to information and exhibit comprehension; provide reasons in support of opinions; respond to others' ideas).
- RLA.4.3.2 define a variety of messages conveyed through visual media (e.g., provide information by observing main concept - details - themes or lessons - viewpoints; recognize intended audience).

Performance Descriptors (RLA.PD.4.3)

- **Distinguished**

Fourth grade students performing at the distinguished level recognize oral communication and listening skills to relate ideas and details. Students listen and view in order to understand themes or lessons while recognizing the intended audience.

- **Mastery**

Fourth grade students performing at the mastery level listen and respond to different literary forms to paraphrase, give reasons in support of opinions and respond to other ideas. Students recognize viewpoints and audiences through visual media and provide oral examples.

- **Partial Mastery**

Fourth grade students performing at the partial mastery level listen and respond to familiar stories and poems to relate personal experiences and summarize details. Students recognize the story elements of visual media.

Fifth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts fifth grade students will expand and strengthen knowledge and abilities learned in earlier grades. Listening, speaking and viewing instruction will prepare students for interaction and expression at school, home, and later, in the work place. Reading comprehension and vocabulary skills will enable students to read at literal, interpretive and critical levels for functional and recreational purposes. The earlier development of the writing process will be strengthened and expanded within and across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.5.1.1 identify defining characteristics, build background knowledge and develop reading skills to understand a variety of literary passages and texts by West Virginia, national and international authors (e.g., fiction; nonfiction; myth; poems; fantasies; biographies; autobiographies; science fiction; tall tales; supernatural tales).
- RLA.5.1.2 increase amount of independent reading.
- RLA.5.1.3 determine main idea and locate supporting details in a literary passage and across the curriculum.
- RLA.5.1.4 analyze text to determine time and sequence.
- RLA.5.1.5 use comprehension skills (e.g., draw conclusions; predict; use context clues; summarize).
- RLA.5.1.6 determine the elements of literature (e.g., characterization; conflict; plot) to construct meaning and recognize author's and/or reader's purpose.
- RLA.5.1.7 identify figurative language in text (e.g., hyperbole; alliteration).
- RLA.5.1.8 make text connections to self, to other text and to the world.
- RLA.5.1.9 identify literary techniques used to interpret literature (e.g., compare/contrast; cause/effect).
- RLA.5.1.10 read types of poetry that use inversion, rhyme and rhythm (e.g., diamante; shape; haiku; limerick; name poems; bio poems; cinquain; and quatrain).
- RLA.5.1.11 use resource materials (e.g., dictionary; glossary) to determine the meaning of unknown words or multiple meaning words.
- RLA.5.1.12 use denotation to understand meaning.
- RLA.5.1.13 use root words, prefixes and suffixes to spell words, change word meanings and generate new words appropriate to grade level.
- RLA.5.1.14 spell commonly misspelled and easily confused words from appropriate grade level list.

Performance Descriptors (RLA.PD.5.1)

■ Distinguished

Fifth grade students performing at the distinguished level read independently above grade level passages/texts across the curriculum to apply higher order thinking skills such as analyze text, determine elements of literature to construct meaning, draw and justify conclusions, generalize and make judgments.

■ Mastery

Fifth grade students performing at the mastery level read independently grade level literary texts using comprehension skills to identify, interpret and evaluate (point of view, conflict, characterization) and to recognize figurative language.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level read grade level passages/texts to connect self to text and identify critical thinking skills such as rephrasing and responding to what is read. Students identify the defining characteristics and use reading strategies to understand informational texts.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.5.2.1 use pre-writing and drafting strategies to generate topics and plan approaches to writing tasks.
- RLA.5.2.2 use the writing process to develop a composition that contains specific, relevant details.
- RLA.5.2.3 use editing strategies to correct errors in organization, content, usage, capitalization, punctuation and spelling.
- RLA.5.2.4 use strategies to write for a specific purpose (e.g., creative; narrative; informative; persuasive).
- RLA.5.2.5 use strategies to address specific types of writing (e.g., journal; friendly letter; business letter).
- RLA.5.2.6 develop a 3-5 paragraph composition with an introductory paragraph, supporting details paragraph(s) and concluding paragraph.
- RLA.5.2.7 use a variety of sentence types (e.g., simple; compound; declarative; exclamatory; imperative; interrogative) avoiding run-on sentences and sentence fragments.
- RLA.5.2.8 apply capitalization rules (e.g., abbreviations; titles of people; initials).
- RLA.5.2.9 apply punctuation rules (e.g., commas; apostrophes; colons; semicolons; quotation marks).
- RLA.5.2.10 write and punctuate simple and compound sentences using conjunctions, interjections and prepositions correctly.
- RLA.5.2.11 identify correct pronoun case and pronoun/antecedent agreement.
- RLA.5.2.12 identify action, helping and linking verbs while using correct verb tense and subject/verb agreement.
- RLA.5.2.13 identify adjectives and adverbs in their comparative and superlative forms.
- RLA.5.2.14 organize information by correctly combining subjects, predicates, modifiers and phrases in sentences.
- RLA.5.2.15 identify the parts of a book, know their purposes and locate information (e.g., table of contents; index; glossary).
- RLA.5.2.16 identify and use traditional reference sources for different types of information (e.g., dictionary; thesaurus; newspaper; telephone directory; recipes; menus; schedules; advertisements; order forms).
- RLA.5.2.17 use card catalog, either hard copy or computer database, to locate sources for research/report topics by title, author and/or subject.
- RLA.5.2.18 identify and interpret graphic aids (e.g., maps; charts; graphs; tables; timelines).

Performance Descriptors (RLA.PD.5.2)

■ **Distinguished**

Fifth grade students performing at the distinguished level write multiple paragraph compositions for self-selected purposes to include creative, narrative, and informative topics. Students will apply advanced language mechanics and grammar such as complex sentence structure and vivid transitional words.

■ **Mastery**

Fifth grade students performing at the mastery level write multiple paragraph compositions for specific purposes. These include creative, narrative and informative compositions using language mechanics and grammar at grade level.

- **Partial Mastery**

Fifth grade students performing at the partial mastery level write multiple paragraphs to a specific prompt for a composition. Students apply language mechanics and grammar such as punctuation and capitalization rules and organize information by utilizing compound subjects, predicates, modifiers and phrases.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with:

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.5.3.1 recognize and exhibit oral communication skills (e.g., rate, audience etiquette).
- RLA.5.3.2 identify and correct usage errors in oral communication (e.g., word choice; grammar - I have seen, not I have saw).
- RLA.5.3.3 deliver recitations.
- RLA.5.3.4 relate personal experiences to oral/visual information.
- RLA.5.3.5 listen in order to understand a topic (e.g., of a guest speaker; informational video; televised interview; radio news program).
- RLA.5.3.6 contribute to group discussions by exhibiting active listening skills.

Performance Descriptors (RLA.PD.5.3)

- **Distinguished**

Fifth grade students performing at the distinguished level deliver an oral presentation across the curriculum through reports, recitations, dramatization and sequential story retelling. Students exhibit oral communication skills by pitch, tone and rate.

- **Mastery**

Fifth grade students performing at the mastery level recognize and exhibit oral communication skills and enhance listening comprehension skills by taking notes, organizing and summarizing spoken ideas and details. Students listen in order to understand a topic, purpose and perspective in spoken text.

- **Partial Mastery**

Fifth grade students performing at the partial mastery level recognize oral communication and listening skills to classify ideas and details. Students listen in order to determine details and story elements in spoken texts.

Sixth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts sixth grade students will continue mastery of communication skills. At this level listening, speaking and viewing strategies require students to gather and process oral information and to effectively express themselves in a variety of situations. Reading objectives strive to promote the development of various vocabulary and comprehension skills that advance the acquisition of literal and inferential knowledge of students and foster recreational reading from a variety of genres, authors, media and resources. Emphasis is given to developing writing skills that are error-free and demonstrate mastery in mechanics and usage to communicate ideas effectively. The student will utilize these competencies across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.6.1.1 know the defining characteristics, build background knowledge and use reading skills to understand a variety of West Virginia, national and international authors (e.g., fiction; nonfiction; myths; poems; fantasies; biographies; autobiographies; science fiction; tall tales; supernatural tales).
- RLA.6.1.2 increase amount of independent reading.
- RLA.6.1.3 determine theme and locate supporting details in a literary passage and across the curriculum.
- RLA.6.1.4 analyze text to determine transitional words/language.
- RLA.6.1.5 use comprehension skills (e.g., draw conclusions; interpret meaning).
- RLA.6.1.6 determine the elements of literature (e.g. external conflict; mood) to construct meaning and recognize author's and/or reader's purpose.
- RLA.6.1.7 identify figurative language in text (e.g., simile; metaphor; personification).
- RLA.6.1.8 explain text connections to self, to other text and to the world for understanding a literary passage.
- RLA.6.1.9 identify and classify types of poetry that use inversion, rhyme and rhythm (e.g., diamante; shape; haiku; limerick; name poems; bio poems; cinquain; and quatrain).
- RLA.6.1.10 use resource materials (e.g., dictionary; glossary; thesaurus) to determine the meaning of unknown words or multiple meaning words.
- RLA.6.1.11 use connotation and denotation to understand meaning.
- RLA.6.1.12 use root words, prefixes, and suffixes to spell words, change word meanings and generate new words appropriate to grade level.
- RLA.6.1.13 spell commonly misspelled words, easily confused words and words with irregular endings across the curriculum.

Performance Descriptors (RLA.PD.6.1)

■ Distinguished

Sixth grade students performing at the distinguished level read both functional and recreational materials above grade level. Students identify and classify literary types, draw and justify conclusions and opinions, explain inferences and interpret author's purpose.

■ Mastery

Sixth grade students performing at the mastery level read independently grade level literary types, draw and justify conclusions and summarize grade level passage.

■ Partial Mastery

Sixth grade students performing at the partial mastery level read grade level materials to recognize literary types, draw conclusions and develop a simple summary.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.6.2.1 use pre-writing and drafting strategies (e.g., drawing; clustering; brainstorming; discussion) to generate topics and plan approaches to writing tasks.
- RLA.6.2.2 from a prompt, use the writing process to develop a composition that contains specific, relevant details and transitions.
- RLA.6.2.3 use writing strategies to address specific writing purposes (e.g., creative; journalistic; essay; narrative; informative; persuasive) and address various audiences (e.g., peers; teachers; employers).
- RLA.6.2.4 edit own writing as well as the writing of others to correct errors in organization, content, usage, mechanics and spelling.
- RLA.6.2.5 demonstrate mastery of a 3-5 paragraph composition.
- RLA.6.2.6 apply capitalization rules (e.g., proper adjectives; names of written works; family relationships; nationalities; religions/religious terms).
- RLA.6.2.7 apply punctuation rules (e.g., commas; apostrophes in contractions and possessives both singular and plural; colons; semicolons; quotation marks; hyphens).
- RLA.6.2.8 write and punctuate simple and compound sentences with conjunctions, interjections and prepositions.
- RLA.6.2.9 identify and use correct pronoun case.
- RLA.6.2.10 identify action, helping and linking verbs while correctly using verb tense and subject/verb agreement in simple and compound sentences.
- RLA.6.2.11 use adjectives and adverbs in comparative and superlative forms.
- RLA.6.2.12 compose sentences that contain compound subjects and compound verbs.
- RLA.6.2.13 organize information by combining predicates, modifiers, phrases and/or clauses and sentences.
- RLA.6.2.14 identify and correct run-on sentences, sentence fragments and redundant words/sentences.
- RLA.6.2.15 use the parts of a book, know their purposes and locate information (e.g., table of contents; index; glossary).
- RLA.6.2.16 identify and use traditional reference sources for different types of information (e.g., dictionary; thesaurus; atlas; almanac, encyclopedia; newspaper; telephone directory; recipes; menus; schedules; advertisements; order forms; audiovisual resources).
- RLA.6.2.17 begin to demonstrate the ability to identify the source, location, media type, relevancy and content validity of available resource information.
- RLA.6.2.18 identify title, author, subject, call number, publisher and copyright of resources using the card catalog, either hard copy or computer database.
- RLA.6.2.19 use traditional organizers to create, read, interpret and organize information in the form of tables, graphs, diagrams and charts.
- RLA.6.2.20 organize information into an outline by being able to categorize information into topic, subtopic and detail.
- RLA.6.2.21 identify and use correct note taking skills.

Performance Descriptors (RLA.PD.6.2)

■ Distinguished

Sixth grade students performing at the distinguished level write an effective and elaborate multiple paragraph composition correct in form and language. Students independently construct and organize research notes from print and non-print sources.

■ Mastery

Sixth grade students performing at the mastery level write a three to five paragraph composition employing grade level grammatical/mechanical conventions. Students apply note-taking skills to organize research data into an outline or graphic representation.

■ Partial Mastery

Sixth grade students performing at the partial mastery level write a basic composition with a beginning, middle and end demonstrating grade level command of grammatical and mechanical conventions. Students use fundamental note-taking skills to organize information into a basic format.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.6.3.1 recognize and exhibit oral communication skills (e.g. volume; rate; audience etiquette).
- RLA.6.3.2 retell simple and detailed stories sequentially.
- RLA.6.3.3 listen in order to comprehend topic and purpose (e.g. of a guest speaker; informational video; televised interview; radio news program).
- RLA.6.3.4 reach consensus in group discussions or settings.

Performance Descriptors (RLA.PD.6.3)

- **Distinguished**
Sixth grade students performing at the distinguished level communicate effectively with a variety of audiences for different purposes, commanding audience attention. Students' fluent oral reading exhibits accurate pitch, tone, rate and volume.
- **Mastery**
Sixth grade students performing at the mastery level communicate with a peer audience for different purposes. Students demonstrate receptive audience behavior and identify components of presentations. Students read orally exhibiting elements of pitch, tone, rate and volume.
- **Partial Mastery**
Sixth grade students performing at the partial mastery level communicate in small group situations. Students demonstrate receptive audience behavior. Students read orally in small groups.

Seventh Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts seventh grade students will continue to build, expand and refine prior learning. Instruction in rigorous listening, speaking and viewing skills will assist in preparing students to interact and express themselves among peers, at home and in the community. Reading comprehension and vocabulary will develop through the use of a wide variety of literary genres and strategies. Writing will utilize error-free and content-rich communication in gathering, organizing, interpreting and reporting information gained through reading. The student will be exposed to these objectives not only in the language arts but across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.7.1.1 classify the defining characteristics, build background knowledge and apply reading skills to understand a variety of literary passages and texts by West Virginia, national and international authors (e.g., fiction; nonfiction; myths; poems; fantasies; biographies; autobiographies; science fiction; tall tales; supernatural tales).
- RLA.7.1.2 increase amount of independent reading.
- RLA.7.1.3 relate common themes across a variety of literature.
- RLA.7.1.4 use comprehension strategies (e.g., generalize; evaluate; infer; paraphrase).
- RLA.7.1.5 determine the elements of literature (e.g., internal conflict; point of view) to construct meaning and recognize author's and/or reader's purpose.
- RLA.7.1.6 identify figurative language in text (e.g., jargon; idioms).
- RLA.7.1.7 make text connections to self, to other text and to the real world.
- RLA.7.1.8 identify literary techniques used to interpret literature (e.g., flashback; stereotype; foreshadowing; propaganda).
- RLA.7.1.9 read types of poetry and the use of inversion, rhyme and rhythm in narrative poems, ballads and lyrics.
- RLA.7.1.10 recognize and understand clipped or shortened words and their meaning. (e.g., bio for biography; auto for automobile).
- RLA.7.1.11 compare/contrast connotation and denotation to understand and enhance meaning of words, sentences and passages.
- RLA.7.1.12 use resource materials (e.g., dictionary; glossary; thesaurus) to determine the meaning of unknown words or multiple meaning words.
- RLA.7.1.13 use root words, prefixes and suffixes to spell words, change word meanings and generate new words appropriate to grade level.

Performance Descriptors (RLA.PD.7.1)

■ Distinguished

Seventh grade students performing at the distinguished level read both functional and recreational materials above grade level. Students classify literary types, support inferences and paraphrase selections making connections to other texts and global situations.

■ Mastery

Seventh grade students performing at the mastery level read independently grade level materials to classify literary types, explain inferences and paraphrase long selections.

■ Partial Mastery

Seventh grade students performing at the partial mastery level read grade level materials to recognize literary types. Students use simple summarizing and paraphrasing in a simple passage.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.7.2.1 from a prompt, use the writing process to develop a focused composition that contains specific, relevant details and transition.
- RLA.7.2.2 use editing and revision techniques to vary sentence length, change sentence order, use vivid and concise words and eliminate organizational errors.
- RLA.7.2.3 use the writing process to compose various types of writing (e.g., creative; informative; expository; persuasive; articles; essays; journals; letters; poetry; research/reports).

- RLA.7.2.4 apply capitalization rules (e.g., languages; school subjects; regions of the U.S.; dialogue; lines of poetry).
- RLA.7.2.5 apply punctuation rules (e.g., commas; apostrophes in possessives and contractions; colons; semicolons; hyphens; dashes; parentheses).
- RLA.7.2.6 use pronouns, pronoun cases and antecedents in correct form.
- RLA.7.2.7 use and apply correct forms of adjectives and adverbs and/or complex sentence.
- RLA.7.2.8 recognize and avoid use of double negatives.
- RLA.7.2.9 compose and punctuate simple, compound and complex sentences with and without conjunctions.
- RLA.7.2.10 organize information by combining subjects, predicates, modifiers and appositives in a sentence.
- RLA.7.2.11 use correct verb tense and subject verb agreement (e.g., irregular verbs; compound subjects; indefinite pronouns; intervening phrases).
- RLA.7.2.12 edit to eliminate run-on sentences, sentence fragments, redundant words/sentences and misplaced modifiers.
- RLA.7.2.13 use title page, copyright page, table of contents, appendix, bibliography, glossary and index to locate specified information.
- RLA.7.2.14 identify and use traditional reference sources for different types of information (e.g., *Reader's Guide*; *Books In Print*; newspapers; schedules; advertisements; audiovisual resources).
- RLA.7.2.15 recognize copyright laws/issues, ethical acquisition and use of digital information in citing sources for research/report.
- RLA.7.2.16 identify the source, location, media type, relevancy and content validity of available information.
- RLA.7.2.17 demonstrate the ability to use the card catalog in hard copy or database to identify title, author, subject, call number, publisher and copyright resources.
- RLA.7.2.18 develop an outline using prepared notes to write a paragraph.

Performance Descriptors (RLA.PD.7.2)

- **Distinguished**
Seventh grade students performing at the distinguished level write an elaborate composition from a prompt that is well-crafted, cohesively organized and employs sophisticated transitional elements. Students construct a detailed outline to produce a research-based report.
- **Mastery**
Seventh grade students performing at the mastery level write a focused composition from a prompt with grade level grammatical/mechanical conventions; sentence variety, supporting details and clear transition. Students develop an outline from research notes to produce a paragraph.
- **Partial Mastery**
Seventh grade students performing at the partial mastery level write a composition from a prompt with limited grammatical/mechanical conventions; complete sentences, basic details and evidence of transition. Students produce a simple outline from notes.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with:

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.7.3.1 recognize and exhibit oral communication skills (e.g., tone; volume; rate; audience etiquette).
- RLA.7.3.2 perform dramatizations.
- RLA.7.3.3 use oral/visual information to foster exploration, questioning and imagining of a topic.
- RLA.7.3.4 listen in order to comprehend topic, purpose and perspective in spoken texts (e.g., of a guest speaker; informational video; televised interview; radio news program).
- RLA.7.3.5 play a variety of roles in group discussions including active listener and discussion leader.
- RLA.7.3.6 distinguish between private and public information in research and reporting.

Performance Descriptors (RLA.PD.7.3)

■ Distinguished

Seventh grade students performing at the distinguished level communicate effectively with a variety of audiences for different purposes. Students deliver an expressive oral presentation exhibiting effective communication skills. Students respond critically to oral and visual information to oral and visual information by exploring and questioning the topic.

■ Mastery

Seventh grade students performing at the mastery level communicate with an audience for different purposes. Students deliver an oral presentation exhibiting communication skills by using a prepared script. Students respond to oral and visual information by exploring and questioning the topic.

■ Partial Mastery

Seventh grade students performing at the partial mastery level communicate with a small group for a specific purpose. Students deliver an oral presentation by reading from a prepared script. Students respond to oral and visual information by summarizing the topic.

Eighth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts eighth grade students will develop strategies that support understanding language in real life situations. Writing will focus on audience, stressing mechanics, language expression and organization of ideas. Reading comprehension and vocabulary will stress development of reading and thinking skills that enable students to comprehend and react critically to various genres of regional, national and international works. The student will utilize language arts skills across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.8.1.1 analyze the defining characteristics, build background knowledge and apply reading skills to understand a variety of literary passages and texts by West Virginia, national and international authors (e.g., fiction; nonfiction; myths; poems; fantasies; biographies; autobiographies; science fiction; tall tales; supernatural tales).
- RLA.8.1.2 relate literary theme to global situations.
- RLA.8.1.3 use comprehension strategies (e.g., make judgments; hypothesize; critique; analyze).
- RLA.8.1.4 determine the elements of literature (e.g., internal/external conflict; point of view) to construct meaning and recognize author's and/or reader's purpose.
- RLA.8.1.5 identify figurative language in text (e.g., onomatopoeia; pun).
- RLA.8.1.6 make text connections to self, to other text and to the real world.
- RLA.8.1.7 identify literary technique used to interpret literature (e.g., irony; satire; persuasive language; analogies).

- RLA.8.1.8 read and identify types of poetry and the use of inversion, rhyme and rhythm (e.g., narrative poem; ballad; lyric; epic).
- RLA.8.1.9 recognize and understand acronyms.
- RLA.8.1.10 use resource materials (e.g., dictionary; glossary; thesaurus) to determine the meaning of unknown words or multiple meaning words.
- RLA.8.1.11 use root words, prefixes, and suffixes to spell words, change word meanings and generate new words appropriate to grade level.

Performance Descriptors (RLA.PD.8.1)

- **Distinguished**
Eighth grade students performing at the distinguished level read both functional and recreational materials above grade level. Students extend multiple text information by making and supporting judgments, hypothesizing, critiquing and analyzing abstract themes.
- **Mastery**
Eighth grade students performing at the mastery level read independently and analyze grade level literary genres, make and support judgments and hypothesize to connect reader's response with author's purpose.
- **Partial Mastery**
Eighth grade students performing at the partial mastery level read grade level materials to classify literary types, explain inferences and make judgments, demonstrate literal knowledge of text and relate text to personal experience.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.8.2.1 use the writing process to demonstrate the ability to compose a variety of written work (e.g., creative; informative; expository; persuasive; chronological explanatory; compare/contrast; cause/effect; article; essay; journal; letters; reports; poetry).
- RLA.8.2.2 from a prompt, develop a focused composition that contains specific, relevant details, smooth transition and vivid, precise words.
- RLA.8.2.3 use revision and editing strategies to correct errors in organization, content, usage, capitalization, punctuation and spelling.
- RLA.8.2.4 recognize and write a simple thesis statement.
- RLA.8.2.5 apply all capitalization rules in writing.
- RLA.8.2.6 apply punctuation rules in writing (e.g., appositives; phrases; clauses).
- RLA.8.2.7 compose and punctuate grammatically correct simple, compound and complex sentences.
- RLA.8.2.8 identify and correct faulty parallel sentence structure such as phrases and clauses.
- RLA.8.2.9 edit and revise to eliminate run-on sentences, sentence fragments, redundant words/sentences and misplaced modifiers.
- RLA.8.2.10 conduct research using parts of a book to gather, evaluate and synthesize data from a variety of sources (e.g., print; non-print; people).
- RLA.8.2.11 identify and use traditional reference sources for different types of information.
- RLA.8.2.12 independently resolve information conflicts and validate information through assessing, researching and comparing data.
- RLA.8.2.13 demonstrate the ability to identify the source, location, media type, relevancy and content validity of available information.
- RLA.8.2.14 apply use of card catalog and/or computer databases to identify title, author, subject, call number, publisher and copyright resources to gather information for a presentation.
- RLA.8.2.15 use an outline to develop a written and/or oral presentation using graphic representation.

Performance Descriptors (RLA.PD.8.2)

■ **Distinguished**

Eighth grade students performing at the distinguished level write an elaborate composition with a concise thesis statement demonstrating command of grammatical/mechanical conventions, vivid word terminology and sophisticated transitional elements to enhance meaning. Students integrate relevant, valid information in a research-based presentation.

■ **Mastery**

Eighth grade students performing at the mastery level write a composition including a thesis statement designed for a specific audience. Students apply grade level grammatical/mechanical conventions, correct word terminology and smooth transition. Students identify information that is relevant and valid for a research-based presentation.

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level write a composition with evidence of grammatical/mechanical conventions, correct word terminology, transition and use of relevant information in a simple research-based presentation.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with:

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.8.3.1 recognize and exhibit oral communication skills (e.g., tone; volume; rate; speaking etiquette; audience etiquette).
- RLA.8.3.2 present an oral report with graphic aids (e.g., tables; graphs; diagrams; charts).
- RLA.8.3.3 think critically about oral/visual information presented; relate personal experiences and apply the information to global situations.
- RLA.8.3.4 listen in order to analyze and critique information received in spoken texts (e.g., of a guest speaker; informational video; televised interview; radio news program).
- RLA.8.3.5 play a variety of roles in group discussions including active listener, discussion leader and/or facilitator.
- RLA.8.3.6 properly use private and public information.

Performance Descriptors (RLA.PD.8.3)

■ **Distinguished**

Eighth grade students performing at the distinguished level plan, design and deliver an enhanced oral/visual presentation justifying their opinions on global situations. Students evaluate sources and the use of public/private information, and apply communication skills required for various careers.

■ **Mastery**

Eighth grade students performing at the mastery level plan, design and deliver an effective oral presentation. Students relate personal experiences to oral/visual information, distinguish between public and private information and identify communication skills required for various careers.

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level deliver oral presentations, communicate personal experiences, locate information and investigate communication skills required for various careers.

Ninth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts ninth grade students will focus on the effective use of written language in educational and occupational endeavors and interpersonal communications. Instructional delivery will be enhanced through a wide range of media. Frequent interaction with a broad array of quality literature will encourage an appreciation for the power of the written and spoken word. All language arts skills and strategies will be utilized across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.9.1.1 identify historical, cultural and biographical influences of literary works.
- RLA.9.1.2 recognize literary styles according to genre.
- RLA.9.1.3 increase the amount of independent reading with emphasis on fiction and nonfiction.
- RLA.9.1.4 develop various reading skills for literary experience, information and/or performing a task (e.g., skimming; scanning; note taking; SQ3R).
- RLA.9.1.5 locate specific information in text (e.g., main and supporting ideas; specific facts; statistics; definition).
- RLA.9.1.6 expand the use of various strategies to establish word meanings (e.g., context clues; affixes; multiple meanings).
- RLA.9.1.7 recognize and explain the function of illustration within a specific text (e.g., pictures; artwork; graphic organizers such as maps - charts - lists - graphs).
- RLA.9.1.8 recognize literary devices (e.g., personification; symbolism; imagery; metaphor; simile; humor; rhythm; rhyme; meter; alliteration; assonance).
- RLA.9.1.9 identify literary elements within specific genre (e.g., point of view; theme; conflict; characterization; voice).
- RLA.9.1.10 recognize the elements, structures and tone of various genres (e.g., novels; short stories; poetry; drama).

Performance Descriptors (RLA.PD.9.1)

- **Distinguished**
Ninth grade students performing at the distinguished level read, analyze and evaluate advanced level texts to draw supportable conclusions about historical, cultural and biographical influences on literary works. Students analyze and evaluate literary devices and elements, author's voice and modes of characterization.
- **Mastery**
Ninth grade students performing at the mastery level read, analyze and synthesize grade level texts to explain historical, cultural and biographical influences on literary works. Students explain literary devices and elements, author's voice and modes of characterization.
- **Partial Mastery**
Ninth grade students performing at the partial mastery level read grade level texts to identify historical, cultural, and biographical influences on literary works. Students recognize basic literary devices and elements.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.9.2.1 address specific purposes (e.g., narrative; expository; descriptive; persuasive) by employing writing strategies.
- RLA.9.2.2 generate topics and plan approaches to writing by using pre-writing strategies.
- RLA.9.2.3 employ drafting strategies for specific writing tasks.
- RLA.9.2.4 create a well-developed composition from a prompt.
- RLA.9.2.5 develop a composition that addresses the assigned topic with a clearly worded and correctly placed thesis statement.
- RLA.9.2.6 develop a composition that is focused and coherent and has a clear, logical progression of ideas (e.g., spatial order in a descriptive essay; chronological order in a process essay).
- RLA.9.2.7 use different transitional devices (e.g., introductory and transitional phrases/conjunctions) between paragraphs.
- RLA.9.2.8 develop a composition that uses complete and varied sentences.
- RLA.9.2.9 develop a composition with appropriate and precise word choice.
- RLA.9.2.10 use revision and editing strategies to correct errors in organization, content, usage, mechanics and spelling.
- RLA.9.2.11 access and evaluate a variety of sources (e.g., *Reader's Guide*; card catalog, electronic media).
- RLA.9.2.12 extend note-taking skills to process and organize information.
- RLA.9.2.13 recognize the concept of intellectual property and plagiarism (e.g., media copyright laws; public/private domain).
- RLA.9.2.14 develop outlining skills to organize text and composition information by selecting main points and supporting details.
- RLA.9.2.15 practice correct use of bibliographic format in research documentation (e.g., MLA; APA).
- RLA.9.2.16 recognize choices of pronunciation and spelling (e.g., dictionary; spell check; thesaurus).
- RLA.9.2.17 recognize the parts of speech within a sentence.
- RLA.9.2.18 recognize the various parts of a sentence (e.g., direct object; predicate adjective; gerund; infinitive).
- RLA.9.2.19 identify editing strategies to correct errors in capitalization and punctuation.
- RLA.9.2.20 recognize and correct errors in subject/verb agreement.
- RLA.9.2.21 recognize and correct errors in pronoun case usage and pronoun/antecedent agreement.
- RLA.9.2.22 recognize and correct run-on sentences, fragments, misplaced modifiers and awkward constructions.
- RLA.9.2.23 form supportable predictions, opinions, inferences and conclusions based upon text.
- RLA.9.2.24 expand vocabulary through various literary works.
- RLA.9.2.25 identify word etymologies to determine meaning.

Performance Descriptors (RLA.PD.9.2)

■ Distinguished

Ninth grade students performing at the distinguished level write compositions that contain a refined thesis statement, subtle transition, elevated diction and pertinent sentence structure germane to the writing. Students independently apply the rules of intellectual property.

■ Mastery

Ninth grade students performing at the mastery level write diverse compositions that integrate a clear and logical thesis statement, transitional devices, precise diction, varied sentence structure and a clear, logical progression of supported ideas. Students extend research skills by applying the rules of intellectual property to compositions.

- **Partial Mastery**

Ninth grade students performing at the partial mastery level write compositions that show evidence of a thesis statement, basic transition, limited diction, complete sentences and a progression of ideas. Students identify and explain the rules of intellectual property.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with:

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.9.3.1 understand, communicate and follow complex directions effectively.
- RLA.9.3.2 review appropriate classroom communication skills (e.g., asking and answering questions to foster comprehension and communication in the appropriate tone and at the appropriate time).
- RLA.9.3.3 review listening behaviors prior to a school wide audience activity (e.g., staying alert; resisting distractions; identifying and adapting to the speaker's purpose).
- RLA.9.3.4 listen to identify the purpose, make predictions, distinguish fact from opinion and construct meaning from discussion, speech or media.
- RLA.9.3.5 recognize and correct usage errors in oral language.

Performance Descriptors (RLA.PD.9.3)

- **Distinguished**
Ninth grade students performing at the distinguished level effectively design and communicate intricate directions. Students synthesize meaning from discussion, speech and media to communicate supportable opinions.
- **Mastery**
Ninth grade students performing at the mastery level effectively communicate complex directions. Students construct meaning from discussion, speech and media through observation and participation.
- **Partial Mastery**
Ninth grade students performing at the partial mastery level effectively communicate simple directions. Students determine meaning from discussion, speech and media through observation and/or participation.

Tenth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts tenth grade students will use written language for educational, occupational and personal endeavors. Preparation will include critiquing oral presentations and using listening, speaking and viewing while reading and writing. Instructional delivery will be enhanced by a wide variety of media. Frequent interaction with a broadened array of literature will encourage an increased appreciation and understanding for the power of the spoken and written word across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.10.1.1 analyze and research historical, cultural and biographical influences of literary works.
- RLA.10.1.2 compare and contrast literary styles according to genre.
- RLA.10.1.3 increase the amount of independent reading with emphasis on American, British and World literature.
- RLA.10.1.4 employ reading strategies necessary for various reading purposes (e.g., literary experience; information; and task performance).
- RLA.10.1.5 continue to use context clues to establish word meaning (e.g., including words with multiple meanings).
- RLA.10.1.6 recognize characteristics of author's style, purpose and tone.
- RLA.10.1.7 form supportable predictions, opinions, inferences and conclusions based upon a text and/or implicit ideas.
- RLA.10.1.8 explain the author's choice of literary devices (e.g., personification; symbolism; imagery; metaphor; simile; humor; rhythm; rhyme; meter; alliteration; assonance).
- RLA.10.1.9 recognize persuasive language and techniques (e.g., advertisements; junk mail; news stories).
- RLA.10.1.10 expand vocabulary through classic literature.
- RLA.10.1.11 explain word etymologies to determine meaning.

Performance Descriptors (RLA.PD.10.1)

■ **Distinguished**

Tenth grade students performing at the distinguished level read, synthesize and evaluate advanced level texts to form supportable predictions, opinions, inferences and conclusions from implicit ideas. Students research and analyze the impact of historical, cultural and biographical factors on literary works. Students examine the universality of literature to determine the interrelationship among literary works.

■ **Mastery**

Tenth grade students performing at the mastery level read and analyze grade level texts to form supportable predictions, opinions, inferences and conclusions from implicit ideas. Students research and analyze the impact of historical, cultural and biographical factors on literary works.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery read grade level texts to form predictions, opinions, inferences and conclusions. Students identify and explain the impact of historical, cultural, and biographical factors on literary works.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.10.2.1 employ writing strategies to address specific audiences (e.g., narrative; expository; descriptive; persuasive).
- RLA.10.2.2 use pre-writing strategies to generate topics and plan approaches to writing by using timed writing tasks.

- RLA.10.2.3 from a writing prompt, create a well-developed composition illustrating various points of view (e.g., omniscient or limited).
- RLA.10.2.4 develop a composition that addresses the assigned topic with a clearly worded and correctly placed thesis statement which is supported by relevant details.
- RLA.10.2.5 develop a timed writing that is focused and coherent and has a clear, logical progression of ideas.
- RLA.10.2.6 use different transitional devices (e.g., introductory and internal transitional phrases/conjunctions).
- RLA.10.2.7 develop a composition that contains sentence variety.
- RLA.10.2.8 develop a composition where word choice is vivid, precise and economical.
- RLA.10.2.9 correct errors in timed writing to correct errors in organization, content, usage, mechanics (e.g., capitalization; punctuation) and spelling using revision and editing strategies.
- RLA.10.2.10 access and evaluate a variety of sources (e.g., *Reader's Guide*; card catalog; electronic media; newspapers).
- RLA.10.2.11 extend note-taking skills to process and organize information (e.g., paraphrase; summary; quote).
- RLA.10.2.12 explain the concept of intellectual property and plagiarism in all media (e.g., media copyright laws; public/private domain).
- RLA.10.2.13 expand outlining skills to organize text and composition information by selecting main points and supporting details.
- RLA.10.2.14 practice correct use of bibliographic format in research documentation (e.g., MLA; APA).
- RLA.10.2.15 explain word etymologies to determine meaning.
- RLA.10.2.16 compare and contrast choice of pronunciation and spelling (e.g. dictionary; spell check; thesaurus).
- RLA.10.2.17 classify the parts of speech within a sentence.
- RLA.10.2.18 recognize the parts of a sentence (e.g., direct object; predicate adjective; gerund; infinitive; word usage variations).
- RLA.10.2.19 recognize and correct errors in subject/verb agreement with emphasis on indefinite pronouns.
- RLA.10.2.20 use correct verb tense by recognizing appropriate situations for tense shifts.
- RLA.10.2.21 recognize and correct errors in sentence structure (e.g., parallelism; redundancy; misplaced modifiers; subordination).

Performance Descriptors (RLA.PD.10.2)

■ Distinguished

Tenth grade students performing at the distinguished level write focused compositions that exhibit a well-discerned and placed thesis statement, sophisticated diction and insightful detail. Students experiment with point of view leading to the development of a personal voice. Students extend research skills by incorporating information into compositions using correct documentation.

■ Mastery

Tenth grade students performing at the mastery level write focused compositions. Students integrate a correctly placed thesis statement, vivid and economical diction, specific, relevant details and various points of view. Students extend research skills incorporating information into compositions using correct documentation.

■ Partial Mastery

Tenth grade students performing at the partial mastery write basic compositions with limited focus. Students incorporate a thesis statement, simplistic diction, sporadic detail and a shifting point of view. Students extend research skills by transferring information into compositions using documentation.

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.10.3.1 communicate and follow intricate directions.
- RLA.10.3.2 employ appropriate classroom communication skills (e.g., asking and answering questions to foster comprehension and communication in appropriate tone and at the appropriate time).

- RLA.10.3.3 listen to a speech (e.g., funeral orations from Shakespeare's *Julius Caesar*) to identify specific examples of central idea, fact versus opinion and persuasive devices.
- RLA.10.3.4 recognize and correct usage errors in oral language (e.g., distinguishing colloquial - dialectical - slang - formal versus informal).
- RLA.10.3.5 practice and master listening, speaking and viewing by using a variety of techniques (e.g., videos, power point presentations; audiotape; web pages).

Performance Descriptors (RLA.PD.10.3)

- **Distinguished**
Tenth grade students performing at the distinguished level automatically evaluate and apply conventions of oral language. Students assess the merit of persuasive devices from multiple sources to determine and debate credibility.
- **Mastery**
Tenth grade students performing at the mastery level recognize and apply conventions of oral language by distinguishing colloquial, dialectical, slang and formal language. Students construct meaning from multiple sources by analyzing persuasive devices to determine credibility.
- **Partial Mastery**
Tenth grade students performing at the partial mastery level recognize conventions of oral language. Students determine basic meaning from multiple sources by identifying and paraphrasing persuasive language.

Eleventh Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts eleventh grade students will refine and enhance foundational literary and communication skills through academic rigor and depth. Career formalization, including college entrance exam preparation and workplace readiness skills, will become a primary focus. Challenging research and writing skills will be emphasized across the curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.11.1.1 research, analyze and evaluate the historical, cultural and biographical influences of literary works.
- RLA.11.1.2 analyze literary styles according to genre.
- RLA.11.1.3 increase the amount of independent reading with emphasis on classic American, British and World literature.
- RLA.11.1.4 select appropriate reading strategies necessary for various reading purposes (e.g., literary experience; information; task performance).
- RLA.11.1.5 analyze characteristics of author's style, purpose and technique from a variety of selections (e.g., critical review; literary/character analysis).
- RLA.11.1.6 draw supportable conclusions, make inferences and generalizations, and interpret character traits.

- RLA.11.1.7 expand vocabulary through various literary works and apply word etymologies to determine meaning.
- RLA.11.1.8 recognize and interpret various literary devices, in particular, figurative language (e.g., personification; archetypes; allegorical patterns).
- RLA.11.1.9 analyze types of texts according to content, structure and tone.
- RLA.11.1.10 read literary criticism applicable to the genre being studied.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.11.2.1 employ writing strategies to address specific purposes and audiences (e.g., narrative; expository; descriptive and/or persuasive).
- RLA.11.2.2 generate topics and plan approaches to writing (e.g., graphic organizers; outlines) using pre-writing strategies.
- RLA.11.2.3 employ drafting strategies for interdisciplinary writing tasks.
- RLA.11.2.4 develop a composition from a student-generated clearly worded and correctly placed thesis statement which is supported by relevant details.
- RLA.11.2.5 develop a composition that is focused and coherent and has a clear, logical progression of ideas.
- RLA.11.2.6 use vocabulary that is vivid, precise and economical.
- RLA.11.2.7 identify and use subtle forms of transition in a composition (e.g., sentence links; repetition of key words or sentences).
- RLA.11.2.8 identify rhetorical devices (e.g., parallel structure; antithesis; narrative pace).
- RLA.11.2.9 produce functional writing (e.g., letter of job application; scholarship application; essay; personal letter).
- RLA.11.2.10 produce a researched essay or project following an accepted format (e.g., MLA; APA).
- RLA.11.2.11 find and develop personal style and voice in writing.
- RLA.11.2.12 in functional and research writing, use revisions and editing strategies to correct errors in organization, content, usage, mechanics and spelling.
- RLA.11.2.13 access and evaluate information through a variety of sources (e.g., *Reader's Guide*; card catalog; electronic media).
- RLA.11.2.14 extend efficient note taking skills with careful attention to identifying purpose, main ideas/key facts and overall themes in order to synthesize information into a well-developed essay.
- RLA.11.2.15 apply the concept of intellectual property and plagiarism in all media (e.g., media copyright laws; private/public domain).
- RLA.11.2.16 produce a suitable outline for use in a researched essay or project.
- RLA.11.2.17 apply choices of pronunciation and spelling (e.g., dictionary; spell check; thesaurus).
- RLA.11.2.18 analyze the parts of a sentence (e.g., direct object; predicate adjective, gerund; infinitive; word usage variations).
- RLA.11.2.19 select appropriate editing strategies to correct errors in punctuation.
- RLA.11.2.20 recognize and correct errors in subject verb agreement and verb tense.
- RLA.11.2.21 recognize and correct errors in sentence structure and usage (e.g., parallelism; redundancy; misplaced modifiers; subordination).

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with:

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.11.3.1 design and communicate complex directions.
- RLA.11.3.2 continue to adapt/apply speaking skills in order to participate in a variety of situations (e.g., panel/group discussion; oral presentation).
- RLA.11.3.3 correct usage errors in oral language (e.g., distinguishing colloquial - dialectical - slang - and formal versus informal language).
- RLA.11.3.4 practice and master listening, speaking and viewing objectives (e.g., videos; PowerPoint presentations; web pages; evaluating a selection on audiotape).

Twelfth Grade Reading and English Language Arts Content Standards and Objectives

Reading and English Language Arts twelfth grade students will focus and polish personal skills and goals. Experiences such as a senior project or a sophisticated persuasive research paper will culminate the graduation experience. Readiness for the work place or post secondary education is the final educational reality check during the twelfth grade year. The expansion and appreciation of language and literature in spoken and written form is a primary focus. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Reading (RLA.S.1)

Students will use skills to read for literacy experiences, read to inform and read to perform a task by:

- identifying and using the dimensions of reading (phonemic awareness, phonics, background knowledge/vocabulary, high frequency words/fluency, comprehension, writing and motivation to read); and
- employing a wide variety of literature in developing independent readers.

Reading Objectives

Students will:

- RLA.12.1.1 research, analyze and evaluate the historical, cultural and biographical influences to determine the impact on literary works.
- RLA.12.1.2 analyze and evaluate author's choice of genre
- RLA.12.1.3 increase the amount of independent reading with emphasis on American, British and World literature.
- RLA.12.1.4 automatically apply appropriate reading strategies necessary for various reading purposes (e.g., literary experience; information; task performance).
- RLA.12.1.5 analyze and evaluate characteristics of author's style, purpose and technique from a variety of selections (e.g., critical review; literary/character analysis).
- RLA.12.1.6 construct supportable conclusions, make inferences and generalizations, and interpret character traits from explicit and implicit ideas.
- RLA.12.1.7 analyze and evaluate persuasive language and techniques (e.g., advertisements; junk mail; web sites; news stories).
- RLA.12.1.8 expand vocabulary through various literary works and analyze word and etymologies to determine meaning.
- RLA.12.1.9 interpret and evaluate the author's choice of various literary devices and techniques, in particular, figurative language (e.g., personification; archetypes; allegorical patterns).
- RLA.12.1.10 analyze and evaluate types of text according to content, structure and tone.
- RLA.12.1.11 read and evaluate literary criticism applicable to the genre being studied.

Standard 2: Writing (RLA.S.2)

Students will employ a wide range of writing strategies to communicate effectively for different purposes by:

- developing the writing process;
- applying grammatical and mechanical properties in writing; and
- gathering and using information for research purposes.

Writing Objectives

Students will:

- RLA.12.2.1 employ writing strategies to address specific purposes (e.g., narrative; expository; persuasive; research; creative).
- RLA.12.2.2 generate topics and plan approaches to research writing (e.g., graphic organizers; outlines) using pre-writing strategies.
- RLA.12.2.3 employ drafting strategies for research writing tasks.
- RLA.12.2.4 develop a focused composition that has a clear and logical progression of ideas supported by relevant details.
- RLA.12.2.5 expand the use of vocabulary that is vivid, precise and economical.
- RLA.12.2.6 expand the use of subtle forms of transition in a composition (e.g., sentence links; repetition of key words or sentences).
- RLA.12.2.7 apply rhetorical devices (e.g., parallel structure; antithesis; narrative pace).
- RLA.12.2.8 write an analysis of a literary selection using terminology and characteristics of the genre and quotations (e.g., apostrophe; symbolism; imagery).
- RLA.12.2.9 produce functional writing related to life skills (e.g., letter of job application; scholarship application; essay; personal letter).
- RLA.12.2.10 produce a summative project (e.g., research paper, power point presentation; web page) using an accepted format (e.g., MLA; APA).
- RLA.12.2.11 refine a personal style and voice in writing.
- RLA.12.2.12 correct errors in organization, content, usage, mechanics and spelling through all writing using revisions and editing strategies.
- RLA.12.2.13 access and evaluate information through a variety of primary and secondary sources (e.g., personal interviews; SIRS; *Congressional Quarterly*).
- RLA.12.2.14 employ a sound note taking system that can be applied to classroom, library and/or interview.
- RLA.12.2.15 integrate the concept of intellectual property and plagiarism in all media (e.g., media copyright laws; private/public domain).
- RLA.12.2.16 produce a detailed outline for use in a summative project.
- RLA.12.2.17 analyze and select choice of pronunciation and spelling (e.g., dictionary; spell check; thesaurus).
- RLA.12.2.18 select appropriate editing strategies to correct all errors in mechanics.
- RLA.12.2.19 recognize and correct all errors in subject/verb agreement.
- RLA.12.2.20 correct all errors in sentence structure and usage (e.g., parallelism; redundancy; misplaced modifiers; subordination).

Standard 3: Listening, Speaking and Viewing (RLA.S.3)

Students will apply their use of spoken, written and/or visual language to communicate with

- a variety of audiences; and
- for different purposes.

Listening, Speaking and Viewing Objectives

Students will:

- RLA.12.3.1 adapt and apply speaking skills in order to participate in a variety of situations (e.g., panel/group discussion; oral presentation; guest speaker).
- RLA.12.3.2 correct all usage errors in oral language (e.g., distinguishing colloquial - dialectical - slang, and formal versus informal language).
- RLA.12.3.3 practice and master listening, speaking and viewing skills (e.g., videos; power point presentations; web pages; and evaluate a selection on audio tape).

SCIENCE

The science content standards identify what students should know, understand and be able to do in the natural sciences throughout their K-12 education. Because each content standard utilizes the knowledge and skills of other standards, they are designed to be used as an integrated whole. Although material can be added to the content standards, using only a subset of the standards will leave gaps in the students' scientific literacy.

Doing Science:

- Standard 1 - History and Nature of Science
- Standard 2 - Science as Inquiry

Knowing Science:

- Standard 3 - Unifying Themes
- Standard 4 - Science Subject Matter/Concepts

Context of Science:

- Standard 5 - Scientific Design and Application
- Standard 6 - Science in Personal and Social Perspectives

A three-dimensional instructional strategy model must be utilized to address the science curriculum and assure students' depth of understanding and breadth of knowledge.

Standard 1. History and the Nature of Science

The study of science as a human endeavor provides for the acquisition of ideas leading toward the current knowledge base that represents science content. The nature of science encompasses the basic values and beliefs that make up the scientific world view, how scientists go about their work and the general culture of scientific enterprise. Studying historical and current discoveries of scientists and scientific milestones provides students with information about how discoveries have influenced current scientific thought and advancements. Students should understand that the continuous development of scientific knowledge shapes history. The study of the history and nature of science clarifies scientific inquiry and the role of science in the development of world cultures.

Standard 2. Science as Inquiry

Science is a process of discovery. Students will engage in active inquiry through investigations and hands-on activities a minimum of 50% of the instructional time. Developing scientific literacy requires a learning environment in which students actively participate in meaningful hands-on activities. These investigations explore the natural world, require critical thinking and develop process skills. Learning activities are sequenced to shape, modify and develop students' knowledge in order for them to become independent inquirers.

Standard 3. Unifying Themes

Broad unifying themes complement the perspectives presented in the other content standards. These themes are fundamental to understanding and unifying the various science disciplines. Major unifying themes are systems, models and changes.

Standard 4. Science Subject Matter/Concepts

Science subject matter focuses on the scientific facts, concepts, principles, theories and models that are important for all students to know, understand and apply. Through the integration of the fields of science and the development of unifying themes, students will understand the interrelationships among biology, chemistry, physics and the earth sciences. Scientifically literate students will make connections in the formal education setting and will apply their knowledge and skills to daily life experiences. The objectives describe the specific subject matter/concepts that students are to master at each grade level.

Standard 5. Scientific Design and Application

Scientific design and application permits the extension of senses, the enhancement of the knowledge base, transportation of materials and information, synthesizing of new products and the modification of the world. Students must learn to use technology to analyze situations, gather relevant information, generate and evaluate creative ideas, pose tangible solutions and communicate their analyses, results and suggestions concisely.

Standard 6. Science in Personal and Social Perspectives

Applying science and technological innovations to personal and social issues such as health, populations, resources and environment helps students to develop decision-making skills. As students expand their conceptual horizons, they should recognize that collective individual actions manifest as societal issues. Students must recognize that society cannot afford to deal only with symptoms; personal and societal actions must be focused on elimination of the causes of problems. Students should recognize that unless imposed by legislation social change involves negotiation among different interest groups. Students must be allowed to encounter and examine social change in a variety of current and historical contexts.

The Role of Technology

West Virginia's vision for education includes the integration of technology throughout the curriculum so that all West Virginia students have the opportunity to develop technology skills that support learning. Successful learning environments provide opportunities for students to use education technology interwoven with relevant curricular content. West Virginia teachers are responsible for integrating technology appropriately in the students' learning environment.

Organization of the Science Program of Study

The West Virginia Science Program of Study is drawn from the National Science Education Standards and the Project 2061 Benchmarks to promote a rigorous and challenging science curriculum. Through experiencing a spiraling, inquiry-based program of study, students in grades K-10 will develop foundational knowledge and skills in the physical sciences, the life sciences, and the earth and space sciences. To assure scientific literacy for all students, a coordinated, integrated approach is utilized in grades K-10. Students in the 11th and 12th grades participate in advanced in-depth laboratory-based elective courses designed to expand their conceptual understanding and enhance their research and laboratory skills.

Science Content Standards K-12

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Kindergarten Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Kindergarten objectives emphasize the process skills. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the physical sciences, the life sciences and the earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. CATS Kindergarten enhances the child's natural curiosity about the environment and augments the awe and wonder of inquiries and discoveries using the senses and by hands-on manipulation of objects to build a strong foundation of concepts blended with safety principles. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.K.1.1 ask questions about themselves and their world.
SC.K.1.2 listen to stories about the lives and discoveries of scientists.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.K.2.1 demonstrate curiosity, initiative and creativity by asking questions about the environment noting patterns and variations of natural objects (e.g., trees, leaves, animal structures).
- SC.K.2.2 explore and describe objects and events using the five senses to develop observational skills and make predictions based on personal observation.
- SC.K.2.3 use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, magnets).
- SC.K.2.4 use safe and proper techniques for handling, manipulating and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.K.2.5 collect and record information in a variety of ways (e.g., drawings, weather calendar, graphs).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

SC.K.3.1 recognize that models are representations of real things.

SC.K.3.2 observe that change occurs gradually, repetitively, or randomly within the environment.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.K.4.1 using the five senses, identify living and non-living things.

Life Cycles of Organisms

SC.K.4.2 observe the movement, growth and changes in plants and animals.

Organisms and Environments

SC.K.4.3 observe models of plants and animals in different environments (e.g., terrariums, aquariums, animals and plants in a forest, pond, field).

Properties of Objects and Materials

SC.K.4.4 describe, compare, sort and group objects in terms of what they are made of (clay, cloth, paper, metal, etc.) and their physical properties of size, shape, color, weight or texture.

SC.K.4.5 identify liquids and solids.

Light, Heat, Electricity and Magnetism

SC.K.4.6 identify colors.

SC.K.4.7 explore changes in energy (e.g., hot/cold and light/dark).

SC.K.4.8 explore magnetic properties of objects.

Position and Motion of Objects

SC.K.4.9 explore the different ways objects can be moved (e.g., straight, circular, fast, slow).

Changes in Earth and Sky

SC.K.4.10 observe and record daily changes in weather (e.g., clouds, air temperature).

Objects in the Sky

SC.K.4.11 identify objects in the day and night sky (e.g., moon, stars, sun).

Properties of Earth Materials

SC.K.4.12 observe and compare differences in earth materials.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives.

Students will:

SC.K.5.1 observe the uses of tools and appliances at home and at play.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives.

Students will:

SC.K.6.1 work in groups, listen to and be tolerant of different viewpoints.

First Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) One objectives build on the process skills and add data gathering and reporting. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics, and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS One continues the excitement of learning about the natural world and allows the beginning of experimentation and data collection to emphasize the tools of science and the properties of matter. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

SC.1.1.1 ask questions about themselves and their world.

SC.1.1.2 discuss the lives and discoveries of scientists after listening to stories about their lives and discoveries.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

SC.1.2.1 demonstrate curiosity, initiative and creativity by questioning observations of changes in the environment (e.g., life cycles; motion of celestial objects; sun and shadow).

SC.1.2.2 use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, magnets, thermometer, seeds, rocks).

SC.1.2.3 use safe and proper techniques for handling, manipulating and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).

SC.1.2.4 collect, record and compare information using a variety of classification systems (e.g., ordering, sorting, sequencing) and using a variety of communication techniques (e.g., sketches, pictographs, models).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

SC.1.3.1 identify that systems are made of parts that interact with one another.

SC.1.3.2 use models as representations of real things.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.1.4.1 classify objects as living or non-living.

SC.1.4.2 identify that most living things need water, food, light and air.

Life Cycles of Organisms

SC.1.4.3 recognize changes in life cycle of living organisms.

SC.1.4.4 identify the parts of growing plants as they develop.

Organisms and Environments

SC.1.4.5 depict movement of living things in air, water and on land. (e.g., birds flying, fish swimming, worms burrowing in soil).

Properties of Objects and Materials

SC.1.4.6 recognize that materials are composed of smaller parts that may be seen with a magnifier.

SC.1.4.7 recognize that materials can be recycled and used again, sometimes in different forms.

SC.1.4.8 recognize that water can be a solid or a liquid, and can change from one form to another.

SC.1.4.9 predict and investigate the buoyancy of objects in water.

Light, Heat, Electricity and Magnetism

SC.1.4.10 classify objects as magnetic or non-magnetic.

SC.1.4.11 observe and record shadows at different times of the day.

Position and Motion of Objects

SC.1.4.12 describe the changes in the motion of objects (e.g., slowing, speeding up, curving)

SC.1.4.13 demonstrate that sounds are produced by vibrations.

Changes in Earth and Sky

SC.1.4.14 observe, identify and record changes in weather and effects on living organisms.

SC.1.4.15 recognize that the sun, moon, and stars appear to move.

Objects in the Sky

SC.1.4.16 observe and discuss the importance of objects in the day and night sky.

Properties of Earth Materials

SC.1.4.17 use a model to compare land and water features on the Earth.

SC.1.4.18 identify important uses of air.

SC.1.4.19 investigate and compare the properties of soil (e.g., sand, clay, humus).

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.1.5.1 distinguish between natural and man-made objects.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.1.6.1 listen to and be tolerant of different viewpoints while working in collaborative groups.
- SC.1.6.2 develop respect and responsibility for the environment by engaging in conservation practices (e.g. recycling, trash clean-up)

Second Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Two objectives build upon the early stages of experimentation and maintenance of natural curiosity. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Two will provide opportunities for developmental and academic growth. The activities will introduce the concepts that science and technology are interrelated. The curricular thrust will be to develop early problem-solving skills through observation, experimenting and concluding. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.2.1.1 recognize science as the human's search for an understanding of the world by asking questions about themselves and their world.
- SC.2.1.2 discuss the lives and discoveries of scientists of different cultures and backgrounds.
- SC.2.1.3 identify and discuss the role of community people in science careers.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.2.2.1 demonstrate curiosity, initiative and creativity by observing, classifying and comparing the patterns, variations and interactions of natural objects in the environment.
- SC.2.2.2 manipulate scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, thermometer, metric ruler, magnets, weather instruments, calculators).
- SC.2.2.3 measure the length and width of various objects using standard and non-standard units (e.g., metric ruler, paper clips, counting bears).
- SC.2.2.4 use safe and proper techniques for handling, manipulating, and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.2.2.5 conduct simple investigations; observe, collect and record information using a variety of classification systems; describe trends of data; and make predictions based on that data (e.g., seasonal changes and plants; temperature and weather).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.2.3.1 identify that systems are made of parts that interact with one another.
- SC.2.3.2 use models as representations of real things.
- SC.2.3.3 observe that changes occur gradually, repetitively, or randomly within the environment.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.2.4.1 identify that plants and animals have different structures.

SC.2.4.2 identify the structures of physical characteristics of living things and explain their functions (e.g., wings for flying, fins for swimming; roots for support and obtaining water).

Life Cycles of Organisms

SC.2.4.3 sequence pictures of events to illustrate the changes in the life cycle of plants and animals.

SC.2.4.4 relate observations of the butterfly's life cycle to student's own growth and change.

Organisms and Environments

SC.2.4.5 observe and compare simple models of different kinds of habitats, including a forest and a stream.

Properties of Objects and Materials

SC.2.4.6 identify materials as a solid, a liquid or a gas and recognize that matter can change from one state to another.

SC.2.4.7 demonstrate that solids, liquids and gases take up space.

Light, Heat, Electricity and Magnetism

SC.2.4.8 demonstrate that a magnet can attract or repel objects.

SC.2.4.9 recognize that some materials and colors conduct heat better than others.

SC.2.4.10 demonstrate that a shadow is cast when an object blocks light.

Position and Motion of Objects

SC.2.4.11 compare the effects of force on the motion of an object.

SC.2.4.12 recognize that sound can change in pitch and volume.

Changes in Earth and Sky

SC.2.4.13 examine changes in the earth's surface (e.g., weathering, erosion).

SC.2.4.14 identify the effects of wind movement.

SC.2.4.15 observe and describe different types of precipitation.

SC.2.4.16 compare seasonal changes.

SC.2.4.17 explain how the rotation of the Earth on its axis causes day and night.

Objects in the Sky

SC.2.4.18 understand that the moon has phases.

Properties of Earth Materials

SC.2.4.19 describe how fossils are formed.

SC.2.4.20 match a fossil or a picture of a fossil, with a picture of its original organism (e.g., dinosaur bones, shell, fern).

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.2.5.1 recognize that common objects and events incorporate science (e.g., CD players, velcro, weather) to solve human problems and enhance the quality of life.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.2.6.1 listen to and be tolerant of different viewpoints while working in collaborative groups.
- SC.2.6.2 develop respect and responsibility for the environment by engaging in conservation practices (e.g., recycling, trash clean-up, power consumption reduction).

Third Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Three objectives build upon problem-solving and experimentation and move into a more in-depth study of science. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Three highlights science-related careers. The study of geology and astronomy expands in CATS Three. Collecting materials, testing the materials, recording data and developing concepts related to physics and chemistry are introduced to expand investigative abilities that lead to logical conclusions. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.3.1.1 recognize that scientific explanations may lead to new discoveries (e.g., new knowledge leads to new questions).
- SC.3.1.2 study the lives and discoveries of scientists of different cultures and backgrounds.
- SC.3.1.3 explore science careers in the community.

Performance Descriptors (SC.PD.3.1)

■ **Distinguished**

Third grade students performing at the distinguished level cite examples of changes in scientific knowledge over time. Students compare and contrast science careers in the community.

■ **Mastery**

Third grade students performing at the mastery level identify that there are changes in scientific knowledge over time; and identify science careers in the community.

■ **Partial Mastery**

Third grade students performing at the partial mastery level identify science careers in the community.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.3.2.1 demonstrate curiosity, initiative and creativity by planning and conducting simple investigations.
- SC.3.2.2 recognize that developing solutions to problems takes time, patience and persistence through individual and cooperative ventures.
- SC.3.2.3 support statements with facts found through research in reference books, science-related magazines and the Internet.
- SC.3.2.4 use scientific instruments and everyday materials to investigate the natural world (e.g., graduated cylinder, hand lens, metric ruler, magnets, weather instruments, thermometer, calculators).
- SC.3.2.5 use safe and proper techniques for handling, manipulating and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.3.2.6 apply mathematical skills and use metric units in measurements.
- SC.3.2.7 interpret data presented in a table, graph, map or diagram and use it to answer questions and make predictions and inferences based on patterns of evidence.
- SC.3.2.8 test variables (e.g., those that affect plant growth; speed; action of water on soil; shadow formation)

Performance Descriptors (SC.PD.3.2)

■ **Distinguished**

Third grade students performing at the distinguished level make predictions and inferences. Students use appropriate scientific equipment to measure and collect data (e.g., metric rulers, scales, beakers). Students identify safe and proper techniques for handling, manipulating, and caring for science materials.

■ **Mastery**

Third grade students performing at the mastery level make predictions. Students use appropriate scientific equipment to measure and collect data (e.g., metric rulers, scales, beakers). Students identify safe and proper techniques for handling, manipulating and caring for science materials.

■ **Partial Mastery**

Third grade students performing at the partial mastery level use appropriate scientific equipment to measure and collect data (e.g., metric rulers, beakers). Students identify safe and proper techniques for handling, manipulating, and caring for science materials.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.3.3.1 identify that systems are made of parts that interact with one another.
- SC.3.3.2 use models as representations of real things.
- SC.3.3.3 observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
- SC.3.3.4 given a set of objects, group or order the objects according to an established scheme (e.g., celestial objects, patterns of motion, constellations).
- SC.3.3.5 given a set of events, objects, shapes, designs, or numbers, find patterns of constancy or regularity.

Performance Descriptors (SC.PD.3.3)

■ **Distinguished**

Third grade students performing at the distinguished level explain that systems are made of parts that interact with one another. Students compare and contrast the changes that occur within systems. Students construct models to represent real things.

■ **Mastery**

Third grade students performing at the mastery level identify that systems are made of parts that interact with one another. Students identify and describe that changes occur within systems. Students identify that models are representations of real things.

■ **Partial Mastery**

Third grade students performing at the partial mastery level identify that systems are made of parts that interact with one another. Students identify that models are representation of real things.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.3.4.1 identify the structures of living things, including their systems and explain their functions (e.g., roots absorb water, circulatory system to move materials).

Life Cycles of Organisms

SC.3.4.2 observe, measure and record changes in living things (e.g., growth and development, variations within species).

Organisms and Environments

SC.3.4.3 compare physical characteristics and behaviors of living organisms and explain how they are adapted to a specific environment (e.g., beaks and feet in birds, seed dispersal, camouflage, different types of flowers).

SC.3.4.4 observe and describe relationships among organisms in an ecosystem (e.g., sequencing food chains, behavior, adaptations, factors that effect populations, predator-prey relationships).

Properties of Objects and Materials

SC.3.4.5 relate the buoyancy of an object to its density.

SC.3.4.6 identify physical and chemical properties.

SC.3.4.7 relate changes in states of matter to changes in temperature.

SC.3.4.8 investigate the dissolving of solids in liquids.

Light, Heat, Electricity and Magnetism

SC.3.4.9 investigate the absorption, reflection and refraction of light by objects.

SC.3.1.10 relate how the color of an object is based upon the absorption or reflection of light.

Position and Motion of Objects

SC.3.4.11 recognize that it takes work to move objects over a distance.

SC.3.4.12 recognize that speed, distance, and time are interrelated.

SC.3.4.13 recognize that the greater a force is exerted on an object, the greater the change of its motion will be.

SC.3.4.14 identify examples of potential and kinetic energy.

Changes in Earth and Sky

SC.3.4.15 identify fossils as a record of time (e.g., what organisms once lived on Earth, where they lived).

SC.3.4.16 explore the eroding of different materials by water and wind (e.g., sand, mud pile and rocks).

SC.3.4.17 describe how volcanoes and earthquakes change the Earth.

Objects in the Sky

SC.3.4.18 recognize the relative movement of the Sun and Moon in relationship to the Earth's position.

SC.3.4.19 describe the similarities and differences among the planets.

Properties of Earth Materials

SC.3.4.20 identify properties of minerals and recognize that rocks are composed of different minerals.

SC.3.4.21 explain how igneous, sedimentary and metamorphic rocks are formed.

SC.3.4.22 identify geographical features using a model or map (e.g., mountains, rivers, valleys, lakes, glaciers, volcanoes).

SC.3.4.23 describe the layers of the Earth and their various features.

Performance Descriptors (SC.PD.3.4)

■ **Distinguished**

Third grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students critique scientific applications; develop justifications for solutions to problems; and generate interconnections among the categories listed above.

■ **Mastery**

Third grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students explain interconnections among the categories listed above.

■ **Partial Mastery**

Third grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.3.5.1 cite examples of the uses of science and technology in common daily events and in the community.
- SC.3.5.2 explain a simple problem and identify a specific solution describing the use of tools and/or materials to solve the problem or to complete the task.

Performance Descriptors (SC.PD.3.5)

- **Distinguished**
Third grade students performing at the distinguished level describe the uses of science and technology in the community and throughout the world.
- **Mastery**
Third grade students performing at the mastery level identify the uses of science and technology in the community.
- **Partial Mastery**
Third grade students performing at the partial mastery level identify the uses of science and technology within the home.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.3.6.1 recognize that a solution to one scientific problem often creates new problems (e.g., recycling, pollution, conservation, waste disposal).
- SC.3.6.2 listen to and be tolerant of different viewpoints by engaging in collaborative activities and be willing to modify ideas when new and valid information is presented.
- SC.3.6.3 develop respect and responsibility for the environment by engaging in conservation practices.
- SC.3.6.4 describe how modern tools and appliances have positively and/or negatively impacted their daily lives.

Performance Descriptors (SC.PD.3.6)

- **Distinguished**
Third grade students performing at the distinguished level describe the impact that their personal choices have on the quality of life. Students cite and classify resources as renewable or nonrenewable and engage in conservation practices.
- **Mastery**
Third grade students performing at the mastery level identify the impact that personal choices have on the quality of their lives. Students identify resources as renewable or nonrenewable and engage in conservation practices.
- **Partial Mastery**
Third grade students performing at the partial mastery level recognize resources as renewable and nonrenewable and engage in conservation practices.

Fourth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Four objectives build on the study of geology, astronomy, chemistry and physics. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. CATS Four promotes cooperative learning, group decisions, cultural diversity, careers and expands the development of hands-on exploration. Basic science concepts are developed and problem-solving abilities are augmented. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.4.1.1 contrast changes in scientific knowledge resulting from new discoveries (e.g., new knowledge leads to new questions).
- SC.4.1.2 study the lives and discoveries of scientists of different cultures and backgrounds.
- SC.4.1.3 explore science careers in West Virginia.

Performance Descriptors (SC.PD.4.1)

■ **Distinguished**

Fourth grade students performing at the distinguished level analyze and draw conclusions about changes in scientific knowledge over time. Students compare and contrast science careers in West Virginia.

■ **Mastery**

Fourth grade students performing at the mastery level contrast changes in scientific knowledge over time. Students identify science careers in West Virginia.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level identify changes in scientific knowledge over time and identify science careers in West Virginia.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.4.2.1 demonstrate curiosity, initiative and creativity by developing questions that lead to investigations; designing simple experiments; and trusting observations of discoveries when trying new tasks and skills.
- SC.4.2.2 recognize that developing solutions to problems requires persistence, flexibility, open-mindedness, and alertness for the unexpected.
- SC.4.2.3 support statements with facts found through research in reference books, science-related magazines, multimedia and the Internet.
- SC.4.2.4 use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, telescope, thermometer, balances, magnets, tuning forks, bulbs and batteries, graduated cylinders, calculators, computers).
- SC.4.2.5 demonstrate safe and proper techniques for handling, manipulating and caring for science materials.
- SC.4.2.6 construct a hypothesis when provided a problem.
- SC.4.2.7 establish variables and controls in an experiment; test variables through experimentation.
- SC.4.2.8 interpret data presented in a table, graph, or diagram and use it to answer questions and make decisions.
- SC.4.2.9 draw and support conclusions, make predictions and inferences based on patterns of evidence (e.g., weather maps, change of speed in a given amount of time, change in wave motions with changes in energy, variation of plants).
- SC.4.2.10 apply mathematical skills and use metric units in measurements and calculations.

Performance Descriptors (SC.PD.4.2)

■ Distinguished

Fourth grade students performing at the distinguished level develop questions and propose solutions; use scientific instruments to make observations, measure and collect data; extract information from charts, tables and graphs. Students demonstrate safe and proper techniques for handling, manipulating and caring for scientific materials.

■ Mastery

Fourth grade students performing at the mastery level develop questions; use scientific instruments to make observations, measure and collect data; extract information from charts, tables and graphs. Students demonstrate safe and proper techniques for handling, manipulating, and caring for scientific materials.

■ Partial Mastery

Fourth grade students performing at the partial mastery level develop questions and make observations using scientific instruments. Students demonstrate safe and proper techniques for handling, manipulating, and caring for scientific materials.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.4.3.1 identify that systems are made of parts that interact with one another.
- SC.4.3.2 use models as representations of real things.
- SC.4.3.3 observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
- SC.4.3.4 given a set of objects, group or order the objects according to an established scheme.
- SC.4.3.5 given a set of events, objects, shapes, designs, or numbers, find patterns of constancy or regularity.

Performance Descriptors (SC.PD.4.3)

- **Distinguished**
Fourth grade students performing at the distinguished level explain the relationship between the form of an object or system and its function. Students construct models to represent systems.
- **Mastery**
Fourth grade students performing at the mastery level identify and describe how modifications to the parts of a system affect interactions between its parts. Students construct models to represent systems.
- **Partial Mastery**
Fourth grade students performing at the partial mastery level identify observable changes to the parts of the system. Students construct models to represent systems.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

- SC.4.4.1 describe the different characteristics of plants and animals which help them to survive in different niches and environments.
- SC.4.4.2 associate the behaviors of living organisms to external and internal influences (e.g., hunger, climate, seasons).
- SC.4.4.3 identify and classify variations in structures of living things including their systems and explain their functions (e.g., skeletons, teeth, plant needles, leaves).

Life Cycles of Organisms

- SC.4.4.4 compare and sequence changes in plant and animal life cycles.
- SC.4.4.5 understand that plants and animals closely resemble their parents and that some characteristics are inherited from the parents and others result from interaction with the environment.

Organisms and Environments

- SC.4.4.6 identify human uses of plants and animals (e.g., food sources, medicines).
- SC.4.4.7 describe environmental barriers to the migration of animals.
- SC.4.4.8 construct and explain models of habitats, food chains, and food webs.

Properties of Objects and Materials

- SC.4.4.9 investigate how properties can be used to identify substances.
- SC.4.4.10 investigate and compare the dissolving of different solids in a given liquid.
- SC.4.4.11 examine simple chemical changes (e.g., tarnishing, rusting, burning).
- SC.4.4.12 understand that materials including air mass, take up space and are made of parts that are too small to be seen without magnification.

- SC.4.4.13 identify various changes in states of matter to heat loss or gain.
 SC.4.4.14 investigate variables that affect the rate of evaporation of a liquid.
 SC.4.4.15 investigate the density of liquids.

Light, Heat, Electricity and Magnetism

- SC.4.4.16 identify different forms of energy and describe energy transformations that occur between them (e.g., electrical to heat, light to mechanical).
 SC.4.4.17 examine types and properties of waves (e.g., transverse, longitudinal, frequency, wavelengths).
 SC.4.4.18 investigate static electricity and conductors/nonconductors of electricity.
 SC.4.4.19 construct simple electrical circuits.
 SC.4.4.20 understand the relationship between a compass and a magnetic field.

Position and Motion of Objects

- SC.4.4.21 relate motion of an object to its frame of reference.
 SC.4.4.22 predict and investigate the motion of an object if the applied force is changed.
 SC.4.4.23 explore that sounds are produced by vibrating objects and columns of air and explore the relationship between frequency and pitch of sound.
 SC.4.4.24 investigate the change in the length, tension, or thickness of the vibrating object on the frequency of vibration (e.g., string, wire, rubber band).

Changes in Earth and Sky

- SC.4.4.25 become familiar with the geologic time scale.
 SC.4.4.26 locate and identify patterns of stars and their seasonal changes.
 SC.4.4.27 compare and explain the relative time differences to erode materials (e.g., a sand pile, mud pile, rock pile).
 SC.4.4.28 investigate the cause and effects of volcanoes, earthquakes and landslides.
 SC.4.4.29 interpret a weather chart or map.

Objects in the Sky

- SC.4.4.30 identify the sun as a star.
 SC.4.4.31 describe the orbits of the Sun and Moon.
 SC.4.4.32 describe and explain the planets orbital paths.

Properties of Earth Materials

- SC.4.4.33 describe the rock cycle.
 SC.4.4.34 explain the relationship between the rate of cooling and crystal size of igneous rocks .
 SC.4.4.35 compare ocean water and fresh water.

Performance Descriptors (SC.PD.4.4)

■ **Distinguished**

Fourth grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students critique scientific applications: develop justifications for solutions to problems; and generate interconnections among the categories listed above.

■ **Mastery**

Fourth grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students explain interconnections among the categories listed above.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.4.5.1 identify and explain a simple problem or task to be completed; identify a specific solution; and list task requirements.

SC.4.5.2 use an appropriate engineering design to solve a problem or complete a task.

Performance Descriptors (SC.PD.4.5)

■ **Distinguished**

Fourth grade students performing at the distinguished level develop an appropriate engineering design for a given task and produce a product or process that exceeds the task requirements.

■ **Mastery**

Fourth grade students performing at the mastery level identify an appropriate engineering design for a given task and produce a product or process to meet the task requirements.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level develop an engineering design for a given task and produce a product or process that does not meet the task requirements.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.4.6.1 recognize that a solution to one scientific problem often creates new problems (e.g., recycling, pollution, conservation, waste disposal, need for technology).
- SC.4.6.2 listen to and be tolerant of different viewpoints by engaging in collaborative activities and modifying ideas when new and valid information is presented from a variety of resources.
- SC.4.6.3 describe the positive and negative consequences of the application of technology on personal health and the environment.
- SC.4.6.4 develop respect and responsibility for the environment by engaging in conservation practices.

Performance Descriptors (SC.PD.4.6)

- **Distinguished**
Fourth grade students performing at the distinguished level compare and contrast the positive and negative consequences of technology applications on personal health, populations, and the environment.
- **Mastery**
Fourth grade students performing at the mastery level describe the positive and negative consequences of technology application on personal health, populations and the environment.
- **Partial Mastery**
Fourth grade students performing at the partial mastery level list the consequences of technology on personal health, populations and on the environment.

Fifth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Five objectives identify, compare, classify and explain our living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics, and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Five reviews earth and the sky, life cycles and habitats of organisms, properties, positions and motions of objects and energy. New major concepts introduced at the fifth grade level include changes in properties of matter, structures, functions and adaptations of organisms, and the structure of the earth's system. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.5.1.1 realize that scientists formulate and test their explanations of nature using observation and experiments.
- SC.5.1.2 recognize scientific knowledge is subject to modification as new scientific information challenges current explanations.
- SC.5.1.3 examine the careers and contributions of men and women of diverse cultures to the development of science
- SC.5.1.4 articulate the historical significance of scientific discoveries.

Performance Descriptors (SC.PD.5.1)

■ Distinguished

Fifth grade students performing at the distinguished level compare and contrast the careers and contributions of men and women from diverse cultures and articulate the historical significance of their scientific discoveries.

■ Mastery

Fifth grade students performing at the mastery level explain the careers and contributions of men and women from diverse cultures and articulate the historical significance of their scientific discoveries.

■ Partial Mastery

Fifth grade students performing at the partial mastery level recognize careers and contributions of men and women from diverse cultures.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.5.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.5.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.5.2.3 apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.5.2.4 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.5.2.5 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.5.2.6 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.5.2.7 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.5.2.8 use inferential reasoning to make logical conclusions from collected data.

Performance Descriptors (SC.PD.5.2)

■ **Distinguished**

Fifth grade students performing at the distinguished level develop questions, generate hypothesis, propose solutions and draw conclusions. Students use scientific instruments to make observations, measure, and collect data. Students collect, organize and display their data; extract information from charts, tables and graphs. Students routinely apply safety techniques.

■ **Mastery**

Fifth grade students performing at the distinguished level develop questions and propose solutions. Students use scientific instruments to make observations, measure and collect data. Students collect, organize and display their data; extract information from charts, tables and graphs. Students routinely apply safety techniques.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level develop questions; use scientific instruments to make observations, measure and collect data; use information from charts, tables and graphs. Students routinely apply safety techniques.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.5.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take a part or build mechanical, electrical, or biological systems).
- SC.5.3.2 construct a variety of useful models of an object, event, or process.
- SC.5.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.5.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD.5.3)

■ Distinguished

Fifth grade students performing at the distinguished level compare and contrast the relationships between the forms of objects or systems and their functions. Students design models to represent systems.

■ Mastery

Fifth grade students performing at the mastery level use models to explain the relationship between the form of an object or system and its function.

■ Partial Mastery

Fifth grade students performing at the partial mastery level identify that there is a relationship between form and function.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

- SC.5.4.1 demonstrate an understanding of the interconnections of biological, earth and space, and physical science concepts.

Structure and Function in Living Systems

- SC.5.4.2 identify and explain common energy conversions in cycles of matter including photosynthesis and carbon dioxide cycle.

- SC.5.4.3 identify the structures of living organisms and explain their function.

- SC.5.4.4 observe and identify cells of organisms using a microscope.

Life Cycles of Organisms: Reproduction and Heredity

- SC.5.4.5 compare variations of plant growth and reproduction.

Populations and Ecosystems

- SC.5.4.6 explain how the different characteristics of plants and animals help them to survive in different niches and environments including adaptations, natural selection, extinction.

- SC.5.4.7 explore the extinction of a species due to environmental conditions.

- SC.5.4.8 trace and describe the pathways of the sun's energy through producers, consumers and decomposers using food webs and pyramids.

Properties of Objects and Materials

- SC.5.4.9 explain that the mass of a material is conserved whether it is together, in parts, or in a different state.

- SC.5.4.10 recognize that elements are composed of only one type of matter.

- SC.5.4.11 using the periodic table, identify common elements according to their symbols.

- SC.5.4.12 identify substances by their relative densities (e.g., floating; sinking).

Light, Heat, Electricity and Magnetism

SC.5.4.13 analyze diagrams of electrical circuits.

SC.5.4.14 use SI (metric) measurement units of volts, amps and watts as they apply to electricity.

SC.5.4.15 investigate the properties of an electromagnet.

Position and Motion of Objects

SC.5.4.16 describe how the variables of gravity and friction affect the motion of objects.

SC.5.4.17 compare and contrast the change in length, tension, or thickness of a vibrating object on the frequency of vibration.

Structure of the Earth System

SC.5.4.18 describe the layers of the earth and their various features.

SC.5.4.19 identify and describe natural landforms, how they change and impact weather and climate.

SC.5.4.20 use a variety of instruments and sources to collect and display weather data to describe weather patterns (e.g., temperatures, wind direction, wind speed, precipitation).

SC.5.4.21 compare and explain the different rates of weathering, erosion and deposition in certain materials.

SC.5.4.22 identify land features and elevations on a topographical map.

SC.5.4.23 identify resources as being renewable or non-renewable.

Earth's History

SC.5.4.24 explore and explain how fossils and geologic features can be used to determine the relative age of rocks and rock layers.

SC.5.4.25 identify that the Earth is made of plates (plate tectonics).

Performance Descriptors (SC.PD.5.4)

■ Distinguished

Fifth grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History

Students critique scientific applications; develop justifications for solutions to problems; articulate abstract concepts; and generate interconnections among the categories listed above.

■ Mastery

Fifth grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History

Students explain interconnections among the categories listed above.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.5.5.1 research everyday applications and interactions of science and technology.

SC.5.5.2 implement engineering solutions for given tasks and measure their effectiveness.

Performance Descriptors (SC.PD.5.5)

■ **Distinguished**

Fifth grade students performing at the distinguished level compare and contrast the interactions between science and technology in daily living. Given a task, students implement an engineering solution, measure and evaluate its effectiveness.

■ **Mastery**

Fifth grade students performing at the mastery level describe the interactions between science and technology in daily living. Given a task, students implement an engineering solution and measure its effectiveness.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level identify interactions between science and technology in daily living.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.5.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.5.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.5.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.5.6.4 explore the connections between science, technology, society and career opportunities.
- SC.5.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.5.6)

- **Distinguished**

Fifth grade students performing at the distinguished level analyze the causes/effects of science and technology on global and local problems. Students identify and describe the connections between science, technology, society and career opportunities.

- **Mastery**

Fifth grade students performing at the mastery level analyze the cause/effect of science and technology on global and local problems. Students identify the connections between science, technology, society and career opportunities.

- **Partial Mastery**

Fifth grade students performing at the partial mastery level list causes/effects of science and technology on local problems.

Sixth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Six objectives demonstrate, differentiate, and apply concepts of the living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics, and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Six reviews changes in the properties of matter, structures, functions and adaptations of organisms, and the structure of the earth's systems. New major concepts introduced at the sixth grade level include motions and forces, ecosystems, diversity of life, energy transformations, plate tectonics, earth's resources and weather. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.6.1.1 explain that scientists formulate and test their explanations of nature using observation and experiments.
- SC.6.1.2 recognize that scientific knowledge is subject to modification as new scientific information challenges current theories.
- SC.6.1.3 associate the careers and contributions of men and women of diverse cultures to the development of science.
- SC.6.1.4 articulate the historical significance of scientific discoveries as influenced by technological demands, competition, controversy, world events, personalities and societal issues.

Performance Descriptors (SC.PD.6.1)

■ Distinguished

Sixth grade students performing at the distinguished level use historical examples to show how scientists formulate and test their explanations. Students provide evidence of how careers relate with scientific fields of study.

■ Mastery

Sixth grade students performing at the mastery level explain how scientists formulate and test their explanations. Students associate careers with scientific fields of study.

■ Partial Mastery

Sixth grades students performing at the partial mastery level recall how scientists formulate and test their explanations. Students match careers with specific scientific fields of study.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.6.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.6.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.6.2.3 apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.6.2.4 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.6.2.5 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.6.2.6 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.6.2.7 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.6.2.8 use inferential reasoning to make logical conclusions from collected data.
- SC.6.2.9 use appropriate technology solutions to gather data; graph data; interpret data; and analyze information.

Performance Descriptors (SC.PD.6.2)

■ **Distinguished**

Sixth grade students performing at the distinguished level evaluate selected scientific processes and skills, such as formulating questions, making predictions, and forming hypothesis for a given problem; analyze records for consistency and accuracy; construct appropriate charts, tables and graphs. Students explain safety techniques and choose proper equipment to solve the problems (Science Subject Matter/Concept appropriate).

■ **Mastery**

Sixth grade students performing at the mastery level use scientific processes and skills to formulate questions, make predictions and form hypothesis; maintain consistent and accurate records; organize data into appropriate charts, tables and graphs. Students explain safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

■ **Partial Mastery**

Sixth grade students performing at the partial mastery level identify scientific process and skills used to formulate questions, make predictions and form hypothesis; maintain consistent and accurate records; select appropriate data on charts, tables and graphs. Students routinely apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze, and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.6.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take apart or build mechanical, electrical, or biological systems).
- SC.6.3.2 construct a variety of useful models of an object, event, or process.
- SC.6.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.6.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD.6.3)

■ **Distinguished**

Sixth grade students performing at the distinguished level evaluate the accuracy of models (e.g. physical, pictorial) of objects or systems and predict how to manipulate variables to improve the model.

■ **Mastery**

Sixth grade students performing at the mastery level design models (e.g. physical, pictorial) of objects or systems and predict how variables affect their function.

■ **Partial Mastery**

Sixth grade students performing at the partial mastery level use models (e.g. physical, pictorial) of objects or systems and identify and describe how changing variables effects their function.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

SC.6.4.1 demonstrate an understanding of the interconnections of biological, earth and space and physical science concepts.

Structure and Function in Living Systems

SC.6.4.2 describe the interactions of various cycles that provide energy through decomposition, photosynthesis, respiration, transpiration in the food web; nitrogen cycle.

SC.6.4.3 classify living organisms according to their structure and functions.

SC.6.4.4 compare the similarities of internal features of organisms which can be used to infer relatedness.

SC.6.4.5 explain how abiotic and biotic factors affect the interdependence among organisms.

SC.6.4.6 construct models of plant and animal cells which show the basic parts (e.g., cytoplasm, cell wall, cell membrane, nucleus, chloroplasts).

Life Cycles of Organisms: Reproduction and Heredity

SC.6.4.7 compare growth patterns in different plants (e.g., mosses, ferns, perennials, biennials, woody plants, herbaceous plants).

Populations and Ecosystems

SC.6.4.8 demonstrate changes in populations of organisms due to limiting environmental factors (e.g., food supply, predators, disease, habitat).

SC.6.4.9 analyze the ecological consequences of human interactions with the environment (e.g., renewable and non-renewable resources).

Structure and Properties of Matter

SC.6.4.10 classify and investigate properties and processes (changes) as either physical and chemical.

SC.6.4.11 investigate the composition of matter concluding that matter is composed of tiny particles and that the particles are the same for the same type of matter.

SC.6.4.12 investigate the formation and separation of simple mixtures.

SC.6.4.13 use indicators to identify substances as acidic, basic or neutral.

SC.6.4.14 identify the symbols of elements.

SC.6.4.15 use the periodic table to identify elements as solids, liquids and gases, metals or nonmetals.

SC.6.4.16 describe properties of matter (e.g., inertia, specific heat, malleability, melting point, density).

Energy

SC.6.4.17 investigate the properties electromagnetic spectrum (e.g., wavelengths, frequencies, visible light); relate wave lengths and/or frequency to position on electromagnetic spectrum (e.g., colors, x-ray).

SC.6.4.18 identify factors affecting reflection and refraction (e.g., nature of surfaces, color, density of medium).

SC.6.4.19 explain absorption and reflection of light by different objects of various colors and textures (e.g., transparent, translucent, opaque, different colors).

SC.6.4.20 describe the flow of heat between objects (e.g., hot air rises, absorption and release of heat by metals).

SC.6.4.21 diagram simple parallel and series circuits (e.g., bulbs, battery, wires, switch).

Motion and Forces

- SC.6.4.22 interpret the relationship of mass to gravitational force (e.g., larger the mass the larger the gravitational force, the closer the objects the stronger the force).
- SC.6.4.23 examine simple machines and the forces involved; apply the effects of balanced and unbalanced forces on motion of objects.
- SC.6.4.24 explain motion in terms of frames of reference and analyze graphs depicting motion and predicted future motion.

Structure of the Earth System

- SC.6.4.25 track major atmospheric events.
- SC.6.4.26 describe and demonstrate the forces and results of plate tectonics.

Earth's History

- SC.6.4.27 describe changes in the rock record due to geologic and physical events over time. (e.g., rock cycle as it relates to plate tectonics.).

Earth and the Solar System

- SC.6.4.28 recognize the phases of the Moon.
- SC.6.4.29 investigate models of Earth-Moon-Sun relationships (e.g., gravity, time, tides).
- SC.6.4.30 compare the Earth's tilt and revolution to the seasonal changes.

Performance Descriptors (SC.PD.6.4)

■ **Distinguished**

Sixth grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students critique scientific applications; develop justifications for solutions to problems; articulate abstract concepts; and generate interconnections among the categories listed above.

■ **Mastery**

Sixth grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students explain interconnections among the categories listed above.

■ **Partial Mastery**

Sixth grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.6.5.1 given a set of attributes, produce a product or process and cite how design priorities (e.g., space, safety) and available materials impact the outcome.
- SC.6.5.2 evaluate the appropriateness of the materials and procedures in given engineering solutions.

Performance Descriptors (SC.PD.6.5)

■ **Distinguished**

Sixth grade students performing at the distinguished level predict the consequences of using inappropriate materials in engineering solutions.

■ **Mastery**

Sixth grade students performing at the mastery level examine engineering solutions and evaluate the appropriateness of the materials and procedures.

■ **Partial Mastery**

Sixth grade students performing at the partial mastery level describe the solution of an engineering task and evaluate the appropriateness of the materials and procedures.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.6.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.6.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.6.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.6.6.4 explore the connections between science, technology, society and career opportunities.
- SC.6.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.6.6)

- **Distinguished**

Sixth grade students performing at the distinguished level provide alternative points of view on ways science/technology/society impacts specific health, population, resources and environmental practices.

- **Mastery**

Sixth grade students performing at the mastery level describe how science/technology/society impacts specific health, population, resources and environmental practices.

- **Partial Mastery**

Sixth grade students performing at the partial mastery level identify how science/technology/society impacts specific resources and environmental practices.

Seventh Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Seven objectives evaluate, interpret, and predict conditions and phenomena of the living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. CATS Seven reviews motions and forces, ecosystems, diversity of life, energy transformations, plate tectonics, earth's resources and weather. Major concepts expanded at the seventh grade level include elements, mixtures, and compounds, populations/ecosystems, conservation of matter and energy and earth's history. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.7.1.1 realize that scientists formulate and test their explanations of nature using observation, experiments and theoretical models.
- SC.7.1.2 recognize and appreciate that scientific knowledge is subject to modification as new scientific information challenges current theories.
- SC.7.1.3 examine the role of skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.7.1.4 examine the careers and contributions of men and women of diverse cultures to the development of science.
- SC.7.1.5 articulate the historical significance of scientific discoveries as influenced by technological demands, competition, controversy, world events, personalities and societal issues.

Performance Descriptors (SC.PD.7.1)

■ Distinguished

Seventh grade students performing at the distinguished level when given a scientific investigation, scrutinize the motives and evaluate the role of skepticism, recognizing bias, methodology, logical reasoning and creativity in scientific investigations. Students predict the impact of current scientific contributions of men and women of diverse cultures on society.

■ Mastery

Seventh grade students performing at the mastery level explain the role of skepticism, recognizing bias, methodology, logical reasoning and creativity in scientific investigations. Students interpret the impact of the scientific contributions of men and women of diverse cultures on society.

■ Partial Mastery

Seventh grade students performing at the partial mastery level list examples of the role played by skepticism, recognizing bias, methodology, logical reasoning and creativity in scientific investigations. Students list scientific contributions of men and women of diverse cultures on society.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.7.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.7.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.7.2.3 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.7.2.4 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.7.2.5 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.7.2.6 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.

- SC.7.2.7 use appropriate technology solutions to gather data; graph data; interpret data; and analyze information.
- SC.7.2.8 use inferential reasoning to make logical conclusions from collected data.

Performance Descriptors (SC.PD.7.2)

■ **Distinguished**

Seventh grade students performing at the distinguished level design an experiment that incorporates independent, dependent, controlled variables; use multiple trials in an experiment for reliability; suggest multiple alternative approaches to investigations. Students apply safety techniques and choose the proper equipment to solve problems (Science Subject Matter/Concept appropriate).

■ **Mastery**

Seventh grade students performing at the mastery level identify independent, dependent, controlled variables; and use multiple trials in an experiment for reliability. Students suggest an alternative approach to investigations. Students apply safety techniques using proper equipment to solve problems (Science Subject Matter/Concept appropriate).

■ **Partial Mastery**

Seventh grade students performing at the partial mastery level define independent, dependent, controlled variables and explain why multiple trials in an experiment are necessary for reliability. Students apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.7.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take apart or build mechanical, electrical or biological systems).
- SC.7.3.2 construct a variety of useful models of an object, event or process.
- SC.7.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.7.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD.7.3)

■ **Distinguished**

Seventh grade students performing at the distinguished level, given a set of conditions, predict and defend future changes that could occur in an object or system over time.

■ **Mastery**

Seventh grade students performing at the mastery level analyze and describe the changes that occur in an object or system over time.

■ **Partial Mastery**

Seventh grade students performing at the partial mastery level describe the changes that occur in an object or system over time.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

- SC.7.4.1 demonstrate an understanding of the interconnections of biological, earth and space and physical science concepts.

Structure and Function in Living Systems

- SC.7.4.2 identify and describe disease causing organisms and the diseases they cause such as bacteria, viruses, protozoa, fungi.
- SC.7.4.3 explain how the skeletal, muscular and integumentary systems work together in the human body.
- SC.7.4.4 compare the level of organization of cells, tissues and organs in living things.
- SC.7.4.5 construct simple keys to differentiate among living things with similar characteristics.
- SC.7.4.6 use pictures to show cyclical processes in nature (e.g., water cycle, nitrogen cycle, and carbon cycle).

Life Cycles of Organisms: Reproduction and Heredity

- SC.7.4.7 evaluate how the different adaptations and life cycles of plants and animals help them to survive in different niches and environments (e.g., inherited and acquired adaptations).
- SC.7.4.8 analyze how changes in the environment have led to reproductive adaptations through natural selection.
- SC.7.4.9 relate how an organisms behavior response is a combination of heredity and environment.
- SC.7.4.10 analyze the differences in the growth, development and reproduction of flowering and non-flowering plants.

Populations and Ecosystems

- SC.7.4.11 predict the trends of interdependent populations if one of the limiting factors is changed.
- SC.7.4.12 evaluate the consequences of the introduction of chemicals into the ecosystem (e.g., environmental consequences, human health risks, mutations).

Structure and Properties of Matter

- SC.7.4.13 differentiate among elements, compounds, homogeneous and heterogeneous mixtures.
- SC.7.4.14 evaluate types of solutions (e.g., solutes and solvents relative concentrations, conductivity, pH).

Chemical Reactions

- SC.7.4.15 study chemical reactions involving acids and bases by monitoring color changes of indicator(s) and identifying the salt formed in the neutralization reaction.
- SC.7.4.16 write word equations to describe chemical reactions.

Energy

- SC.7.4.17 describe the behavior of individual particles and verify the conservation of matter (e.g., melting and freezing of pure substances).
- SC.7.4.18 trace the energy flow during phase changes
- SC.7.4.19 define characteristics of light and sound waves and describe how sound is perceived by the ear and light is perceived by the eye.
- SC.7.4.20 investigate application of lenses to science (e.g., microscopes, telescopes, magnifying glass, periscopes).
- SC.7.4.21 identify characteristics of AC and DC circuits.

- SC.7.4.22 explain conservation of matter and energy qualitatively and recognize that energy can be changed from one form to another.

Motion and Forces

- SC.7.4.23 perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
- SC.7.4.24 explain the effect of gravity on falling objects (e.g., $g = 9.8\text{m/s}^2$, object dropped on earth and on moon).
- SC.7.4.25 analyze motion graphically and use vectors to represent direction of motion.

Structure of the Earth System

- SC.7.4.26 depict and relate causes of tides, surfs and currents.
- SC.7.4.27 examine the relationships among air masses, oceans, weather, convection currents and the sun's energy.
- SC.7.4.28 interpret and create topographical maps.

Earth's History

- SC.7.4.29 compare and contrast periods of geologic time using rocks and rock layers.

Earth and the Solar System

- SC.7.4.30 explain and model using manipulatives how the Earth's tilt and revolution determine the seasonal changes and weather patterns.
- SC.7.4.31 recognize the changes involved in the life cycle of a star.
- SC.7.4.32 describe and compare the physical characteristics of celestial objects.
- SC.7.4.33 compare the characteristics of the members of our solar system.

Performance Descriptors (SC.PD.7.4)

■ **Distinguished**

Seventh grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students critique scientific applications; develop justifications for solutions to problems; articulate abstract concepts; and generate interconnections among the categories listed above.

■ **Mastery**

Seventh grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students explain interconnections among the categories listed above.

■ **Partial Mastery**

Seventh grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.7.5.1 make and compare different proposed solutions to an identified problem in light of specified criteria.
- SC.7.5.2 test and evaluate different types of materials and/or design approaches in building objects or completing tasks.

Performance Descriptors (SC.PD.7.5)

■ **Distinguished**

Seventh grade students performing at the distinguished level illustrate the variations between two designs using different materials to solve an engineering problem and defend each design.

■ **Mastery**

Seventh grade students performing at the mastery level predict the consequences of using inappropriate materials in engineering solutions.

■ **Partial Mastery**

Seventh grade students performing at the partial mastery level distinguish between appropriate and inappropriate materials in engineering solutions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.7.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.7.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.7.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.7.6.4 explore the connections between science, technology, society and career opportunities.
- SC.7.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.7.6)

- **Distinguished**

Seventh grade students performing at the distinguished level analyze the personal motives and societal cost and benefits of health, population, resources and environmental practices.

- **Mastery**

Seventh grade students performing at the mastery level describe the personal and societal costs and benefits of health, population, resources and environmental practices.

- **Partial Mastery**

Seventh grade students performing at the partial mastery level identify the personal and societal cost and benefits of health, population, resources and environmental practices.

Eighth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Eight objectives analyze, quantify, and explain conditions and phenomena of the living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. CATS Eight reviews elements, mixtures, and compounds, populations/ecosystems, conservation of matter and energy and earth's history. Major concepts introduced at the eighth grade level include reproduction, genetics, behavior, chemical reactions and environmental concerns. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.8.1.1 realize that scientists formulate and test their explanations of nature using observation, experiments and theoretical models.
- SC.8.1.2 recognize and appreciate that scientific knowledge is subject to modification as new scientific information challenges current theories.
- SC.8.1.3 apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.8.1.4 examine the careers and contributions of men and women of diverse cultures to the development of science.
- SC.8.1.5 articulate the historical significance of scientific discoveries as influenced by technological demands, competition, controversy, world events, personalities and societal issues.

Performance Descriptors (SC.PD.8.1)

■ Distinguished

Eighth grade students performing at the distinguished level make inferences about changes in scientific knowledge using current and historical scientific discoveries. Students trace the development of a key historical discovery.

■ Mastery

Eighth grade students performing at the mastery level make inferences about changes in science knowledge using current and historical scientific discoveries.

■ Partial Mastery

Eighth grade students performing at the partial mastery level identify changes that have occurred in scientific knowledge using current or historical discoveries.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.8.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.8.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.8.2.3 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.8.2.4 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.8.2.5 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.8.2.6 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.8.2.7 use appropriate technology solutions to gather, graph and interpret data and analyze information.
- SC.8.2.8 use inferential reasoning to make logical conclusions from collected data.

Performance Descriptors (SC.PD.8.2)

■ **Distinguished**

Eighth grade students performing at the distinguished level design an experiment that solves a problem; collect, organize and graph the data applying the measurement of central tendency and frequency to draw conclusions. Students apply safety techniques and use proper equipment to solve the problem (Science Subject Matter/Concept appropriate).

■ **Mastery**

Eighth grade students performing at the mastery level organize, graph, analyze data and draw conclusions from data collected in experiments; calculate measures of central tendency (mean, median, mode) and frequency. Students routinely apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level organize, graph and analyze data and draw conclusions from data collected in experiments. Students apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.8.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take apart or build mechanical, electrical, or biological systems).
- SC.8.3.2 construct a variety of useful models of an object, event, or process.
- SC.8.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.8.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD. 8.3)

■ **Distinguished**

Eighth grade students performing at the distinguished level construct a scale model and design a test to show the effects of variation in scale.

■ **Mastery**

Eighth grade students performing at the mastery level construct scale models and predict the influences that a variation in scale will have on an object or system.

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level compare scale models of an object or system. Describe the effects of variation in scale on the object or system.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

SC.8.4.1 demonstrate an understanding of the interconnections of biological, earth and space, and physical science concepts.

Structure and Function in Living Systems

SC.8.4.2 identify and explain the structures and functions of cell organelles.

SC.8.4.3 explain how the circulatory, respiratory and reproductive systems work together in the human body.

SC.8.4.4 compare the variations in cells, tissues and organs of the circulatory, respiratory and reproductive systems of different organisms.

SC.8.4.5 demonstrate how living cells obtain the essentials of life through chemical reactions of transpiration, respiration and photosynthesis.

Life Cycles of Organisms: Reproduction and Heredity

SC.8.4.6 analyze how behaviors of organisms lead to species continuity (e.g., reproductive/mating behaviors, seed dispersal).

SC.8.4.7 demonstrate the basic principles of genetics to include Mendel's laws, DNA, monohybrid crosses, production of sperm and egg, production of body cells, genes, chromosomes, inherited traits.

SC.8.4.8 examine how patterns of human development are similar to other vertebrates.

Populations and Ecosystems

SC.8.4.9 group unknown organisms based on observable characteristics (e.g., use dichotomous keys).

SC.8.4.10 trace matter and energy flow in a food web as it goes from sunlight to producers to consumers, design an environment in which the chemical and energy needs for the growth, reproduction and development of plants are met (e.g., food pyramids, decomposition).

Structure and Properties of Matter

SC.8.4.11 use the periodic table to locate and classify elements as metallic, non-metallic or metalloid.

SC.8.4.12 trace the development of the model of the atom (e.g. Crookes, Thompson, Becquerel, Rutherford, Bohr).

SC.8.4.13 determine the number of protons, neutrons and electrons and use information to draw a Bohr model of the atom.

SC.8.4.14 assign an element to its chemical family on the periodic table and note similarities in outer energy level electrons within each family.

SC.8.4.15 evaluate gaseous systems noting the variation in diffusion rates and examine the expansion of gases at elevated temperatures.

Chemical Reactions

SC.8.4.16 conduct and classify chemical reactions by reaction type (synthesis, decomposition, single replacement or double replacement); energy type (endothermic and exothermic); and write word equations for the chemical reactions.

SC.8.4.17 identify chemical reaction factors that might affect the reaction rates including catalysts, temperature changes, light energies and particle size.

Energy

- SC.8.4.18 identify types of energy and their sources (e.g., petroleum refinement, windmills, geothermal).
- SC.8.4.19 interpret and illustrate changes in waves as they pass through various mediums (e.g., sound through water and metal, light through thicknesses of glass).
- SC.8.4.20 apply the conservation of energy theory to energy transformations (e.g., electrical/heat, heat/mechanical).
- SC.8.4.21 quantitatively represent work, power, pressure (e.g., $W=fd$, $P=W/t$, pressure = force/area).

Motion and Forces

- SC.8.4.22 graph and interpret the relationships (e.g., distance versus time, speed versus time, acceleration versus time).
- SC.8.4.23 describe Newton's Laws of Motion; identify examples; illustrate qualitatively and quantitatively drawing vector quantities.
- SC.8.4.24 illustrate quantitatively mechanical advantage of simple machines.

Structure of the Earth System

- SC.8.4.25 summarize problems related to water on earth as a life sustaining substance (e.g., quality and quantity of surface and ground water).
- SC.8.4.26 identify the principle forces of plate tectonics and related geological events.
- SC.8.4.27 relate global patterns of atmospheric movement on local weather and the impact of oceans on weather and climate.

Earth's History

- SC.8.4.28 relate rock formations to the types of fossil fuels.
- SC.8.4.29 describe the factors involved in mining resources.
- SC.8.4.30 construct and interpret rock layer models through stratigraphic interpretation.

Earth and the Solar System

- SC.8.4.31 recognize societal concerns with exploration and colonization of space.
- SC.8.4.32 diagram the motions of the Sun, Moon and Earth and explain the phenomena associated with these motions (e.g., glacial periods, eclipses, tides, meteor showers).
- SC.8.4.33 compare and contrast the orbits of planets and comets.
- SC.8.4.34 compare and contrast the different types of galaxies (e.g., shape, size, components).

Performance Descriptors (SC.PD.8.4)

■ **Distinguished**

Eighth grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students critique scientific applications; develop justifications for solutions to problems; articulate abstract concepts; and generate interconnections among the categories listed above.

- **Mastery**

Eighth grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students explain interconnections among the categories listed above.

- **Partial Mastery**

Eighth grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Structure and Function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.8.5.1 research applications of space technology in everyday life (e.g., velcro, teflon, weather satellites).
- SC.8.5.2 compare scientific inquiry and technological design processes.
- SC.8.5.3 explain why no technological design is perfect (e.g., constraints lead to tradeoffs).
- SC.8.5.4 design and construct engineering solutions to problems according to specified constraints.

Performance Descriptors (SC.PD.8.5)

- **Distinguished**

Eighth grade students performing at distinguished level evaluate the design of an engineering solution to identify the compliance within specific constraints (e.g., environmental issues, aesthetics, financial limitations).

- **Mastery**

Eighth grade students performing at the mastery level design and construct an engineering solution to a given problem with specified constraints (e.g., environmental issues, aesthetics, financial limitations).

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level identify the influences of specified constraints (e.g., environmental issues, aesthetics, financial limitations) on an engineering solution.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.8.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.8.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.8.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.8.6.4 explore the connections between science, technology, society and career opportunities.
- SC.8.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.8.6)

■ **Distinguished**

Eighth grade students performing at the distinguished level design a strategy to counteract the negative effects of science/technology/society on a global or local problem.

■ **Mastery**

Eighth grade students performing at the mastery level analyze and evaluate effects of science/technology/society on global and local problems.

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level describe the science/technology/society effects on a global or local problem.

Ninth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Nine objectives continue the development of foundational knowledge in biology, chemistry, physics, and the earth and sciences. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy across these major fields of science. Subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50 percent of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. Building on the knowledge and skills acquired in CATS Eight, students in CATS Nine will expand and deepen their understanding of major concepts such as energy interactions, genetic probabilities, chemical changes and mineral composition of local rock layers. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.9.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- SC.9.1.2 recognize that science has practical and theoretical limitations.
- SC.9.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- SC.9.1.4 conclude that science is a blend of creativity, logic and mathematics.
- SC.9.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.

Performance Descriptors (SC.PD.9.1)

■ Distinguished

Ninth grade students performing at the distinguished level match scientific explanations to historical observations and experimental evidence and identify variability in experimental results. Students describe the historical setting accounting for the evolvement of key historical concepts and principals.

■ Mastery

Ninth grade students performing at the mastery level paraphrase scientific explanations for historical observations and experimental evidence and support through examples that science is a blend of creativity, logic and mathematics. Students trace the development of key scientific concepts and principles.

■ Partial Mastery

Ninth grade students performing at partial mastery identify scientific explanations for historical observations and experimental evidence and recognize that science is a blend of creativity, logic and mathematics. Students relate the development of key scientific concepts and principles.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.9.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- SC.9.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- SC.9.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- SC.9.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- SC.9.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- SC.9.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- SC.9.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives and applying).
- SC.9.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Performance Descriptors (SC.PD.9.2)

■ **Distinguished**

Ninth grade students performing at the distinguished level analyze those skills and/or values including ethical practices that exemplify scientific inquiry. Students conduct safe experiments and draw conclusions given a complex, real world application.

■ **Mastery**

Ninth grade students performing at the mastery level select those skills and/or values, to include ethical practices that exemplify scientific inquiry. Students conduct safe experiments and draw conclusions given a real world application.

■ **Partial Mastery**

Ninth grade students performing at the partial mastery level select those skills and or values including ethical practices that exemplify scientific inquiry. Students conduct safe experiments and choose appropriate conclusions.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.9.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- SC.9.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- SC.9.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- SC.9.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Performance Descriptors (SC.PD.9.3)

■ **Distinguished**

Ninth grade students performing at the distinguished level use mathematical models incorporating both graphs and equations to predict short- and long-term changes in cyclical and linear biological and physical systems.

■ **Mastery**

Ninth grade students performing at the mastery level use mathematical models incorporating both graphs and equations to compare cyclical or linear changes in biological and physical systems that evolve over time.

■ **Partial Mastery**

Ninth grade students performing at the partial mastery level use mathematical models incorporating graphs or equations to describe systems in equilibrium and those that are evolving.

Standard 4: Science Subject Matter/Concepts

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives (SC.S.4)

Students will:

- SC.9.4.1 demonstrate an understanding of the interconnections of biological, earth/space and physical science concepts.

The Cell and Molecular Basis for Heredity

- SC.9.4.2 analyze and explain the principles of genetics (e.g., monohybrid and dihybrid crosses, mutations, genotypes, phenotypes, X and Y chromosomes, multiple alleles, DNA, probability, diversity).

- SC.9.4.3 illustrate meiosis and mitosis and relate to chromosome number and production of sperm, egg and body cells.

The Interdependence of Organisms

- SC.9.4.4 mathematically illustrate changes in populations of organisms.
- SC.9.4.5 identify and describe microscopic organisms and foreign substances in the environment and their harmful effects (e.g., microorganisms, mutagens, carcinogens).
- SC.9.4.6 design an environment that demonstrates the interdependence of plants and animals (e.g., energy and chemical cycles, adaptations of structures and behaviors).

Matter, Energy, and Organization in Living Systems

- SC.9.4.7 explain how excretory, digestive systems work together in the human body.
- SC.9.4.8 identify and compare the structure and function of cell, tissues and systems of different organisms.
- SC.9.4.9 identify the organisms and the chemical processes involved in the decay of materials.
- SC.9.4.10 trace the transfer of matter and energy in the chemical/molecular processes of photosynthesis, respiration and fermentation.

Structure and Properties of Matter

- SC.9.4.11 using the element's position on the Periodic Table, predict physical and chemical properties.
- SC.9.4.12 describe the characteristics of radioactivity substances including alpha particles, beta particles and gamma rays; the half life of a radioactive isotope; a chain reaction; and differentiate between fission and fusion.
- SC.9.4.13 investigate the relationship between the density of an object, its mass, and its volume.
- SC.9.4.14 investigate physical states of matter including descriptions of the behavior of atoms and molecules in terms of the Kinetic Molecular Theory.

Chemical Reaction

- SC.9.4.15 write formulas and name compounds given oxidation numbers of monatomic and polyatomic ions.
- SC.9.4.16 identify the various types of chemical bonds and the resulting compounds that are formed (e.g., ionic, nonpolar covalent, polar covalent).
- SC.9.4.17 experimentally determine the products of chemical reactions; write balanced chemical equations; classify type of reaction; and describe energy changes.

Energy

- SC.9.4.18 identify, describe and differentiate various forms of energy and energy transformations.
- SC.9.4.19 relate absorption and dissipation of heat to the composition of a material.
- SC.9.4.20 demonstrate and diagram a magnetic field using bar magnets and iron fillings.
- SC.9.4.21 hypothesize and experiment when different components are substituted in an electrical circuit; define and solve electrical problems involving potential difference, Ohm's Law and power.

Motions and Forces

- SC.9.4.22 relate the forces between charged objects to the charge on the objects and the distance between them.
- SC.9.4.23 review foundational concepts of kinematics (e.g., speed-distance-time relationships) and dynamics (e.g., Newton's Laws, simple machines).
- SC.9.4.24 experiment with a pendulum to determine which variables (amplitude, mass, length) will affect the motion of the pendulum.
- SC.9.4.25 investigate types of waves and their properties including interference, diffraction, resonance; differences and similarities between transverse and longitudinal waves; wave equation to determine the relationships among speed, wavelength and frequency.

Energy in the Earth System

- SC.9.4.26 investigate formation and destruction of landforms.
- SC.9.4.27 demonstrate the relationships of temperature, air pressure, wind speed, wind direction and humidity as elements of weather.

SC.9.4.28 compare and analyze the characteristics of oceans, including their lateral and vertical motions.

Geochemical Cycles

SC.9.4.29 employ a variety of tests to identify common rock-forming minerals.

SC.9.4.30 analyze and describe common rock samples using grain size and shape, and mineral composition.

SC.9.4.31 use models to describe interactive cycles such as the water, the nitrogen and the carbon dioxide cycles.

Origin and Changes in the Earth Systems and Universe

SC.9.4.32 examine how scientists use seismographic evidence in determining structure and composition of the Earth's interior.

SC.9.4.33 determine the relative age of materials using time-stratigraphic and bio-stratigraphic relationships.

SC.9.4.34 estimate the absolute age of materials using existing radioisotopic data.

SC.9.4.35 describe the effects of the movement of subsurface water.

SC.9.4.36 relate changes in the Earth's surface to the motion of lithospheric plates.

SC.9.4.37 summarize and discuss the evidentiary basis for the Theory of Plate Tectonics.

SC.9.4.38 research and describe the life cycles of various stellar types.

SC.9.4.39 interpret topographic maps, weather maps and charts, and astronomical models such as solar systems, galaxies, constellations, stellar types and stellar evolution.

Performance Descriptors (SC.PD.9.4)

■ **Distinguished**

Ninth grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- The Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students critique scientific applications; develop justifications for solutions to problems; articulate abstract concepts; and generate interconnections among the categories listed above.

■ **Mastery**

Ninth grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- The Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students explain interconnections among the categories listed above.

■ **Partial Mastery**

Ninth grade students performing at the partial mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- The Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.9.5.1 identify the scientific concepts underlying simple technological innovations.
- SC.9.5.2 cite examples of the interdependence of science and technology (e.g., new technologies have lead to development of new scientific knowledge).
- SC.9.5.3 apply scientific skills and technological tools to design a solution that addresses a personal or societal need.
- SC.9.5.4 analyze the consequences of imposed constraints on an engineering solution.

Performance Descriptors (SC.PD.9.5)

■ **Distinguished**

Ninth grade students performing at the distinguished level evaluate the consequences of imposed constraints on engineering solutions and propose a design change.

■ **Mastery**

Ninth grade students performing at the mastery level analyze the consequences of imposed constraints on engineering solutions and propose a design change.

■ **Partial Mastery**

Ninth grade students performing at the partial mastery level describe the consequences of imposed constraints on engineering solutions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.9.6.1 research uses and values of natural resources.
- SC.9.6.2 research current environmental issues (e.g., effects of pollution, solid waste management, local, national, and global issues).
- SC.9.6.3 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- SC.9.6.4 explore occupational opportunities in science and technology including the academic preparation necessary.
- SC.9.6.5 engage in decision making activities and actions to resolve science-technology-society issues.

Performance Descriptors (SC.PD.9.6)

■ Distinguished

Ninth grade students performing at the distinguished level analyze how public policy decisions impact health, population, resources and environmental issues.

■ Mastery

Ninth grade students performing at the mastery level describe how public policy decisions impact health, population, resources and environmental issues.

■ Partial Mastery

Ninth grade students performing at the partial mastery level identify that public policy decisions impact health, population, resources and environmental issues.

Tenth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Ten objectives conclude the development of foundational knowledge of biology, chemistry, physics, and the earth and space sciences. Through the spiraling, inquiry-based program of study, all students will demonstrate scientific literacy across these major fields of science. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50 percent of the instructional time to develop conceptual understanding and research laboratory skills. Safety instruction is integrated in all activities. Building on the knowledge and skills acquired in CATS Nine, students in CATS Ten will expand their depth of understanding of major concepts such as energy transformation qualifications; cellular biology; molecular genetics; embryology; physical, chemical and nuclear changes; fossils and environmental concerns. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.10.1.1 formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
- SC.10.1.2 recognize that science has practical and theoretical limitations.
- SC.10.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- SC.10.1.4 conclude that science is a blend of creativity, logic and mathematics.
- SC.10.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.

Performance Descriptors (SC.PD.10.1)

■ Distinguished

Tenth grade students performing at the distinguished level will evaluate scientific explanations in historical context. Students analyze possible sources of variability in experimental results.

■ Mastery

Tenth grade students performing at the mastery level provide scientific evidence for phenomena within historical contexts. Students account for variability in experimental results.

■ Partial Mastery

Tenth grade students performing at the partial mastery level will evaluate scientific explanation in historical context. Students analyze possible sources of variability in experimental results.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.10.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- SC.10.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- SC.10.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- SC.10.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- SC.10.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- SC.10.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.
- SC.10.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).

- SC.10.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument.).

Performance Descriptors (SC.PD.10.2)

■ **Distinguished**

Tenth grade students performing at the distinguished level design, conduct, and evaluate safe experiments using appropriate skills, attitudes and/or values (including ethical practice). Students defend conclusions using scientific evidence. Students evaluate effectiveness of experimental design and propose revisions.

■ **Mastery**

Tenth grade students performing at the mastery level design, conduct, and evaluate safe experiments using appropriate skills, attitudes and/or values (including ethical practice). Students defend conclusions using scientific evidence.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery level design, conduct, analyze safe experiments using appropriate skills, attitudes and/or values (including ethical practice).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze, and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.10.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- SC.10.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- SC.10.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- SC.10.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Performance Descriptors (SC.PD.10.3)

■ **Distinguished**

Tenth grade students performing at the distinguished level design experiments that use mathematical models incorporating both graphs and equations to predict changes in systems. Students describe cyclical and linear systems that evolve over time.

■ **Mastery**

Tenth grade students performing at the mastery level use mathematical models incorporating both graphs and equations to predict short and long-term changes in cyclical and linear biological and physical systems.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery level use mathematical models incorporating both graphs and equations to compare cyclical or linear changes in biological and physical systems that evolve over time.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

SC.10.4.1 demonstrate an understanding of the interconnections of biological, earth and space and physical science concepts.

The Cell and Molecular Basis for Heredity

SC.10.4.2 identify and explain the structures and functions of cell organelles (e.g., Golgi bodies, endoplasmic reticulum, mitochondria, chloroplasts, ribosomes, lysosomes, vacuoles).

SC.10.4.3 compare the variations in cells, tissues and organs of different organisms (e.g. endocrine, nervous, digestion and immune systems).

SC.10.4.4 identify mechanisms for the movement of materials into and out of cells (e.g., active and passive transport, endo- and exocytosis).

SC.10.4.5 explore the discovery of DNA and its structure by constructing a model to demonstrate the nucleotide bonding and the double helix structure.

SC.10.4.6 relate the role of DNA analysis to genetic disorders, forensic science, molecular genetics, and biotechnology (e.g., protein synthesis, heredity, cell division, cellular functions).

SC.10.4.7 review principles of genetics (e.g. number of chromosomes, mutations, crossover, Punnett squares, linkage).

Evolution and Interdependence of Organisms

SC.10.4.8 compare the embryonic development of invertebrate and vertebrate animals (e.g., ontogeny and phylogeny, diversity, taxonomy).

SC.10.4.9 construct and manipulate models which show variations in living things (e.g., nervous, endocrine, immune systems).

SC.10.4.10 recognize that fossil records provide a scientific explanation for variation in the species and common ancestors.

SC.10.4.11 relate the role of natural selection to the development, diversity and or extinction of a species.

Matter, Energy, and Organization in Living Systems

SC.10.4.12 construct concept maps showing energy flow and cycles of matter between chemical and biological systems including photosynthesis, stored chemical energy, decomposition, carbon and nitrogen cycles.

SC.10.4.13 explain how the nervous, endocrine and immune systems work together in the human body.

SC.10.4.14 review the needs of growing plants and the environments supplying those needs.

SC.10.4.15 review factors that affect succession, populations and communities (e.g., use maps, graphs, charts, tables).

SC.10.4.16 trace matter and energy flow through the respiration processes of glycolysis, the Krebs cycle and electron transport system (e.g., ATP, carbon, oxygen, water).

Structure and Properties of Matter

SC.10.4.17 investigate the properties of solutions including density, conductivity, solubility, concentration, pH and colligative properties.

Chemical Reaction

SC.10.4.18 differentiate between physical, chemical and nuclear changes and reactions.

Energy

SC.10.4.19 investigate the relationships among temperature, pressure and volume in gases and interpret graphs that depict these relationships (e.g., Charles' Law, Boyle's Law, Gay-Lussac's Law).

SC.10.4.20 investigate and measure changes in thermal energy in physical and chemical changes.

SC.10.4.21 compare and contrast the characteristics and uses of waves in various parts of the electromagnetic spectrum; calculate the frequency of a particular wavelength.

SC.10.4.22 summarize the relationship between frequency and speed (e.g., Doppler effect).

SC.10.4.23 qualitatively explain the relationship between electricity and magnetism and describe how electrical components of a circuit function.

SC.10.4.24 qualitatively and quantitatively describe the conservation of energy (e.g., thermal, chemical, mechanical).

Motions and Forces

SC.10.4.25 apply Newton's Laws of Motion depict the relationship among rate, force, momentum and time using kinematics graph and mathematical models.

SC.10.4.26 describe and quantify how machines can provide mechanical advantages.

SC.10.4.27 determine the effect of different forces on vibrating systems (e.g., pendulums, springs).

SC.10.4.28 demonstrate qualitative and quantitative understanding of pressure in various systems (e.g., water pipes, circuits, blood vessels).

Energy in the Earth System

SC.10.4.29 relate the characteristics and behavior of mechanical waves to earth processes (e.g., explain the formation of water waves as a function of wind velocity, duration, and fetch).

SC.10.4.30 relate the cause of tides to their height and frequency.

SC.10.4.31 investigate effects of geological events on weather and climate (e.g., ocean currents).

SC.10.4.32 observe and describe the effects of water on the earth's surface (e.g., changes in particle size, slope, velocity).

SC.10.4.33 investigate and compare theories of the source of the Earth's magnetic field and relate Earth's electromagnetic field to the dynamics of the magnetosphere.

SC.10.4.34 discuss theories for the causes of plate tectonics.

Geochemical Cycles

SC.10.4.35 discuss physical and chemical relationships between minerals in rock cycle.

Origin and Evolution in the Earth Systems and Universe

SC.10.4.36 investigate fossils as evidence for evolution and indicators of paleo-environments.

SC.10.4.37 compare and contrast morphological features of fossils to present-day organisms.

SC.10.4.38 use fossil evidence to estimate the relative and absolute ages of rock layers.

SC.10.4.39 compare and contrast the characteristics of Earth and the other planets relative to their distance from the Sun.

SC.10.4.40 interpret apparent motion of constellations and their relationship to the rotation of the earth.

Performance Descriptors (SC.PD.10.4)

■ Distinguished

Tenth grade students performing at the distinguished level comprehend and apply the knowledge of objectives at the level indicated in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students critique scientific applications; develop justifications for solutions to problems; articulate abstract concepts; and generate interconnections among the categories listed above.

■ Mastery

Tenth grade students performing at the mastery level comprehend and apply the knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students explain interconnections among the categories listed above.

■ Partial Mastery

Tenth grade students performing at the mastery level demonstrate knowledge of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.10.5.1 investigate and analyze the interdependence of science and technology.

SC.10.5.2 research and design solutions to a personal or a societal problem created by technology.

SC.10.5.3 compare and test modifications to an engineering design.

SC.10.5.4 utilize technology to communicate designs, results and conclusions.

Performance Descriptors (SC.PD.10.5)**■ Distinguished**

Tenth grade students performing at the distinguished level propose improvements to engineering designs; test and evaluate their modifications; and communicate the effectiveness of their design changes.

■ Mastery

Tenth grade students performing at the mastery level compare and test modifications to an engineering design and communicate the effectiveness of their design changes.

■ Partial Mastery

Tenth grade students performing at the partial mastery level analyze and suggest an improvement to an engineering design.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

SC.10.6.1 investigate the effects of natural phenomena on the habitat and habitat change.

SC.10.6.2 research current environmental issues (e.g., depletion of fossil fuels, global warming, destruction of rainforest pollution).

SC.10.6.3 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.

SC.10.6.4 explore occupational opportunities in science and technology including the academic preparation necessary.

SC.10.6.5 engage in decision making activities and actions to resolve science-technology-society issues.

Performance Descriptors (SC.PD.10.6)

■ Distinguished

Tenth grade students performing at the distinguished level predict the long-term societal impact of specific health, population, resource and environmental practices framed by public policy decisions.

■ Mastery

Tenth grade students performing at the mastery level predict long-term societal impact of specific health, population, resource and environmental practices framed by public policy decisions.

■ Partial Mastery

Tenth grade students performing at the partial mastery level describe the long-term societal impact of specific health, population, resource and environmental practices.

Eleventh and Twelfth Grade Science Content Standards and Objectives

Advanced Biology (11/12) Content Standards and Objectives

This is an advanced level course designed for students who have completed Coordinated and Thematic Science (CATS) 10 and desire a broader, in-depth study of the content found in many biological fields of endeavor. This course is designed to build upon and extend the Biology concepts, skills and knowledge from the CATS 7-10 program. Students interested in health and scientific related careers will build and expand their laboratory skills and experiences. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AB.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AB.1.2 recognize that science has practical and theoretical limitations.
- AB.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AB.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AB.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.

- AB.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AB.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AB.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AB.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AB.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AB.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AB.2.6 use computers and other electronic technologies (e.g., computer, CBL, probe interfaces, laser discs) to collect, analyze and/or report data, interact with simulations, and conduct research.
- AB.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- AB.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument.).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AB.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AB.3.2 apply evidence from models to make predictions about interactions and changes in systems.

- AB.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- AB.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Chemical Foundations

- AB.4.1 review foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.
- AB.4.2 investigate the molecules of life and their function in the living systems.

Cell Function and Genetics

- AB.4.3 identify the structure, functions, and interactions of eukaryotic cell organelles and their products.
- AB.4.4 analyze the chemistry and structure of the cell membrane as it relates to import and export of molecules necessary for life, exploring osmosis, diffusion, active and passive transport and dialysis.
- AB.4.5 research the diversity/uniqueness of cell types (compare differences in prokaryotic/eukaryotic, plant/animal cells; explore nerve cells, blood cells, gametes, etc.).
- AB.4.6 explore capture and release of energy as demonstrated by photosynthesis, cellular respiration, fermentation, and the role of coenzymes and vitamins.
- AB.4.7 investigate and discuss homeostasis.
- AB.4.8 recognize and describe the phases of eukaryotic and prokaryotic cell cycles.
- AB.4.9 identify the stages of mitotic and meiotic eukaryotic cell division and explain significance of the stages.
- AB.4.10 investigate and discuss DNA as the agent of heredity.
- AB.4.11 investigate and discuss the importance of replication and mutation in the diversity of life.
- AB.4.12 evaluate the advantages of asexual and sexual reproduction.
- AB.4.13 identify Mendel's 1st Law and 2nd Law of Genetics and apply these laws to predict phenotypic and genotypic ratios from mono and dihybrid crosses.
- AB.4.14 explore basic phenotypic and genotypic genetics beyond Mendel including such things as incomplete dominance, gene interaction, codominance, multi-alleles, crossing over, genetic recombination; and influences of environment, development, sex and age.
- AB.4.15 identify the function of DNA in replication and transfer of the genetic code.
- AB.4.16 identify the function of the RNAs; messenger, transfer and ribosomal in the transcription and translation process of protein formation.
- AB.4.17 recognize that differentiation is regulated through the expression of different genes.
- AB.4.18 discuss the regulatory process in controlling gene function.
- AB.4.19 introduce genetic engineering through current DNA technology practices and the social issues that it raises.
- AB.4.20 discuss gene mutations.

Evolution

- AB.4.21 discuss evidence of evolution and natural selection, including examples such as peppered moth, fossil records, biogeography, molecular biology and comparative anatomy.
- AB.4.22 investigate and discuss that behavioral response is a set of actions determined in part by heredity and in part from experience.
- AB.4.23 research pioneers and current authors of evolutionary ideas.

Classification of Organisms

- AB.4.24 present overview of the taxonomy and systematics of living organisms comparing DNA as the modern basis of classification to older methods based on morphology.
- AB.4.25 discuss reasons why viruses are not included in the modern classification system.

Human Systems

- AB.4.26 explore the various systems of the human organism and their interactions.

Environment and Ecosystems

- AB.4.27 investigate and discuss responses of organisms to internal and environmental stimuli.
- AB.4.28 investigate and discuss that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival.
- AB.4.29 investigate and discuss ecology as the interaction of living organisms and their nonliving environment.
- AB.4.30 trace the energy flow through an ecosystem.
- AB.4.31 investigate and discuss that the number of organisms any environment can support depends on the resources available.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- AB.5.1 summarize technological advances in the biological sciences.
- AB.5.2 investigate and analyze the interdependence of science and technology.
- AB.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- AB.5.4 describe the scientific concepts underlying technological innovations.
- AB.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data, and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- AB.6.1 investigate and discuss the impact that humans may have on the quality of the biosphere such as depletion of the rainforest, pollution of estuaries, strip mining, depletion of fossil fuels and deterioration of ozone layer.
- AB.6.2 investigate the effects of natural phenomena on the environment (e.g., oceanographic, meteorologic).
- AB.6.3 research current environmental issues (e.g., depletion of fossil fuels, global warming, destruction of rainforest pollution).
- AB.6.4 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- AB.6.5 explore occupational opportunities in science and technology including the academic preparation necessary.
- AB.6.6 engage in decision making activities and actions to resolve science-technology-society issues.

Biology - Technical Conceptual (11/12) Content Standards and Objectives

This is an advanced level course designed for students who have completed Coordinated and Thematic Science (CATS) 10 and who are interested in the field of technical biology with the scientific knowledge and opportunities to develop the inquiry, problem solving and decision making abilities necessary for their future vocation. Biology - Technical Conceptual (11/12) is an alternative to Advanced Biology (11/12) and is designed to prepare students for technical careers. The course will provide an in-depth study in the chemical nature of life, cellular functions, microbiology, ecology, biotechnology, zoology and botany with application emphasis. It builds on the fundamental concepts developed in CATS 7-10 in a rigorous and integrated manner. Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- BTC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- BTC.1.2 recognize that science has practical and theoretical limitations.
- BTC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- BTC.1.4 conclude that science is a blend of creativity, logic and mathematics.

- BTC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- BTC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- BTC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- BTC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- BTC.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- BTC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- BTC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- BTC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- BTC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- BTC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- BTC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- BTC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- BTC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- BTC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Matter and Energy

- BTC.4.1 trace matter and energy transfers occurring during photosynthesis, cell respiration, and fermentation.
- BTC.4.2 explore material transport in and out of cells (e.g., diffusion and osmosis).
- BTC.4.3 investigate the nature of light in relation to energy transformation in photosynthesis.
- BTC.4.4 compare and describe the properties of sound waves and how they affect organisms (e.g. sound pollution, sonography, echolocation and animal vocalization).
- BTC.4.5 investigate how electric and magnetic forces affect life.

Chemical Foundations

- BTC.4.6 review of foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.
- BTC.4.7 investigate the molecules of life and their function in the living systems.
- BTC.4.8 estimate molecular weight through the diffusion of biological stains.

Conservation and Human Impact on the Environment

- BTC.4.9 explain common problems related to conservation, use, supply and quality of water.
- BTC.4.10 investigate recycling in relation to human consumption of natural resources.
- BTC.4.11 describe landfills and sewage treatment facilities and how they work.
- BTC.4.12 investigate and analyze the impact that humans have on the quality of the biosphere (e.g. locally, regionally, and globally).
- BTC.4.13 use topographic maps and Geographic Information Systems (GIS) to investigate biological systems and patterns (e.g. land use).
- BTC.4.14 examine global change over time (e.g. climatic trends, fossil fuel depletion, global warming, ozone depletion).

Populations and Ecosystems

- BTC.4.15 investigate interspecific and intraspecific competition.
- BTC.4.16 apply sampling techniques to the study of ecosystems.
- BTC.4.17 investigate variations in ecosystem productivity.
- BTC.4.18 investigate population biology.
- BTC.4.19 investigate soil and soil organisms.
- BTC.4.20 explain the mechanics of composting.
- BTC.4.21 evaluate the effects of large scale use of fungicides and pesticides on the diversity of organisms.

BTC.4.22 discuss and categorize chemical hazards and how they impact life. (e.g. flammable, reactive, poisons, corrosive).

Cell Function and Genetics

BTC.4.23 review the structure and function of cell membranes.

BTC.4.24 review DNA as it relates to mitosis, meiosis and protein synthesis.

BTC.4.25 review basic genetics including incomplete dominance, gene interactions, co-dominance, multiple-alleles, crossing over, genetic recombinations, environmental influences, development, sex and age

BTC.4.26 analyze karyotypes and pedigrees as diagnostic tools.

BTC.4.27 research genetic engineering through current DNA technology and the social and ethical issues that it raises (e.g. bacterial production of human insulin, DNA, cloning, fingerprinting, etc.).

BTC.4.28 analyze gene expression and embryonic development.

Plants

BTC.4.29 compare and contrast hydrophytic, mesophytic and xerophytic plants.

BTC.4.30 investigate the diversity of plants, their habitat, transport system, reproduction and life cycle.

BTC.4.31 investigate methods of plant propagation (e.g. culturing techniques, hydroponics, cloning, grafting, vegetative propagation).

BTC.4.32 research forest-management practices (e.g. clear cutting, selective cutting, pruning, fire ecology).

BTC.4.33 research and evaluate the importance of cultivated and wild plants to human society, economics and the environment.

Animals

BTC.4.34 investigate and analyze animal distribution.

BTC.4.35 research variations in animal reproductive strategies.

BTC.4.36 explain animal behavior.

Life Cycles of Organisms

BTC.4.36 compare the characteristics, structures and life cycles of simple to complex organisms.

Application of Biotechnology Techniques

BTC.4.37 apply techniques of biotechnology to phylogenetics, forensics, paleontology, and human genetics.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

BTC.5.1 summarize technological advances in the biological sciences.

BTC.5.2 investigate and analyze the interdependence of science and technology.

BTC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.

BTC.5.4 describe the scientific concepts underlying technological innovations.

BTC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- BTC.6.1 research current environmental issues pertaining to biology.
- BTC.6.2 describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.
- BTC.6.3 explore occupational opportunities in science and technology including the academic preparation necessary.
- BTC.6.4 engage in decision making activities and actions to resolve science-technology-society issues.

Human Anatomy and Physiology (11/12)
Content Standards and Objectives

This advanced course is designed for those students wanting a deeper understanding of the structure and function of the human body. The body will be viewed as a whole using anatomical terminology necessary to describe location. Focus will be at both micro and macro levels reviewing cellular functions, biochemical processes, tissue interactions, organ systems and the interaction of those systems as it relates to the human organism. Systems covered include integumentary, skeletal, muscular, respiratory, circulatory, digestive, excretory, reproductive immunological, nervous and endocrine. This course will be appropriate for college bound students as well as those choosing a health services career cluster. Students will engage in active inquiries, investigation, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- HAP.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- HAP.1.2 recognize that science has practical and theoretical limitations.
- HAP.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- HAP.1.4 conclude that science is a blend of creativity, logic and mathematics.
- HAP.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist=s contributions.
- HAP.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- HAP.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- HAP.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- HAP.2.3 apply scientific approaches to seek solutions for personal and societal issues .
- HAP.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- HAP.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- HAP.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- HAP.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- HAP.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- HAP.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- HAP.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- HAP.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- HAP.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Frame of Reference for Anatomical Studies

- HAP.4.1 demonstrate knowledge of directional terminology necessary for anatomical location such as proximal, dorsal, medial, lateral, visceral, superficial and deep.
- HAP.4.2 explore current literature and research related to human anatomy and physiology.

Chemical Level of Organization

- HAP.4.3 review of foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.
- HAP.4.4 trace the transfer of energy in chemical molecular processes in the human body (e.g., glycolysis, Krebs cycle, electron transport system).

Cellular /Tissue/System Levels of Organization

- HAP.4.5 identify the role of DNA in transcription and relate to types of RNA and protein synthesis.
- HAP.4.6 identify the structure, functions and interactions of eukaryotic cell organelles and their products.
- HAP.4.7 describe the organizational levels, interdependency and the interaction of cells, tissues, organs, organ systems.
- HAP.4.8 categorize, by structure and function, the various types of human tissue (e.g. muscle, epithelial, connective, nervous).

Systems Level of Organization

- HAP.4.9 relate the structure of the integumentary system to its function as a sensory organ, environmental barrier and temperature regulator.

- HAP.4.10 relate how bone tissue is important to the development of the human skeleton.
 - HAP.4.11 investigate the structure and function of the skeletal system, including identification of bones, markings on bones and articulations.
 - HAP.4.12 show the mechanism of muscle contraction on micro and macro levels.
 - HAP.4.13 recognize the relationship between the skeletal, neural and muscular systems.
 - HAP.4.14 research the musculature system including locations, origins, insertions, muscle groups and types of muscles.
 - HAP.4.15 classify, describe and investigate the various types of neurons emphasizing structure and function.
 - HAP.4.16 trace and describe a nervous impulse including a discussion of the sodium-potassium pump.
 - HAP.4.17 locate, identify and discuss the structure and function of the parts of the central nervous system.
 - HAP.4.18 illustrate the nerves and functions of the peripheral nervous system including the autonomic portions.
 - HAP.4.19 apply the knowledge of the structure of the ear and eye to their function/dysfunction in relationship to environmental perception.
 - HAP.4.20 discuss the specific role of enzymes and hormones to bodily functions.
 - HAP.4.21 explore the endocrine system emphasizing glands, hormonal control and problems in hormone production.
 - HAP.4.22 investigate the male and female reproductive systems including identification of structures and their functions.
 - HAP.4.23 relate the male and female reproductive systems to human growth and development.
 - HAP.4.24 compare and contrast the purposes, processes and outcomes of cellular meiosis and mitosis.
 - HAP.4.25 research the formation of gametes, fertilization and embryonic development.
 - HAP.4.26 analyze the change in DNA activity and how it affects the control of protein synthesis and human inheritance.
 - HAP.4.27 relate Mendel's laws of inheritance and DNA to genetic diseases such as sickle-cell anemia, chromosomal abnormalities, Tay-Sachs disease, Huntington's disease, etc.
 - HAP.4.28 identify the cellular processes and the energy and nutritional requirements needed to maintain human metabolism.
 - HAP.4.29 illustrate how transport mechanisms in cells, tissues and/or organs depend on osmosis and mixture gradients.
 - HAP.4.30 examine the role of the digestive system in supplying nutrients (carbohydrates, proteins, lipids, vitamins, minerals, water).
 - HAP.4.31 explain how structures of the respiratory system are significant to communication, gas exchange and cellular respiration.
 - HAP.4.32 illustrate the structure of the circulatory and lymphatic systems and the function of blood to the role of transportation, cellular support and defense.
 - HAP.4.33 investigate the composition of blood and compatibility of blood types.
 - HAP.4.34 describe the relationship of the excretory system to other organs and systems.
- Human Immune Systems and Health
- HAP.4.35 describe potential system failures in the human body due to genetic, nutritional, operational, disease, or environmental influences.
 - HAP.4.36 investigate the immunological system emphasizing its role in defense of the human organism.
 - HAP.4.37 investigate and research the causative factors, symptoms, prevention and treatment of diseases.
 - HAP.4.38 identify disorders related to each major system.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- HAP.5.1 summarize technological advances in medicine and health.
- HAP.5.2 investigate and analyze the interdependence of science and technology.
- HAP.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- HAP.5.4 describe the scientific concepts underlying technological innovations.
- HAP.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- HAP.6.1 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- HAP.6.2 explore occupational opportunities in science and technology including the academic preparation necessary.
- HAP.6.3 engage in decision making activities and actions to resolve science-technology-society issues.

Advanced Chemistry (11/12)

Content Standards and Objectives

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire a broader, in-depth study of the content found in the science field of chemistry. *Advanced Chemistry* (Eleven/Twelve) is the advanced study of matter, its composition and its changes. This course is designed to build upon and extend the Chemistry concepts, skills and knowledge from the CATS 7-10 program. This course is designed to prepare a student for college chemistry, requiring a strong mathematical base. The relationship between chemistry concepts and mathematics will be emphasized. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AC.1.2 recognize that science has practical and theoretical limitations.
- AC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AC.2.3 apply scientific approaches to seek solutions for personal and societal issues.

- AC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data, interact with simulations; conduct research; and to present and communicate conclusions.
- AC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- AC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument.).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- AC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Properties of Matter

- AC.4.1 review the classification of matter using the periodic table; the use the kinetic molecular theory to explain physical states of matter; physical and chemical properties; and physical and chemical changes.

Atomic Structure

- AC.4.2 review Bohr model of the atom and calculation of subatomic particles - protons, neutrons, and electrons.
- AC.4.3 research and evaluate the contributions of Dalton, Planck, Bohr, Einstein, and de Broglie, Heisenberg, and Schrodinger to the evolution of the atomic theory.
- AC.4.4 identify four types of electron clouds (s, p, d, f) and describe the quantum number (n, l, m, s) for electrons.
- AC.4.5 write electron configurations and associate electron configuration of elements with element location on periodic table.
- AC.4.6 write electron dot structures for representative elements.

Bonding

- AC.4.7 predict the formulas of ionic compounds and molecular compounds.
- AC.4.8 analyze the periodic table to predict trends in atomic size, ionic size, electronegativity, ionization energy and electron affinity.
- AC.4.9 using the periodic table, predict the type of bonding that occurs between atoms and differentiate among properties of ionic, covalent and metallic bonds.
- AC.4.10 construct models to explain the structure and geometry of organic and inorganic molecules and the lattice structures of crystals.
- AC.4.11 recognize simple organic functional groups and name simple organic compounds.

Stoichiometry

- AC.4.12 predict the products and write balanced equations for the general types of chemical reactions.
- AC.4.13 use dimensional analysis to perform unit conversions and to verify experimental calculations.
- AC.4.14 use the Avogadro constant to define the mole and to calculate molecular and molar mass as well as a molar volume.
- AC.4.15 perform calculations using the combined and ideal gas laws.
- AC.4.16 use molar mass to calculate the molarity of solutions, percentage composition, empirical formulas and formulas of hydrates.
- AC.4.17 experimentally determine the empirical formulas of hydrates.
- AC.4.18 perform stoichiometric calculations including mass-mass, mass-volume, volume-volume including problems to determine theoretical yield and to identify the limiting reactant.

Equilibrium

- AC.4.19 experimentally determine the factors that influence the rate of reaction.
- AC.4.20 apply LeChatelier's principle to explain the effect of changes in concentration, pressure, volume, and temperature on an equilibrium system.

Solution Chemistry

- AC.4.21 review colligative properties.
- AC.4.22 name and define acids and bases using Arrhenius, Bronsted-Lowry and Lewis definitions.
- AC.4.23 predict the products upon adding water to both acidic and basic anhydrides.
- AC.4.24 write and balance net ionic equations.
- AC.4.25 solve problems using the solubility product constants.
- AC.4.26 calculate the pH and/or pOH for various solutions and relate to the pH scale.
- AC.4.27 conduct titrations and perform calculations for both acid-base and oxidation-reduction reactions.

Electrochemistry

- AC.4.28 define oxidation and reduction in terms of electron transfer within reactions.

AC.4.29 construct electrolytic cells, write and balance the half-cell reactions and calculate cell voltage.

Reaction Dynamics

AC.4.30 calculate the enthalpy change in reactions using the heat of formation.

AC.4.31 evaluate the factors driving chemical reactions including enthalpy and entropy and their interrelationship.

Nuclear Chemistry

AC.4.32 write balanced nuclear equations and make predications using half-life values.

AC.4.33 list the biological effects of radiation and the units used to measure radiation.

AC.4.34 compare and contrast fusion and fission reactions.

AC.4.35 research the application of nuclear technology.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- AC.5.1 summarize technological advances in chemistry.
- AC.5.2 investigate and analyze the interdependence of science and technology.
- AC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- AC.5.4 describe the scientific concepts underlying technological innovations.
- AC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- AC.6.1 research current environmental issues pertaining to chemistry.
- AC.6.2 describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.
- AC.6.3 explore occupational opportunities in science and technology including the academic preparation necessary.
- AC.6.4 engage in decision making activities and actions to resolve science-technology-society issues.

Chemistry-Technical Conceptual (11/12)

Content Standards and Objectives

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire an alternative to a traditional college preparatory course emphasizes real life applications of chemical principles. Mathematical based problem solving is de-emphasized. Chemistry -Technical Conceptual is the study of matter, its composition and its changes. Emphasis is placed on the important role chemistry plays in a student's personal life, career opportunities, environment and society. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- CTC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- CTC.1.2 recognize that science has practical and theoretical limitations.
- CTC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- CTC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- CTC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- CTC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- CTC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- CTC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- CTC.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- CTC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.

- CTC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- CTC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- CTC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- CTC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- CTC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- CTC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- CTC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- CTC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Properties of Matter

- CTC.4.1 review the classification of matter and the properties of metals and nonmetals.
- CTC.4.2 identify sources and uses of elements.
- CTC.4.3 use the kinetic molecular theory to explain physical states of matter.

- CTC.4.4 perform calculations using the gas laws.
CTC.4.5 apply the principle of distillation to the separation of liquids (e.g., petroleum or water purification).

Atomic Structure

- CTC.4.6 review the parts of the atom.
CTC.4.7 review the relationship of an element's group and period position with its properties.
CTC.4.8 compare atomic and ionic electronic structures.

Bonding

- CTC.4.9 review formula writing and ionic and covalent bonding.
CTC.4.10 recognize the impact of water's unusual physical properties.
CTC.4.11 predict solute solubility based on molecular polarity.

Stoichiometry

- CTC.4.12 review balancing equations.
CTC.4.13 use dimensional analysis to perform unit conversions and to verify experimental calculations.
CTC.4.14 relate the mole concept to chemical formulas.
CTC.4.15 use moles to measure chemical quantities.
CTC.4.16 determine the percent composition by mass of the elements in a compound.
CTC.4.17 make connections between resource conservation and the Law of Conservation of Matter.
CTC.4.18 illustrate the concept of a limiting reagent.

Solution chemistry

- CTC.4.19 review solution properties (e.g., solubility, conductivity, density, pH and colligative).
CTC.4.20 define solutions in terms of saturation.
CTC.4.21 perform solutions concentration calculations (e.g. molarity, ppm).
CTC.4.22 compare and contrast the properties of strong and weak acids and bases.
CTC.4.23 perform an acid-base neutralization reaction.

Electrochemistry

- CTC.4.24 construct electrolytic cells to observe the reduction of ions into free metals and write the half reactions that occur.
CTC.4.25 predict reactions of metals with aqueous solutions using the Metal Activity Series.

Reaction Dynamics

- CTC.4.26 review temperature and heat.
CTC.4.27 measure the flow of energy into or out of chemical reactions.
CTC.4.28 predict the effect of temperature and catalysts on reaction rates.
CTC.4.29 apply LeChatelier's Principle in determining equilibrium.

Carbon and Petroleum

- CTC.4.30 draw and construct models for the first ten alkanes.
CTC.4.31 relate the properties of organic compounds to their functional groups (e.g., alcohol and esters).
CTC.4.32 demonstrate the formation of polymers from smaller molecules.
CTC.4.33 compare and contrast the use of petroleum as either a source of energy or as a fundamental ingredient of synthetic materials.

Nuclear Chemistry

- CTC.4.34 review nuclear fusion and fission, isotopes and half-lives.
CTC.4.35 compare the penetrating energies of nuclear radiation.
CTC.4.36 balance simple nuclear equations.
CTC.4.37 explain practical applications of nuclear technology (e.g., radioactive dating, radioisotopes in medicine).

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- CTC.5.1 summarize technological advances in chemistry.
- CTC.5.2 investigate and analyze the interdependence of science and technology.
- CTC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- CTC.5.4 describe the scientific concepts underlying technological innovations.
- CTC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- CTC.6.1 research current environmental issues pertaining to chemistry.
- CTC.6.2 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- CTC.6.3 explore occupational opportunities in science and technology including the academic preparation necessary.
- CTC.6.4 engage in decision making activities and actions to resolve science-technology-society issues.

Advanced Environmental Earth Science (11/12)

Content Standards and Objectives

As responsible citizens on this planet, students must be able to recognize their role as caretakers of the earth in order to protect its fragile environment. This is possible only if students have a deep understanding of the earth and its processes. Advanced Environmental Earth Science (11/12) is designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire to build on the fundamentals of geology, oceanography, meteorology and astronomy developed in CATS 7-10 in a rigorous and integrated manner with the traditional disciplines of biology, chemistry and physics where appropriate. As stewards of the earth, an emphasis on environment should be included within the traditional earth science disciplines. Ecology, economics, politics and social considerations all combine to help students develop an understanding of how humans effect and are effected by their environment. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AES.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AES.1.2 recognize that science has practical and theoretical limitations.
- AES.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AES.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AES.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AES.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AES.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).

- AES.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AES.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AES.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AES.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AES.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- AES.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- AES.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AES.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AES.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AES.3.3 measure changes in systems using graph and equations relating these to rate, scale, patterns, trends and cycles.
- AES.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Dynamic Earth

AES.4.1 review foundational earth science concepts including rocks and minerals, properties of waves, constructing and interpreting weather maps, surface features found on maps, climatic relationships to biomes, use of data gathering instruments, temperature-phase change relationships.

AES.4.2 identify and describe the structure, origin, and evolution of the lithosphere, hydrosphere, atmosphere and biosphere.

Geology

AES.4.3 identify components of the solid earth and the natural processes relating to its development.

AES.4.4 list, identify, and sequence eras, epochs and periods in relation to earth history and geologic development.

AES.4.5 utilize fossil evidence to estimate the relative and absolute ages of rock layers (time-stratigraphic and biostratigraphic).

AES.4.6 estimate the absolute age of materials using existing radioisotopic data.

AES.4.7 identify the type and composition of various minerals.

AES.4.8 investigate and explain the processes of the rock cycle.

AES.4.9 explain the relationship between pressure and temperature to the formation and reformation of rocks.

AES.4.10 identify and describe agents and processes of degradation (e.g., weathering by gravity, wind, water, and ice).

AES.4.11 identify and describe tectonic forces relating to internal energy production and convection currents.

AES.4.12 understand the cause and effect relationships of degradational and tectonic forces with respect to the dynamic earth and its surface (e.g., volcanoes, earthquakes).

AES.4.13 construct and/or interpret information on topographic maps.

Oceanography

AES.4.14 identify and describe properties of our oceans (e.g., composition, physical features of the ocean floor, and life within the oceans).

AES.4.15 compare and contrast characteristics of the oceans, including their lateral and vertical motions.

AES.4.16 investigate the evolution of the ocean floor that results in the creation of new materials and features.

AES.4.17 investigate the stratification of the ocean (colligative properties and biological zonation).

Meteorology

AES.4.18 investigate and explain, heat transfer in the atmosphere and its relationship to meteorological processes (e.g., pressure, winds, evaporation, condensation, and precipitation).

AES.4.19 predict the effects of ocean currents on climate.

AES.4.20 compare and contrast meteorological processes related to air masses, weather systems, and forecasting.

AES.4.21 examine global change over time (e.g., climatic trends, fossil fuel depletion, global warming, ozone depletion).

Astronomy

AES.4.22 research theories concerning origins of the universe.

AES.4.23 apply Newton's Law of Universal Gravitation to the motion of celestial objects.

AES.4.24 investigate the solar system including origin theories, comparing and contrasting the planets, planetary motions, and other celestial bodies.

AES.4.25 investigate celestial bodies and their evolution.

AES.4.26 explain the relationships between location, navigation and time.

AES.4.27 compare ancient and modern methods and tools used to study astronomy.

AES.4.28 investigate the electromagnetic spectrum as related to observable phenomena in the universe.

Environment

- AES.4.29 describe the relationship between earth processes and natural disasters and draw conclusions concerning their human impact.
- AES.4.30 explore the relationships between human consumption of natural resources and the stewardship responsibility for reclamations including disposal of hazardous and non-hazardous waste.
- AES.4.31 investigate and describe in detail the physical and chemical properties of water.
- AES.4.32 explain common problems related to the conservation, use, supply and the quality of water.
- AES.4.33 explore the relationships between the extraction and use of natural resources and the impact on the environment.
- AES.4.34 research alternative energy sources.
- AES.4.35 understand the fragile nature of the Earth.
- AES.4.36 research and explain how the political system influences environmental decisions.
- AES.4.37 investigate which federal and state agencies have responsibility for environmental monitoring and actions.
- AES.4.38 develop decision-making skills with respect to addressing environmental problems.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- AES.5.1 summarize technological advances in the earth sciences.
- AES.5.2 investigate and analyze the interdependence of science and technology.
- AES.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- AES.5.4 describe the scientific concepts underlying technological innovations.
- AES.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- AES.6.1 research and explain how the political system influences environmental decisions.
- AES.6.2 investigate the effects of natural phenomena on the environment (e.g., oceanographic, meteorologic).
- AES.6.3 research current environmental issues (e.g., depletion of fossil fuels, global warming, destruction of rainforest pollution).
- AES.6.4 describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.

- AES.6.5 explore occupational opportunities in science and technology including the academic preparation necessary.
- AES.6.6 engage in decision making activities and actions to resolve science-technology-society issues.

Advanced Physics (11/12)

Content Standards and Objectives

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire a broader, in-depth study of the content found in the science field of physics. As a college preparatory course, *Advanced Physics* (Eleven/Twelve) is a laboratory driven, advanced study of nature's universal laws with emphasis on process skills. This course is designed to build upon and extend the Physics concepts, skills, and knowledge from the CATS 7-10 program. The course emphasizes a mathematical approach to the areas of kinematics, dynamics, thermodynamics, light and optics, electricity and magnetism and modern physics. Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AP.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AP.1.2 recognize that science has practical and theoretical limitations.
- AP.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AP.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AP.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AP.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AP.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AP.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AP.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AP.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AP.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AP.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- AP.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- AP.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AP.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AP.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AP.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- AP.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology, and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Mechanics

- AP.4.1 review Newton's Laws of Motion.
- AP.4.2 using both given information and laboratory collected data, calculate velocity and acceleration along linear and circular paths.
- AP.4.3 solve multi-step problems involving velocity, acceleration and net force.
- AP.4.4 apply both graphical, algebraic, and trigonometric solutions to vector, problems involving two or more vectors; calculate both vector components and resultants including projectile motion in both one and two dimensions.
- AP.4.5 apply the concepts of potential and kinetic energy to final velocity of an object-independent of path; evaluate the conservation of energy and momentum in simple harmonic motion.
- AP.4.6 investigate and calculate the work, energy, power, mechanical advantage, and efficiency using simple machines involving linear and rotational motion.

Fluids

- AP.4.7 define fluids and determine the magnitude of buoyant force exerted on floating and submerged objects; explain why some objects float or sink.
- AP.4.8 relate the pressure exerted by a fluid to its depth; calculate the pressure exerted by a fluid.
- AP.4.9 examine the motion of a fluid; apply Bernoulli's equation to solve fluid problems; recognize the effects of Bernoulli's principle on fluid motion.
- AP.4.10 define the general properties of an ideal gas; apply the Ideal Gas Law to predict the properties of an ideal gas under different conditions.

Thermodynamics

- AP.4.11 distinguish between temperature and heat; relate these to kinetic energy and internal energy of matter; apply the principle of conservation of energy to calculate changes in potential, kinetic and internal energy.
- AP.4.12 investigate and apply concepts of specific heat, heat of fusion and vaporization to calculate phase changes of materials, and perform calculations using the specific heat equation; interpret phase diagrams.

Waves, Sound and Optics

- AP.4.13 investigate and apply the reflective, refractive and diffractive properties of waves to study mechanical and electromagnetic waves.
- AP.4.14 relate the wavelength, velocity and frequency of waves with the equation $\text{velocity} = \text{frequency} \times \text{wavelength}$ and use it to perform calculations.
- AP.4.15 analyze the properties of sound waves and perform appropriate calculations; relate the physical properties of sound waves to the way sound is perceived.
- AP.4.16 define Doppler shift and identify applications.
- AP.4.17 apply ray optics diagrams to lenses and mirrors, use the lens/mirror equation and the magnification equation to solve optics problems.
- AP.4.18 investigate and analyze optical applications in technology.

Electricity and Magnetism

- AP.4.19 measure and draw electrical and magnetic fields; describe applications of electrical and magnetic fields.

- Science in Personal and Social Perspectives Objectives**
Students will:
- AP.6.1 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
 - AP.6.2 explore occupational opportunities in science and technology including the academic preparation necessary.
 - AP.6.3 engage in decision making activities and actions to resolve science-technology-society issues.

- Standard 6: Science in Personal and Social Perspectives (SC.5.6)**
Students will:
- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
 - demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
 - predict the long-term societal impact of specific health, population, resource and environmental practices; and
 - demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

- Scientific Design and Application Objectives**
Students will:
- AP.5.1 investigate, analyze, synthesize, and evaluate those devices in the home that were developed from the understanding of science and technology.
 - AP.5.2 investigate and analyze the interdependence of science and technology.
 - AP.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
 - AP.5.4 describe the scientific concepts underlying technological innovations.
 - AP.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

- Standard 5: Scientific Design and Application (SC.5.5)**
Students will:
- demonstrate an understanding of the interdependence between science and technology;
 - demonstrate the ability to distinguish between natural and man-made objects;
 - demonstrate abilities of technological design; and
 - demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

- Astronomy and Modern Physics**
- AP.4.20 recognize the basic properties of electrical charge, charging by conduction and induction, and differentiate between conductors and insulators; calculate electrical force using Coulomb's law.
 - AP.4.21 recognize that circuits are closed loops; define units of electrical measure.
 - AP.4.22 construct and analyze electrical circuits and calculate Ohm's law problems for series, parallel and complex circuits including voltage drops; calculate power and energy in electrical systems.
 - AP.4.23 describe the orbital relationships within the solar system; apply Kepler's Laws to calculate orbital periods.
 - AP.4.24 apply Newton's law of Universal Gravitation to derive relationships to calculate acceleration of gravity on other planets and orbital velocities.
 - AP.4.25 research and evaluate evidence of the Big Bang model of the universe.
 - AP.4.26 describe Einstein's special theory of relativity and its basic development through assumptions and logical consequences.
 - AP.4.27 describe nuclear reactions and discuss applications of nuclear energy.

Physics-Technical Conceptual (11/12) Content Standards and Objectives

Physics-Technical Conceptual (11/12) is a course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire an in-depth study in physics to prepare them for technical careers. This course is an alternative to the traditional mathematical approach to physics. Curriculum organization and delivery for Physics-Technical Conceptual may be addressed by either of two approaches.

> A thematic approach would cover the physics principles as applied to four energy systems: mechanical, fluid, thermal, and electrical that make up both simple and complex technological devices and equipment. This approach would emphasize the analogies in mechanical, fluid, thermal, and electrical systems. Incorporated in the instruction is the mathematics needed to understand and apply the principles.

> A topic approach would cover the physics principles in a traditional sequence with an emphasis on conceptual understanding. While mathematics is de-emphasized, laboratory work will require traditional physics measurements to be made. Emphasis will be on the concepts which underlie the natural laws of the universe.

Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the involvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- PTC.1.1 formulate scientific explanations based on the students' observational and experimental evidence, accounting for variability in experimental results.
- PTC.1.2 recognize that science has practical and theoretical limitations.
- PTC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- PTC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- PTC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientists' contributions.
- PTC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

PTC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).

PTC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).

PTC.2.3 apply scientific approaches to seek solutions for personal and societal issues properly and safely manipulate equipment, materials, chemicals, organisms and models.

PTC.2.4 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).

PTC.2.5 use appropriate technology solutions (e.g., computer, CBL, probe, interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.

PTC.2.6 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).

PTC.2.7 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

PTC.2.8 demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);

• demonstrate the ability to identify, construct, test, analyze, and evaluate systems, models, and changes; and

• demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

PTC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.

PTC.3.2 apply evidence from models to make predictions about interactions and changes in systems.

PTC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.

PTC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology, and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Mechanics

- PTC.4.1 qualitatively and quantitatively analyze mechanical systems (e.g., force, work, rate, resistance, energy, power, force transformations).
- PTC.4.2 use both given information and lab collected data to calculate velocity and acceleration along linear and circular paths.
- PTC.4.3 draw free body diagrams to illustrate the forces acting on objects and perform simple calculations involving velocity, acceleration and net force; research the applications of force and acceleration in modern design and technology.
- PTC.4.4 apply graphical and algebraic solutions to vector problems.
- PTC.4.5 identify the relationship between potential energy and kinetic energy in gravitational and elastic potential/kinetic energy systems; recognize the conservation of energy in simple harmonic motion.
- PTC.4.6 calculate work, energy, power and efficiency in mechanical systems.
- PTC.4.7 construct models and/or working systems that show applications of technology to solve problems involving mechanical systems.

Fluids

- PTC.4.8 qualitatively and quantitatively analyze fluid systems (e.g., pressure, work, rate, resistance, energy, power, force transformations).
- PTC.4.9 identify and apply the properties of solids, liquids and gases to explain their behavior at different pressures and temperatures.
- PTC.4.10 identify and apply Bernoulli's principle to floating objects; identify the buoyant force acting on floating and submerged objects.
- PTC.4.11 calculate the pressure of a solid object on a surface and the pressure exerted by a fluid at a given depth; relate the measure of pressure in kPa to pressure in N/m^2 .
- PTC.4.12 construct models and/or working systems that show applications of technology to solve problems involving fluid systems.

Thermodynamics

- PTC.4.13 qualitatively and quantitatively analyze thermal systems (e.g., temperature, rate, resistance, energy).
- PTC.4.14 perform conversions between Fahrenheit, Celsius, and Kelvin temperature scales.
- PTC.4.15 define specific heat capacity; use the specific heat equation to calculate heat gained or lost during phase changes and heat lost when objects cool.
- PTC.4.16 investigate and analyze the different rates of heat transfer by different materials.
- PTC.4.17 construct models and/or working systems that show applications of technology to solve problems involving heat flow and heat exchange.

Waves, Sound and Optics

- PTC.4.18 investigate and apply the reflective, refractive and diffractive properties of waves to study mechanical and electromagnetic waves.
- PTC.4.19 use the relationship between wavelength, velocity and frequency to calculate the speed of waves; recognize that the speed of light is a constant.
- PTC.4.20 construct models and/or working systems that show applications of technology to solve problems involving energy transfer by wave motion.
- PTC.4.21 research and describe new developments in optical technology.

Electricity and Magnetism

- PTC.4.22 qualitatively and quantitatively analyze electrical systems (e.g., voltage, work, rate, resistance, energy, power, force transformations).
- PTC.4.23 investigate the nature of electrical and magnetic fields; recognize the basic properties of electrical charge and differentiate between conductors and insulators.
- PTC.4.24 draw and construct electrical circuits; apply Ohm's law to calculate
- PTC.4.25 construct models and/or working systems that show applications of technology to solve problems involving use of electricity.

Modern Physics

- PTC.4.26 recognize and distinguish between Einstein's General and Special Theories of Relativity and research evidences to support these theories.
- PTC.4.27 recognize the products of nuclear decay and write decay chain equations. Voltage drops in series and parallel circuits.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- PTC.5.1 investigate, analyze, synthesize, and evaluate those devices in the home that were developed from the understanding of science and technology.
- PTC.5.2 investigate and analyze the interdependence of science and technology.
- PTC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- PTC.5.4 describe the scientific concepts underlying technological innovations.
- PTC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- PTC.6.1 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- PTC.6.2 explore occupational opportunities in science and technology including the academic preparation necessary.
- PTC.6.3 engage in decision making activities and actions to resolve science-technology-society issues.

SOCIAL STUDIES

Social Studies, as a field of study, embodies the essence of mankind and interconnects the past, present and future. It investigates where people live and how they participate as citizens. It manifests how they change, prosper and live in an increasingly culturally diverse, interconnected world. Social Studies, an academic area within the K-12 curriculum, is responsible for enabling students to understand the social world and become respectable citizens.

The West Virginia Content Standards and Objectives have been written in an effort to bring order to the vast, rich and powerful substance of social studies. With this philosophy as a guide, members of the Social Studies Curriculum Refinement Committee developed five content standards for all West Virginia students. Identifying what students should know and be able to do is the foundation of West Virginia's Content Standards and Objectives in Social Studies. As Abigail Adams wrote, "Learning is not attained by chance; it must be sought for with order and attended with diligence." Each content standard is a statement of a core learning expectation for all students.

West Virginia's vision for education includes the integration of technology throughout the curriculum so that all West Virginia students have the opportunity to develop technology skills that support learning. Successful learning environments provide opportunities for students to use educational technology interwoven with relevant curricular content. West Virginia teachers are responsible for integrating technology appropriately in the students' learning environment.

The Social Studies Content Standards and Objectives establish the foundation of five core disciplines: citizenship, civics/government, economics, geography and history. Each discipline offers a distinct strategy for examining the world and providing students with specific intellectual and conceptual tools for analyzing causes and consequences. The organization of separate content standards for each discipline suggests their unique contribution to an understanding of the world; it does not imply they be taught in isolation. Social Studies is by its very nature integrative. The important social issues require insights from across the disciplines. Citizenship, civics/government, economics, geography and history each offer distinct approaches and develop specific skills for examining common subject matter, which can be integrated when addressing a particular issue or event. Below is a brief explanation of the specific importance of each core discipline.

Citizenship

Citizenship education will prepare students to become informed, active citizens who accept their responsibilities, understand their privileges and rights and participate actively in society and government as effective citizens. Students must be able to research issues, form reasoned opinions, support their positions and engage in the political process. The students will learn respect for the rights of others, a concern for the common good and a commitment to basic democratic principles.

Civics/government

Civics directly addresses citizenship education in the context of political systems. Students study the assumptions upon which governments are founded and the strategies governments employ to achieve their goals. With respect to the United States, students learn the underlying principles of representative democracy, the constitutional separation of powers and the rule of law. Students will understand the need for authority and government and the exercise of rights and responsibilities. Students must learn and practice intellectual and participation skills essential for an involved citizenry. In order to develop these skills, the curriculum must extend beyond the school to include experiences in the workplace and service in the community.

Economics

Economics analyzes the production, allocation, distribution and use of resources. Students examine the inherent relationship between costs and benefits and the values associated with them. Understanding economic principles, whole economies and the interactions between different types of economies helps students comprehend the exchange of information, capital and products across the globe. Learners will investigate economic principles and their application to historical situations. Then learners will work cooperatively and individually to analyze how basic economic principles affect their daily lives by examining real problems and situations. The economic principles should include an understanding of scarcity and choice, productivity, markets and prices, supply and demand, competition, role of government, international trade factors and consumer decisions.

Geography

Geography organizes life situations in terms of where they occur. People interact with the natural world in culturally distinct ways to produce unique places, and those places change over time. The methods and perspectives of geography give students a spatial understanding of the world, and the ability to evaluate information in spatial terms. Students will examine the varying ways that peoples interact with their environments, and appreciate the diversity of the places those interactions create.

History

History organizes events and phenomena in terms of when they occurred and examines where, how and why they took place. Students study how individuals and societies have changed and interacted over time. They gather historical data, examine, analyze and interpret this data, and present their results in a clear, critical manner. They organize events through chronologies and evaluate cause-and-effect relationships among them. Students analyze how individuals, groups and nations have shaped cultural heritages. Through the study of history, students learn about states, nations, locations, settlements, formations, governments, economic developments and cultural history.

Plato informed our study of Social Studies when he wrote these words, "The direction in which education starts a man will determine his future life." Social Studies education must begin early to insure that students develop an understanding and appreciation of the United States as a powerful and proud nation. As we enter the twenty-first century, the United States remains an international leader and role model for democracy. Social Studies education is the heart and soul that provides students with the knowledge necessary to understand the strength and challenges of our country and the skills to make it even greater one day.

Social Studies Content Standards K-12

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

Kindergarten Social Studies Content Standards and Objectives

Social Studies in kindergarten will introduce children to the lives of interesting people in history, time sequence using historic events, geographic direction and economic choices. The Social Studies program begins the formal introduction of what constitutes a good citizen of the United States. Children will learn the roles of good citizens regarding responsibilities, privileges and rights. Teachers will emphasize the importance of following rules, respecting the rights of others, self-control, honesty, courage, justice and leadership. The objectives for elementary West Virginia Social Studies may be integrated throughout the K-3 curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.K.1.1 demonstrate an understanding that a good citizen takes turns and shares, takes responsibility for doing daily chores, cares for personal belongings and shows respect for what belongs to others.
- SS.K.1.2 identify examples of honesty, courage and patriotism.
- SS.K.1.3 identify the need for rules and the consequences for breaking rules and how to resolve disagreements peacefully.
- SS.K.1.4 be given the opportunity to recite the Pledge of Allegiance, sing patriotic songs and celebrate national holidays.
- SS.K.1.5 give examples and explain why citizens voluntarily contribute their time and talents to the community.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.K.2.1 explain why rules are important and participate in developing rules.
- SS.K.2.2 give examples of authority figures in the home, school and community.
- SS.K.2.3 identify traditional patriotic symbols such as state and national flags and be given the opportunity to participate in patriotic activities such as standing for the National Anthem.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.K.3.1 identify occupations within the local community.
- SS.K.3.2 identify the basic needs of people (shelter, food and clothing).
- SS.K.3.3 identify the economic concept of the difference between needs and wants.
- SS.K.3.4 identify the economic concept of the exchange of money for goods and services.
- SS.K.3.5 identify the economic concept of saving for the future.
- SS.K.3.6 recognize that some goods and services are provided by the government (schools, parks, police and fire departments).

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.K.4.1 identify land masses versus bodies of water using a globe or a map.
- SS.K.4.2 demonstrate knowledge of left/right, up/down, near/far and above/under using locations on a map or picture.
- SS.K.4.3 identify community symbols (e.g., traffic signs, traffic lights, street and highway markers) and map symbols (e.g., legend references to land, water, roads and cities).
- SS.K.4.4 name the four seasons and describe the characteristics of each season.
- SS.K.4.5 name types of weather, describe the characteristics of each type, and describe what people wear in different types of weather.
- SS.K.4.6 compare and contrast characteristics of life in the city (urban) and country (rural).

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.K.5.1 collect data and sequence time, places, people and events as they relate to the student's own life.
- SS.K.5.2 build a sense of empathy toward other people, times and cultures.
- SS.K.5.3 begin to identify sources of information to answer questions.
- SS.K.5.4 explore the past through stories of people, heroes, pictures, songs, holidays, customs, traditions and legends.
- SS.K.5.5 investigate the culture of Native Americans.
- SS.K.5.6 identify characteristics of communities, families and family life.

First Grade Social Studies Content Standards and Objectives

Social Studies in grade one explores the role of the citizen in the schools, family, and community. Students will learn responsibilities, privileges and rights, patriotic traditions, symbols, functions of money and the connection of the past to the present. Conflict resolution, consumer roles and good safety practices will be introduced. Students will be introduced to geographic features and regions. A variety of graphic skills will be incorporated, including graphs, charts, timelines and other data collection activities. Economic concepts of basic needs and community occupations will be explored. The objectives for elementary West Virginia Social Studies may be integrated throughout the K-3 curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.1.1.1 express opinions and accept opinions of others in solving problems and/or resolving conflicts.
- SS.1.1.2 recognize examples of honesty, caring and trustworthiness in the home and at school.
- SS.1.1.3 participate in developing classroom rules and identifying consequences of breaking rules.
- SS.1.1.4 demonstrate respect and responsibility for self and others' materials and belongings.
- SS.1.1.5 be given the opportunity to recite the Pledge of Allegiance, participate in patriotic singing and celebrate national holidays.
- SS.1.1.6 explain volunteerism and participate in school/community projects.
- SS.1.1.7 demonstrate and give examples of appropriate behavior in dangerous situations (e.g., fire, poison, traffic, strangers and drugs).

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/ Government Objectives

Students will:

- SS.1.2.1 identify and practice various group roles (e.g., group leader, recorder, reporter, collector) in the classroom.
- SS.1.2.2 explain why different forms of governments (e.g., family, school, communities) are necessary.
- SS.1.2.3 describe the roles of government leaders and identify the president and governor.
- SS.1.2.4 recognize the need for authority figures.
- SS.1.2.5 explain the difference between rules and laws, establish criteria for determining if a rule or law is fair, and identify the consequences for breaking rules.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.1.3.1 make choices from among needs and wants, and predict the consequences of those choices.
- SS.1.3.2 demonstrate the exchange of goods and services (using money or other goods and services).
- SS.1.3.3 compare and contrast occupations in the community.
- SS.1.3.4 recognize that all people share the same basic needs.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment. (Physical Systems);
- identify, analyze and explain how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of the environment and society (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.1.4.1 construct a simple map of a familiar area (such as the school) incorporating cardinal directions and map symbols.
- SS.1.4.2 locate the United States and West Virginia on a globe or world map.
- SS.1.4.3 identify major geographic features (e.g., rivers, lakes, mountains, oceans) using a United States map.
- SS.1.4.4 sequence the seasons of the year, days of the week and months.
- SS.1.4.5 identify basic natural resources (e.g., water, plants, soil, air).
- SS.1.4.6 describe how climate/weather affects the way people live (e.g., food, clothing, shelter, recreation).
- SS.1.4.7 construct and interpret simple maps using cardinal directions, location, a scale and symbols in a legend.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.1.5.1 identify ways communities change over time (e.g., landscape, buildings, jobs, population).
- SS.1.5.2 investigate and contrast family history through two generations (parents, grandparents) and make comparisons to present-day living using sources such as timelines, interviews, pictures and graphs.
- SS.1.5.3 identify characteristics of the past and contributions of heroic people using sources as stories, folk tales, pictures, poems, songs, legends, holidays and customs.
- SS.1.5.4 build a sense of empathy for others by investigating racial and cultural differences through celebrations, holidays and family traditions.
- SS.1.5.5 identify different types of families (e.g., single parent, extended, multi-generational).
- SS.1.5.6 participate in the collection and organization of historical data.

Second Grade Social Studies Content Standards and Objectives

Second grade Social Studies expands the roles of citizenship. Students will learn the functions of government, local folklore, symbols and traditions. The roles and responsibilities of each child as a citizen in a democratic community and nation will be emphasized. They will explore volunteer and service activities, conservation and environmental preservation. The use of conflict resolution will be reinforced. Students will continue to learn about geographic places and regions and participate in map activities. Students will learn the economic concepts of needs/wants, bartering and saving/spending. The objectives for elementary West Virginia Social Studies may be integrated throughout the K-4 curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.2.1.1 choose and participate in a project of volunteer service.
- SS.2.1.2 identify and examine examples of honesty, trustworthiness, compassion and empathy in daily life experiences.
- SS.2.1.3 model the personal responsibilities of good citizenship in the classroom (e.g., responsibility, self-control).
- SS.2.1.4 be given the opportunity to recite the Pledge of Allegiance and participate in national celebrations.
- SS.2.1.5 identify and practice components of conflict resolution within the school community.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

SS.2.2.1 identify the three levels of government (local, state, federal).

SS.2.2.2 compare and contrast rules and laws.

SS.2.2.3 recognize the need for authority figures and identify the characteristics of responsible leaders.

SS.2.2.4 explain how and why laws/rules can provide order and predictability.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

SS.2.3.1 make economic choices and predict the consequences of those choices.

SS.2.3.2 explore various occupations and how job opportunities in the community have changed.

SS.2.3.3 practice bartering as an alternative method of securing goods/services and needs/wants, and compare to present ways of acquiring goods and services.

SS.2.3.4 identify how people in different cultures have the same needs, but meet their needs in different ways.

SS.2.3.5 explain the role of banks in saving for the future purchase of goods and services.

SS.2.3.6 construct, read and interpret a variety of graphs, charts and tables.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.2.4.1 recognize West Virginia by shape and relative location.
- SS.2.4.2 demonstrate knowledge of cardinal directions, a compass rose and map legends on a map.
- SS.2.4.3 identify the United States and/or world regions on a map.
- SS.2.4.4 examine a variety of maps and globes to identify and describe major geographic features (e.g., rivers, lakes, oceans, islands, continents, mountains).
- SS.2.4.5 identify basic natural resources (e.g., water, plants, soil, air) and how people use these resources.
- SS.2.4.6 locate major communities in the county and state, and explain the processes that have caused them to change.
- SS.2.4.7 use a map scale to construct class and school maps.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.2.5.1 gather information and data using family artifacts, photos and interviews in order to compare different life styles, and use this information to construct a timeline of family history through three generations.
- SS.2.5.2 explore the history of the community by identifying locally significant sites and people.
- SS.2.5.3 explore, compare and contrast the past contributions of heroic people using sources such as stories, folk tales, pictures, poems, songs, legends, holidays and customs.
- SS.2.5.4 investigate current events using various media (e.g., student newspaper, television, news broadcasts).
- SS.2.5.5 read children's books about different cultures, and compare the variety of traditions, languages, structures of families and community life.
- SS.2.5.6 examine the lives and cultures of Native Americans and early settlers through stories, legends, myths and folklore.
- SS.2.5.7 use and draw conclusions from various historic data collection methods (e.g., graphs, charts, timelines).

Third Grade Social Studies Content Standards and Objectives

Third grade Social Studies presents a study of the broader community to introduce state and nation. Students will explain community changes due to technology, human interaction with the environment and the movement of people. Students will practice citizenship in the school and community and study government at local, state and national levels. Supply and demand, taxation and budgeting within the context of the community will be introduced. The objectives for elementary West Virginia Social Studies may be integrated throughout the K-4 curriculum. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.3.1.1 identify and practice principles of honesty, fairness and justice in experiences at home, school and in the community.
- SS.3.1.2 identify and model the personal and civic responsibilities of good citizenship in the classroom, school and community.
- SS.3.1.3 explain the significance of patriotic symbols, holidays, celebrations and famous people.
- SS.3.1.4 explain the importance of respect and protection of minorities.
- SS.3.1.5 give examples of how people working together can accomplish goals that individuals working alone cannot.
- SS.3.1.6 explain and cite examples of how groups can make a difference in the community.
- SS.3.1.7 introduce the concept of the common good.

Performance Descriptors (SS.PD.3.1)

■ Distinguished

Third grade students performing at the distinguished level evaluate how the responsibilities of citizenship such as honesty, justice, patriotism, and respect at school, at home, in the community and in the state are important for the common good and predict situations where students will use these responsibilities.

■ Mastery

Third grade students performing at the mastery level explain and demonstrate the responsibilities of citizenship, such as honesty, justice, patriotism, and respect at school, at home, in the community and in the state.

■ Partial Mastery

Third grade students performing at the partial mastery level recognize, recall, and label the responsibilities of citizenship such as honesty, justice, patriotism, and respect at school, at home, in the community and in the state.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.3.2.1 explain the importance of government in the classroom, school, community and state.
- SS.3.2.2 explain that citizens are united by commonly held principles and beliefs.
- SS.3.2.3 identify the three levels (local, state, federal) of government and the responsibilities of each level.
- SS.3.2.4 review majority rule and give examples of that concept in a democracy.
- SS.3.2.5 apply criteria in evaluating rules and laws (strengths and weaknesses, design and purpose, enforcement, bias).

Performance Descriptors (SS.PD.3.2)

■ **Distinguished**

Third grade students performing at the distinguished level analyze government in order to determine its importance in the classroom, school, community and state. They evaluate school rules. They describe majority rule as it relates to democracy.

■ **Mastery**

Third grade students performing at the mastery level explain government and its importance in the classroom, school, community and state. They compare and contrast school rules/laws as to their strengths and weaknesses. They relate majority rule to that concept in a democracy.

■ **Partial**

Third grade students performing at the partial mastery level define government and identify its importance in the classroom, school, community and state. They identify classroom rules.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.3.3.1 explain the concept of scarcity by citing examples of limited supplies and scarce resources.
- SS.3.3.2 explain why budgeting is a critical skill.
- SS.3.3.3 explain supply and demand with appropriate examples.
- SS.3.3.4 examine the economic impact of various occupations.
- SS.3.3.5 summarize how banks serve as intermediaries between savers and borrowers.
- SS.3.3.6 explain the relationship between government taxation and the provision of public services.
- SS.3.3.7 illustrate the path of a product from the raw material to the consumer.
- SS.3.3.8 show how competition for products increases with advertising.
- SS.3.3.9 create and use graphs, charts, maps and other data sources to illustrate the use of resources, the demand for products and the supply of goods and services.

Performance Descriptors (SS.PD.3.3)

- **Distinguished**
Third grade students at the distinguished level classify how budgeting and occupational choices change because of scarcity, production, consumption and taxation on the occupations and budgets of people, and the provisions of public services.
- **Mastery**
Third grade students at the mastery level explain within the context of the community scarcity, supply, demand, savings, taxation, steps in production, consumption, public services and advertising affect personal budgeting and occupational choice.
- **Partial Mastery**
Third grade students at the partial mastery level define within the context of the community scarcity, supply, demand, savings, taxation, steps in production, consumption, public services, advertising, personal budgeting and occupational choice.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.3.4.1 describe and use the basic elements of maps and globes (e.g., title, legend, cardinal directions, scale, grid, parallels, meridians).
- SS.3.4.2 identify north, south, east, west, borders, lines of longitude and latitude, equator, north and south poles and time zones using a map.
- SS.3.4.3 identify world geographic features (e.g., peninsulas, islands, continents, straits, mountains, rivers, deserts, oceans, seas, harbors, gulfs, forests, oases).
- SS.3.4.4 locate states and capitals on a United States map.
- SS.3.4.5 compare and contrast climate, weather and location with regard to people's clothing, food, shelter and jobs.
- SS.3.4.6 describe the various elements of the environment (water, soil, weather, climate, topography), and explain how people affect and are affected by them.
- SS.3.4.7 describe how people in the community make their living from the environment and identify activities that individuals can do to keep the environment clean.

- SS.3.4.8 construct, read and interpret data from various types of maps, globes, charts, graphs and timelines (e.g., population, products, climate).

Performance Descriptors (SS.PD.3.4)

- **Distinguished**
Third grade students performing at the distinguished level identify and explain the elements of maps and globes and define geographic vocabulary, use a wide variety of maps and globes to locate major world geographic features, and analyze the interaction between people and environment with regard to personal directions, latitude and longitude, states and capitals.
- **Mastery**
Third grade students performing at the mastery level identify the basic elements of maps and globes and define geographic vocabulary, use a variety of maps and globes to locate major world geographic features, and describe the interaction between people and environment with regard to personal directions, latitude and longitude, states and capitals.
- **Partial Mastery**
Third grade students performing at the partial mastery level sometimes identify the basic elements of maps and globes and define simple geographic vocabulary. Students use simple maps and globes to locate major world geographic features. Sometimes they recognize the interaction between people and environment with regard to personal direction, states and capitals.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.3.5.1 explain the historical significance of major events, people and their contributions to the United States.
- SS.3.5.2 construct a timeline representing the settlement of a community/region.
- SS.3.5.3 compare and contrast present cultures to the cultures of people of other historical time periods (e.g., source of food, clothing, shelter, products used).
- SS.3.5.4 make historical inferences by analyzing artifacts and pictures.
- SS.3.5.5 discuss and draw conclusions about current events.
- SS.3.5.6 explore American heroes, customs and traditions using various forms of literature.
- SS.3.5.7 explain the importance of respect for diversity in the heritage, culture, ideas and opinions of others.
- SS.3.5.8 compare and contrast different stories or accounts about past events, people, places or situations, and identify how they contribute to our understanding of the past.
- SS.3.5.9 sequence and discuss a series of pictures that reflect historic change (e.g., transportation, technology, agriculture, events in history).
- SS.3.5.10 organize information from various reference sources to prepare short reports and presentations.

Performance Descriptors (SS.PD.3.5)

■ **Distinguished**

Third grade students performing at the distinguished level evaluate the significance of key individuals and major historical events in early American history. Using folklore and literature, they draw conclusions about lifestyles and cultures. Students describe their local community and extend the concept of community to state, nation and the world.

■ **Mastery**

Third grade students performing at the mastery level identify key individuals and major historical events in early American history. Using folklore and literature, they compare and contrast past and present cultures. Students describe their local community and extend the concept of community to state and nation.

■ **Partial Mastery**

Third grade students performing at the partial mastery level identify key individuals and major historical events in early American history. Using folklore and literature, they list characteristics of cultures past and present. Students describe their local community.

Fourth Grade Social Studies Content Standards and Objectives

Fourth grade Social Studies is an introduction to the growth of the United States from exploration and colonization (When The Three Worlds Meet) to the conclusion of the American Revolution. Students will analyze the assimilation of immigrant groups, development of improved technology, major historical figures and events. Students will also learn about the physical geography of North America and its influence upon diverse cultures. Data collection and the essential roles of citizens in the democratic process will be emphasized. Roles of elected officials, economic trade offs and the need for taxation will be introduced. Students will learn how the economic concepts of competition, advertising, budgeting and taxation impact production and consumption. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.4.1.1 identify public agencies in the community that provide services and investigate opportunities for volunteerism.
- SS.4.1.2 work independently and cooperatively to accomplish goals.
- SS.4.1.3 identify commonly held democratic values, principles and beliefs expressed in the Declaration of Independence and the significance of patriotic symbols, holidays, celebrations and famous people.

- SS.4.1.4 describe forms of diversity in early American society, giving examples of the strengths/contributions of each.
- SS.4.1.5 evaluate the qualities of responsible leadership by individuals and in groups.
- SS.4.1.6 explain the responsibilities, privileges and rights of United States citizenship and the importance of civic life.
- SS.4.1.7 describe ways in which groups of people in schools/communities can manage conflict peacefully.

Performance Descriptors (SS.PD.4.1)

■ **Distinguished**

Fourth grade students performing at the distinguished level explain the basic democratic values, principles, and beliefs expressed in the Declaration of Independence and analyze how they relate to rights and responsibilities of Americans today, and then, find examples of them in today's news and activities. They assess and critique the significance of US and WV patriotic symbols, holidays and celebrations. They generate strategies which will enhance conflict resolution skills.

■ **Mastery**

Fourth grade students performing at the mastery level compare and contrast the principles, values and beliefs expressed in the Declaration of Independence, and draw conclusions about the significance of US and WV patriotic symbols, holidays and celebrations. They also describe the rights and responsibilities of American and WV citizenship and then employ strategies to manage conflict peacefully.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level name some of the principles, values and beliefs expressed in the Declaration of Independence and summarize some significances of the US and WV patriotic symbols, holidays and celebrations. They also identify the rights and responsibilities of American and WV citizenship and then model strategies for managing conflict peacefully.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.4.2.1 explain how the rule of law and limited government protect individual rights and the common good.
- SS.4.2.2 explain the rights of minorities in the democratic process and the right to dissent responsibly.
- SS.4.2.3 identify historical conflicts concerning individual rights and how those conflicts were resolved.

Performance Descriptors (SS.PD.4.2)

■ Distinguished

Fourth grade students performing at the distinguished level verify the protection of minority rights in a democracy, cite examples of conflicts concerning individual rights and draw conclusions about how they have been resolved. They analyze symbols and celebrations and rank famous West Virginians according to the significance of their contributions. They compare and contrast the parts of government at the local, county and state levels.

■ Mastery

Fourth grade students performing at the mastery level explain how the rights of minorities are protected in a democracy and how conflicts concerning individual rights have been resolved. They explain state symbols, celebrations and famous West Virginians and describe their contributions. They define parts of the government at the local, county and state levels.

■ Partial Mastery

Fourth grade students performing at the partial mastery level list examples of how the rights of minorities are protected in a democracy. They recall how conflicts concerning individual rights have been resolved. They identify state symbols, celebrations and famous West Virginians. They list the parts of the government at the local, county and state levels.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.4.3.1 explain the concept of trade-offs (e.g., developing hypothetical budgets in simulated situations).
- SS.4.3.2 using print and media sources, analyze advertisements and their impact upon consumer choices.
- SS.4.3.3 analyze the factors that shaped the economy in the colonies and the Americas.
- SS.4.3.4 give examples of people as consumers and producers of goods.
- SS.4.3.5 explain the concept of taxation and its relationship to public services.
- SS.4.3.6 describe how slavery and indentured servitude influenced the early economy of the United States.
- SS.4.3.7 predict how competition in the market place affects prices.
- SS.4.3.8 analyze a product chart for price comparison.
- SS.4.3.8 construct and use charts, graphs, tables and grids to display data.

Performance Descriptors (SS.PD.4.3)

■ Distinguished

Fourth grade students at the distinguished level analyze the factors of production, scarcity, land use, consumer and producer choices and explain their impact on taxation, slavery, indentured servitude and natural resources in the economic development of the colonies and the Revolutionary War. Students explain how occupational choices are affected by resource use.

■ **Mastery**

Fourth grade students at the mastery level identify the factors of production, scarcity, land use, choices of consumers and producers of goods and explain their impact on taxation, slavery, indentured servitude and natural resources to explain the economic development of the colonies and the American Revolution. Students identify how natural resources and geographic features affect the economic development of West Virginia and the occupational choices of citizens.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level define factors of production, scarcity, land use and taxation and cite an example of each. Students identify occupations based on the natural resources and geographic features of West Virginia.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.4.4.1 identify and locate North, South and Central American countries and bodies of water.
- SS.4.4.2 use geographic terms to describe the physical features of the Americas (e.g., mountains, rivers, grasslands, oases).
- SS.4.4.3 analyze the effect of geographic factors in the development of transportation routes and settlement patterns in the Americas.
- SS.4.4.4 identify physical barriers to transportation in the Americas and how people adapted to the barriers (e.g., Appalachian and Rocky mountains, Great Plains, Rain Forest, Isthmus of Panama).
- SS.4.4.5 compare and contrast the physical, economic and political changes caused by geographic conditions and human intervention.
- SS.4.4.6 analyze and compare the effects of geographic factors upon people's jobs, food, clothing, shelter, services and interaction with the outside world.
- SS.4.4.7 identify geographic factors that affect population density and other patterns on the earth.
- SS.4.4.8 describe different climate types.
- SS.4.4.9 locate on a map the sites of the American Indian nations before the arrival of the Europeans.
- SS.4.4.10 utilize map skills to locate places and to construct maps (e.g., symbols in a legend/key; lines of demarcation [Equator, Prime Meridian, latitude and longitude, time zones, borders, coast lines] scales; directions [cardinal and intermediate]; and geographic barriers).

Performance Descriptors (SS.PD.4.4)

■ Distinguished

Fourth grade students performing at the distinguished level independently identify and locate the countries of the Americas, states of the United States and counties of West Virginia on blank maps. The students use grade level terminology in drawing conclusions about the interaction of people and environment of West Virginia and the United States in regard to physical features, natural resources, climate, transportation, migration and settlement. They compare, contrast and analyze regions of both West Virginia and the United States.

■ Mastery

Fourth grade students performing at the mastery level identify and locate the countries of Americas, states of the United States and the counties of West Virginia on blank maps. The students use grade level geographic terminology to describe the interaction of people and the environment of West Virginia and the United States with regard to physical features, natural resources, climate, transportation, migration and settlement. They compare and contrast regions of both West Virginia and the United States.

■ Partial Mastery

Fourth grade students performing at the partial mastery level locate some of the countries of the Americas, states of the United States and the counties of West Virginia on blank maps, and define simple geographic terms, recognize the interaction of people and environment of West Virginia and the United States with regard to physical features, natural resources, climate, transportation, migration and settlement. They locate selected regions of both West Virginia and the United States.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.4.5.1 interpret data presented in timelines.
- SS.4.5.2 order chronologically selected historical figures and episodes, and explain their importance in the stories of Native Americans, explorers, settlers and colonists in North America.
- SS.4.5.3 identify major leaders and events from America's colonization through the Revolutionary War.
- SS.4.5.4 identify the influence of various factors on the founding of the original colonies.
- SS.4.5.5 identify areas and patterns of early American settlement and depict territorial expansion and population distribution in the United States through maps, charts, pictures and research projects.
- SS.4.5.6 explore ways in which early explorers and settlers adapted to, used and changed the environment of the state or region.
- SS.4.5.7 identify and describe European explorers of the 15th and 16th centuries, their reasons for exploring, the information gained from their journeys and what happened as a result of their travels.
- SS.4.5.8 explore how and why family and community life differed in various regions of colonial North America.
- SS.4.5.9 compare the family lives of different groups and strata in colonial times including the roles and responsibilities of men, women, children and the elderly.

- SS.4.5.10 explain how African Americans came to America and how slavery developed.
- SS.4.5.11 describe factors that led to the colonists' break with Great Britain and research major events of the Revolutionary War (e.g. Stamp Act, Boston Tea Party, Bunker Hill, Yorktown)
- SS.4.5.12 describe ways in which language, stories, music, folk tales and artistic creations serve as expressions of culture and influence the behavior of people living in a particular culture.
- SS.4.5.13 compare and contrast the cultures of the colonists and Native Americans and describe the changes that occurred when they came into contact with one another.
- SS.4.5.14 explain the similarities and differences in backgrounds, motivations and occupational skills between people in the English settlements and those in the French and Spanish settlements.
- SS.4.5.15 evaluate the choices made and roles undertaken in the American Revolution by different classes and groups and what they hoped or feared from revolution.
- SS.4.5.16 analyze various sources for reconstructing the past such as documents, letters, diaries, maps, photos and others.
- SS.4.5.17 explain why Americans and those who led them (e.g., George Washington, Benjamin Franklin, Thomas Jefferson) went to war to win independence from England.
- SS.4.5.18 analyze and interpret information from pictures and news sources related to historical events and people.
- SS.4.5.19 suggest appropriate reference sources to answer specific questions, collect information and prepare short reports.
- SS.4.5.20 sequence major historical events in United States history on a timeline (e.g., discovery of America, Boston Tea Party, Revolutionary War).

Performance Descriptors (SS.PD.4.5)

■ **Distinguished**

Fourth grade students performing at the distinguished level connect early exploration and colonization of North America to the spread of cultural, religious and political ideology. They assess the significant events and differing beliefs leading to the Revolutionary War. Students use primary and secondary sources to draw conclusions about colonial life. Students trace and describe the economic, social, political and cultural history of West Virginia as reflected in folklore and heritage.

■ **Mastery**

Fourth grade students performing at the mastery level explain the early exploration and colonization of North America. Students identify significant events leading to the Revolutionary War. They use primary and secondary sources to describe colonial life. Students trace and describe the economic, social, political and cultural history of West Virginia as reflected in folklore and heritage.

■ **Partial Mastery**

Fourth grade students performing at the partial mastery level trace and describe the early exploration and colonization of North America. Students identify key events leading to the Revolutionary War. They describe the economic, social, political and cultural history of West Virginia as reflected in folklore and heritage.

Elementary West Virginia Studies Content Standards and Objectives

The objectives for West Virginia Studies explore historic, geographic, economic, and civic concepts. These objectives shall be taught as a kindergarten-4 integrated unit or as a separate fourth grade unit. The relationship among geographic factors, settlement patterns, and economic development of West Virginia will be explored in this course. The cultural heritage of the various groups who settled West Virginia will be researched through classroom activities. The course content will reflect West Virginia's unique characteristics as well as its relationship to the nation. Teachers are encouraged to introduce students to geographic places and regions. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

The students will:

- SS.WV.1.1 explain why various civic dispositions, such as the act of voting as a West Virginia citizen, is a responsibility, a privilege and a right.
- SS.WV.1.2 propose solutions and investigate opportunities for public volunteerism concerning a local problem.
- SS.WV.1.3 explain that students are citizens of their classroom, community, state and nation.
- SS.WV.1.4 take and defend a position as to why fulfilling one's civic responsibility is important.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

The students will:

- SS.WV.2.1 identify state symbols, the state capital, the Governor, celebrations, holidays and famous West Virginians.
- SS.WV.2.2 recognize and be given the opportunity to recite the State Motto and sing the State Song.
- SS.WV.2.3 identify the roles and functions of the government (e.g., legislative, executive, judicial branches) at the local, county and state levels.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

The students will:

- SS.WV.3.1 identify the effect of natural resources and geographic features upon the economic development of counties and the state.
- SS.WV.3.2 identify the major occupations of people in the private and public sectors of our state.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.WV.4.1 locate West Virginia on a United States map, and identify bordering states.
- SS.WV.4.2 locate and describe the four geographic regions of West Virginia and the major communities contained within each region.
- SS.WV.4.3 locate student's county and county seat on a West Virginia map.
- SS.WV.4.4 analyze the impact of West Virginia's geography on transportation, settlement, jobs, clothing, food, shelter, services and interaction with the outside world and changes over time.
- SS.WV.4.5 describe West Virginia's climate and weather.
- SS.WV.4.6 recognize the difference between renewable and nonrenewable resources.
- SS.WV.4.7 identify student's state, town, county and address.
- SS.WV.4.8 use maps to explore West Virginia's population, products, resources, transportation, state parks, forests and scenic/recreational resources.

- SS.WV.4.9 find an absolute West Virginia location (e.g., using a grid system) and a relative location (e.g., direction and reference to neighboring states, rivers, mountain ranges).

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.WV.5.1 explain and trace the economic, social and political history of West Virginia.
- SS.WV.5.2 describe the cultural life of West Virginia as reflected in folklore and heritage.
- SS.WV.5.3 compare and contrast past and present lifestyles of West Virginians.
- SS.WV.5.4 use reference sources to answer specific questions, collect information and prepare short reports about West Virginia.

Fifth Grade Social Studies Content Standards and Objectives

The fifth grade Social Studies program is a basic overview of the United States from its emergence as a new nation. Students will understand the significance of major events of each historical era. Students will examine documents relating to the establishment of the nation and the new government. They will continue to examine the role of citizenship in the school and community. Students will examine the movement in the nation from rural to urban and from agriculture to industry focusing on the economic impact of these moves. Students will learn how government decisions impact the economy. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.5.1.1 describe how groups and institutions work to meet the individual needs and promote the common good.
- SS.5.1.2 explain the political process and describe its importance in decision-making.
- SS.5.1.3 explain the consent of the governed as the source of authority of government.
- SS.5.1.4 explain the importance of citizens' having and supporting common democratic values and principles expressed in the nation's core documents.
- SS.5.1.5 identify and analyze differences between individual responsibilities, privileges and rights of American citizenship.

Performance Descriptors (SS.PD.5.1)

■ **Distinguished**

Fifth grade students performing at the distinguished level justify and defend the roles of an American citizen in relation to responsibilities, rights, involvement in political process and decision making. They explain the source of governmental power and analyze the belief in common values and principles as defined by our core documents.

■ **Mastery**

Fifth grade students performing at the mastery level identify, explain, and examine the roles of an American citizen in relation to responsibilities, rights, involvement in political process, and decision making. They explain the source of governmental power and analyze the belief in common values and principles as defined by our core documents.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level recognize and recall some of the roles of an American citizen in relation to responsibilities, rights, involvement in political process, and decision making. They explain the source of governmental power and the belief in common values and principles as defined by our core documents.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.5.2.1 give examples of how government does or does not provide for the needs and wants of people, establish order and manage conflict.
- SS.5.2.2 participate in exercises that demonstrate knowledge of trial by jury.
- SS.5.2.3 list and explain the weaknesses of the Articles of Confederation.
- SS.5.2.4 list the individual rights and responsibilities in the Bill of Rights.
- SS.5.2.5 identify the first three articles of the Constitution and outline the basic functions of the three branches of government.
- SS.5.2.6 explain and illustrate how a bill becomes a law.
- SS.5.2.7 analyze the importance of government in the classroom, school, community, state and nation.

Performance Descriptors (SS.PD.5.2)

■ **Distinguished**

Fifth grade students performing at the distinguished level compare and contrast the Articles of Confederation, U.S. Constitution and Bill of Rights to determine how each meets the needs and wants of the people. They create a bill to address a particular need or want and work through the legislative process.

■ **Mastery**

Fifth grade students performing at the mastery level explain how government does or does not provide for the needs and wants of the people, (e.g., the failure of the Articles of Confederation, the development of the Constitution and the Bill of Rights). They describe the steps taken for a bill to become law and recognize that laws evolve to meet the needs and wants of the people.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level identify some needs and wants of the people that government provides/addresses, and list the basic rights in the Bill of Rights. They will identify laws at the local, state and national levels.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.5.3.1 identify the roles of consumers in the United States economy.
- SS.5.3.2 apply the concept of supply and demand to a specific United States situation.
- SS.5.3.3 explain the economic impact of slavery upon the development of the United States.
- SS.5.3.4 list geographic factors that can enhance or limit economic activities in various United States regions.
- SS.5.3.5 describe the impact of industrialization on the economy of the United States.
- SS.5.3.6 explain the function of agriculture in the economic development of the United States.
- SS.5.3.7 apply the concepts of sales, expenses and profits to a real life event (e.g., school-related situation such as sports events, concession stand, snack machines).

Performance Descriptors (SS.PD.5.3)

■ **Distinguished**

Fifth grade students at the distinguished level construct possible solutions for a selected long-term economic problem that was present through the nineteenth and twentieth centuries and construct a model showing possible solutions.

■ **Mastery**

Fifth grade students at the mastery level explain the role of economic factors, agriculture, slavery, industrialization, supply and demand and competition, in the development of the United States economy and individual consumer habits from the emergence of a new nation to the present.

■ **Partial Mastery**

Fifth grade students at the partial mastery level describe examples of economic factors, agriculture, slavery, industrialization, supply and demand, and competition, which have influenced United States economy from the Revolutionary War to the present.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.5.4.1 read, interpret and draw conclusions from United States maps (e.g., special purpose maps, graphs, charts, tables, timelines).
- SS.5.4.2 measure distances using a scale, and apply the concept of cardinal and intermediate directions.
- SS.5.4.3 use a map to locate a country by hemisphere and its proximity to the equator.
- SS.5.4.4 locate, identify and contrast the major rivers, landforms, natural resources, climate regions, major soil regions and deserts of the United States.
- SS.5.4.5 describe the development of the United States' urban areas.
- SS.5.4.6 discuss and define the various regions of the United States.
- SS.5.4.7 identify and locate each of the fifty United States within their regions.
- SS.5.4.8 explain the relationship of the environment to cultures in the United States.
- SS.5.4.9 relate the United States' westward expansion to natural resources and physical geography.
- SS.5.4.10 use geography to describe historical events.
- SS.5.4.11 describe how people have changed the environment of the United States.

Performance Descriptors (SS.PD.5.4)

■ Distinguished

Fifth grade students performing at the distinguished level use, construct and draw conclusions from U.S. maps and other resources, and acquire, process and effectively report on the various regions of the United States from the early explorers' perception to current times. They explain the physical processes responsible for the major rivers, mountains, soils and deserts of the United States, and analyze and evaluate how human activity and environment shaped the United States, and use and apply geographic perspective and tools to discuss the evolution of cultures in the United States.

■ Mastery

Fifth grade students performing at the mastery level use and acquire information from United States maps and other resources. They discuss the various regions of the United States from the early explorers' perception to current times. They explain the physical processes responsible for the major rivers, mountains, soils and deserts of the United States, and analyze how human activities and the environment shaped the United States.

■ Partial Mastery

Fifth grade students performing at the partial mastery level relate information from United States maps and resources, and identify the various regions of the United States from the perceptions of the early explorers to the current times. They discuss the physical processes responsible for the major rivers, mountains, soils and deserts of the United States, and identify human activities and environment that shaped the United States. Students use simple geographic tools to explain evolution of cultures in the United States.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.5.5.1 describe and analyze the events and the historic figures responsible for such documents as the United States Constitution, the Bill of Rights and the Emancipation Proclamation.
- SS.5.5.2 create a timeline showing the arrival of major immigrant groups and describe their experiences and the influence of each culture upon American society.
- SS.5.5.3 describe the development of transportation in the United States and explain its impact on settlement, industry and residential patterns.
- SS.5.5.4 explain why maintaining historical records and landmarks is important to the United States.
- SS.5.5.5 interpret quotes of famous Americans from various periods of history.
- SS.5.5.6 explain how important figures reacted to their times and why they were significant to the history of our democracy (e.g., George Washington, Thomas Jefferson, Abraham Lincoln, Sojourner Truth, Susan B. Anthony, Eleanor Roosevelt and Martin Luther King, Jr.).
- SS.5.5.7 describe how regional folk heroes and other popular figures have contributed to the cultural history of the United States (e.g., frontiersmen such as Daniel Boone, cowboys, mountain men such as Jedediah Smith, American Indian Chiefs including Geronimo and outlaws such as Billy the Kid).
- SS.5.5.8 explain how songs, symbols and slogans demonstrate freedom of expression and the role of protest in democracy (e.g., the abolition of slavery, women's suffrage, labor movements, the civil rights movement).
- SS.5.5.9 assess the significance of the new Constitution of 1787, including the struggles over its ratification and the reasons for the addition of the Bill of Rights.
- SS.5.5.10 describe issues faced by Washington when he became the first United States President.
- SS.5.5.11 identify and explain social and technological changes that took place during the Industrial Revolution in the United States.
- SS.5.5.12 list the reasons for westward expansion and explain how it affected the inhabitants of the American West (e.g., Native Americans).
- SS.5.5.13 explain the effects of government policies on Native American nations and their land holdings.
- SS.5.5.14 analyze the impact of slavery and the Abolitionist Movement upon the development of the United States.
- SS.5.5.15 identify causes, major events and important people of the Civil War.
- SS.5.5.16 explain how various reconstruction plans succeeded or failed.
- SS.5.5.17 identify events which led to the United States becoming a world power.
- SS.5.5.18 identify the opposing sides in World War I and explain why the United States entered the war.
- SS.5.5.19 describe the effects of the Great Depression on the people of the United States.
- SS.5.5.20 identify the causes and effects of World War II.
- SS.5.5.21 identify significant leaders in the Civil Rights Movement (e.g., John Fitzgerald Kennedy, Martin Luther King Jr., Rosa Parks, Lyndon Johnson).

Performance Descriptors (SS.PD.5.5)

■ **Distinguished**

Fifth grade students performing at the distinguished level evaluate the significance of people, places, documents, ideas and events in their correct historical period and context from the post-Revolutionary War era to the present. They determine factors which led to the ascent of the United States to a world power and analyze the role of the United States in significant nineteenth and twentieth century events.

■ **Mastery**

Fifth grade students performing at the mastery level identify people, places, documents, ideas and events in their correct historical period and context from the post - Revolutionary War era to the present. They explain the ascent of the United States to a world power and describe significant nineteenth and twentieth century events.

■ **Partial Mastery**

Fifth grade students performing at the partial mastery level identify key people, places, documents, ideas, and events in their correct historical period and context from the post -Revolutionary War era to the present.

Sixth Grade Social Studies Content Standards and Objectives

Sixth grade Social Studies provides an interdisciplinary examination of selected world regions: North America, South America, Western Europe and the Middle East. Students study historical development, characteristics of places, connections between regions and their impact on modern cultures. Students learn how governments are developed and the roles of citizens in various emerging state/nation. Emphasis will be placed on how environment, technology and resources have helped to determine economic relations and conflicts between these regions. Various economic systems will be introduced. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.6.1.1 describe ways in which nations interact with one another and try to resolve problems.
- SS.6.1.2 evaluate, take and defend positions on the purposes that government should serve.
- SS.6.1.3 explain how nations benefit when they resolve conflicts peacefully.
- SS.6.1.4 compare and contrast the role of American citizens and citizens in selected regions.
- SS.6.1.5 analyze and evaluate the influence of various forms of citizen action on public policy.
- SS.6.1.6 evaluate the effectiveness of public opinion in influencing and shaping public policy development and decision making.

SS.6.1.7 compare and contrast responsibilities, privileges and rights of United States citizenship in selected regions.

Performance Descriptors (SS.PD.6.1)

■ **Distinguished**

Sixth grade students performing at the distinguished level predict how the roles of American citizens and citizens in other nations may change in the future and assess the influence of those citizens' actions on public policy. They also judge and defend the benefits of resolving international conflicts peacefully.

■ **Mastery**

Sixth grade students performing at the mastery level compare and contrast the roles of American citizens to citizens in other nations and analyze the influence of those citizens' actions on public policy. They also survey the benefits of resolving international conflicts peacefully.

■ **Partial Mastery**

Sixth grade students performing at the partial mastery level identify the roles of citizens in world regions and identify some of the influences of those citizens' actions on public policy. They also demonstrate some of the benefits of resolving international conflicts peacefully.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.6.2.1 evaluate competing ideas about the purposes of government.
- SS.6.2.2 analyze and explain how various types of government meet needs and wants of citizens, manage conflict and establish security.
- SS.6.2.3 explain the impact of strong leadership on historic world events.
- SS.6.2.4 explain the purpose of political parties and special interest groups and their influence on the political process.
- SS.6.2.5 illustrate the political divisions of nations.
- SS.6.2.6 identify and give examples of different forms of government, and classify them as either limited or unlimited.
- SS.6.2.7 distinguish between governmental and nongovernmental international organizations and describe their functions.

Performance Descriptors (SS.PD.6.2)

■ **Distinguished**

Sixth grade students performing at the distinguished level analyze various forms of governments and they compare the structures of governments for the power given to leaders. They identify strong leadership and evaluate their actions and the consequences. They determine the function of governmental and non-governmental organizations.

- **Mastery**

Sixth grade students performing at the mastery level explain the impact of strong leadership on historical world events. They differentiate among various forms of government and distinguish between governmental and non-governmental organizations.

- **Partial Mastery**

Sixth grade students performing at the partial mastery level recognize characteristics that make a strong leader. They list world leaders past and present and match them to their form of government.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.6.3.1 explain the economic reasons for immigration and migration.
- SS.6.3.2 demonstrate an understanding that competition among sellers results in lower prices.
- SS.6.3.3 compare the basic characteristics of communism, socialism and capitalism.
- SS.6.3.4 explain and outline the steps in producing and marketing goods.
- SS.6.3.5 assess the economic impact of technology on regions.
- SS.6.3.6 explain how trade cartels affect the world economy (e.g., Organization of Petroleum Exporting Countries).
- SS.6.3.7 trace the development of treaties and organizations related to trade.
- SS.6.3.8 compare production and consumption of goods and services in different countries.

Performance Descriptors (SS.PD.6.3)

- **Distinguished**

Sixth grade students at the distinguished level evaluate economic systems in selected nations in relation to the United States economic system.

- **Mastery**

Sixth grade students at the mastery explain the impact of technology, trade cartels and treaties, on the production, marketing and consumption of goods and services and employment in selected nations.

- **Partial Mastery**

Sixth grade students at the partial mastery level describe jobs and types of technology used in production, marketing and consumption of goods and services. They define and recognize trade cartels and treaties related to selected nations.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.6.4.1 determine the time at one location when informed of the time at another location using a world time zone map.
- SS.6.4.2 use map tools (legends, keys, scales) to interpret information (e.g., climate, landforms, resources).
- SS.6.4.3 identify changes in population due to shifts from agricultural to industrial/urban development.
- SS.6.4.4 locate and identify the continents, major climates, major bodies of water and natural resources (e.g., knowledge of landforms such as peninsulas, mountain ranges, plateaus, river valleys, lakes), and compare and analyze the relationship of people and the environment with regard to population, settlement and trade.
- SS.6.4.5 locate the major waterways of North America, South America, Western Europe and the Middle East, and explain their impact on exploration, settlement and trade. (e.g., discuss how the opening of the Erie Canal contributed to the rise of New York City).
- SS.6.4.6 draw conclusions about the effects of geography on transportation, culture, economic activities, population density and distribution using maps.
- SS.6.4.7 explain the changing nature of the earth's surface (e.g., earthquakes, volcanoes).
- SS.6.4.8 compare and contrast general characteristics of the population of selected regions with regard to economics, religion, language and movement.
- SS.6.4.9 interpret information from a population growth graph and a population pyramid (e.g., discuss the age of the population, growth potential, life expectancy).
- SS.6.4.10 examine changes in the commercial form and function (e.g., agriculture center to trade center to industrial center) of urban areas in different regions of the world.

Performance Descriptors (SS.PD. 6.4)

■ Distinguished

Sixth grade students performing at the distinguished level explain the physical and human processes that shape the earth's surface and predict future changes. Students construct and/or use complex time zone maps, globes and population pyramids to derive information about their place in the world. They use maps to draw conclusions about the effects of geography on population density, distribution and movement. Students compare and contrast the selected regions of the world with respect to migration including economics, religion and language. They analyze and evaluate the characteristics of the new geographic frontiers.

■ Mastery

Sixth Grade students performing at the mastery level describe and explain the physical and human processes that shape the earth's surface. They construct and/or use time zone maps, globes and population pyramids to derive information about their place in the world. They use maps to draw conclusions about the effects of geography on population density, distribution and movement. Students describe selected regions of the world with respect to migration including economics, religion and language. They identify the new geographic frontiers.

■ Partial Mastery

Sixth grade students performing at the partial mastery level identify the physical and human processes that shape the earth's surface. Students use grade level geographic tools to recognize their place in the world. Students use simple maps to describe the effects of geography on population density, distribution and movement. They identify the movement of economics, religion and language from selected regions of the world. They locate the new geographic frontiers.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.6.5.1 identify and evaluate contributions of classical civilizations and cite reasons for their rise and fall.
- SS.6.5.2 explain the basic tenets of major monotheistic religions and their impact on western civilizations.
- SS.6.5.3 identify the contributions and characteristics of Arab/Islamic society and Judea-Christian societies.
- SS.6.5.4 identify the causes and consequences of the Protestant Reformation.
- SS.6.5.5 identify how Europeans benefited by expansion in the New World.
- SS.6.5.6 explain the competition of the English and French on the American frontier.
- SS.6.5.7 explain the systems of slavery developed in North America, Latin America, Iberia and Africa.
- SS.6.5.8 describe the impact of the slave trade on the political, economic and social systems in North America, Latin America, Iberia and Africa.
- SS.6.5.9 identify agricultural products exchanged between the New and Old Worlds during the age of exploration.
- SS.6.5.10 identify major historical events in the development of transportation systems (water, rail, motor vehicles, aviation).
- SS.6.5.11 outline or build a timeline showing the influx of ethnic groups into North America.
- SS.6.5.12 explain how the Industrial Revolution affected the lives of people in Western Europe and the Americas.
- SS.6.5.13 analyze and trace the evolution of democracy during the nineteenth century in western nations.
- SS.6.5.14 compare and contrast the worth of the individual in different societies over time.
- SS.6.5.15 develop a timeline of the major events of western migration in the United States and identify key land acquisitions on a map.
- SS.6.5.16 outline events in the Abolition movement and the results of the Emancipation Proclamation and Amendments 13, 14, 15.
- SS.6.5.17 explain the causes and effects of the Great Depression and the political responses of governments to this crisis (rise of Hitler, Fascism, militarism in Japan, New Deal in the United States).
- SS.6.5.18 identify global tensions which led to the outbreak of WW I and WW II.
- SS.6.5.19 identify key figures, philosophies and events in the Minority Rights movements including civil rights and rights of women.
- SS.6.5.20 explain the impact of the use of atomic weapons.

Performance Descriptors (SS.PD.6.5)

■ **Distinguished**

Sixth grade students performing at the distinguished level evaluate the significance of people, places, documents, ideas and events in their correct historical period and context. They examine the contributions of the civilizations of North America, South America, Europe and the Middle East and assess how those contributions advanced that culture and influenced other cultures.

■ **Mastery**

Sixth grade students performing at the mastery level identify people, places, documents, ideas and events in their correct historical period and context. They identify and explain contributions of the civilizations of North America, South America, Europe and the Middle East with an emphasis on exploration and colonization, the Industrial Revolution and religions of the world. They compare and contrast the cultural characteristics of each selected region.

■ **Partial Mastery**

Sixth grade students performing at the partial mastery level identify key people, places, documents, ideas and events in their correct historical period and context. They identify contributions of major civilizations of North America, South America, Europe and the Middle East and list the cultural characteristics of each region.

Seventh Grade Social Studies Content Standards and Objectives

The seventh grade is a study of geography through the six essential elements: The World in Spatial Terms; Places and Regions; Physical Systems; Human Systems; Environment and Society; and Uses of Geography. Students will examine people and places, and analyze the relationships between them. These relationships include cultures, history, environmental concerns and political and economic systems. Students will use maps, graphs, charts and other technologies in achieving an understanding of a geographical perspective. Students will formulate concepts directly related to those ideals that foster citizenship. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.7.1.1 compare and contrast individual rights of citizens in a variety of world regions.
- SS.7.1.2 explain how actions citizens take can influence public policy decisions.
- SS.7.1.3 compare and contrast nations' laws that may or may not provide order, predictability and security.

- SS.7.1.4 locate, access and organize information about an issue of public concern from multiple points of view.
- SS.7.1.5 identify and practice selective forms of civic discussion and participation consistent with the ideas of citizens in a democratic republic.
- SS.7.1.6 recognize and explain the difference between power and authority.

Performance Descriptors (SS.PD.7.1)

- **Distinguished**
Seventh grade students performing at the distinguished level evaluate the rights of citizens from various world regions and determine how they relate to those of U.S. citizens. They evaluate the influence that the American democratic system has had on other nations and the influence those nations have had on American politics and society. They also assess the difference between power and authority.
- **Mastery**
Seventh grade students performing at the mastery level describe the rights of citizens from various world regions comparing and contrasting them to those of U.S. citizens. They explain and analyze the influence that the American democratic system has had on other nations and the influence those nations have had on American politics and society.
- **Partial Mastery**
Seventh grade students performing at the partial mastery level identify the rights of citizens from various world regions and compare them to those of U.S. citizens. They identify some of the influences that the American democratic system has had on other nations and the influence those nations have had on American politics and society. They recognize some of the differences between power and authority.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.7.2.1 identify and explain the different forms of government in various world regions.
- SS.7.2.2 compare and contrast the lawmaking processes of world governments.
- SS.7.2.3 analyze the different ways nations provide order and protect justice.
- SS.7.2.4 debate the importance of limited government and the rules of law.
- SS.7.2.5 differentiate various methods that nations use to interact with one another to resolve problems and conflicts.
- SS.7.2.6 recognize the influence of the United States on other nations and the influence of other nations on the American political process and society.

Performance Descriptors (SS.PD.7.2)**■ Distinguished**

Seventh grade students performing at the distinguished level analyze different forms, processes and purposes of government in order to rank their effectiveness. They assess examples of methods used to address international conflicts to determine the level of resolution.

■ Mastery

Seventh grade students performing at the mastery level compare and contrast different forms, processes and purposes of world governments. They differentiate the ways nations interact with one another to resolve problems.

■ Partial Mastery

Seventh grade students performing at the partial mastery level identify different forms of government and their purposes. They list ways nations interact with one another to solve problems.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.7.3.1 demonstrate an understanding of how competition among buyers of a product results in higher prices of that product.
- SS.7.3.2 analyze how geography influences the economy of a region.
- SS.7.3.3 describe the relationship between supply, demand and the price of a product.
- SS.7.3.4 compare and contrast various social services provided by world governments.
- SS.7.3.5 identify and compare different types of economic systems.
- SS.7.3.6 describe the impact of technology on agriculture and industry throughout the world.
- SS.7.3.7 identify and classify the different types of world trade organizations.
- SS.7.3.8 identify the impact and global effects of a strike on an industry.
- SS.7.3.9 explain how countries are economically interdependent.
- SS.7.3.10 define basic economic terminology and apply it to economic development of world regions.

Performance Descriptors (SS.PD.7.3)**■ Distinguished**

Seventh grade students at the distinguished level apply economic principles to evaluate how the interdependence of global economies influences price determination, government services, technological changes in agriculture and industrial development, resource use and trade policy.

■ Mastery

Seventh grade students at the mastery level compare economic systems and explain their interdependence in terms of opportunity cost and competition and their impact on price determination, government services, technological changes in agriculture and industrial development, resource use and trade policy.

■ Partial Mastery

Seventh grade students at the partial mastery level describe the characteristics of economic systems and present examples of opportunity costs, price determination, government services, agricultural and industrial technology, resource use, and trade policy.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment. (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

The students will:

- SS.7.4.1 use correct geographic terminology.
- SS.7.4.2 draw conclusions about information presented on special purpose maps and be able to differentiate among map types.
- SS.7.4.3 understand the use of directions (e.g., cardinal directions, subordinate directions, latitude and longitude).
- SS.7.4.4 identify and locate the seven continents of the world and their associated oceans, seas, rivers and landforms.
- SS.7.4.5 identify countries, cities and transportation networks on maps.
- SS.7.4.6 identify and explain the advantages and disadvantages of different map projections and their uses (e.g., aerial photos, globes, charts, graphs, polar projection).
- SS.7.4.7 identify how mental maps (perceptions) affect our judgments about people and places.
- SS.7.4.8 locate and identify major world rivers, climate areas and rain forests.
- SS.7.4.9 identify and describe the patterns of immigration and effects on the distribution of cultural patterns in a region (e.g., disease, language, religion, customs, diversity).
- SS.7.4.10 compare and contrast geographic regions (e.g., physical, cultural, perceptual, economic).
- SS.7.4.11 identify geographic factors and cultural factors that block the movement of ideas and innovations.
- SS.7.4.12 analyze the growth of tourism and its impact on regional environments and culture.
- SS.7.4.13 analyze interconnections between regions (e.g., goods and services, music, language, religion).
- SS.7.4.14 identify how human processes impact the world's physical environment (e.g., pollution, clear-cutting, strip mining).
- SS.7.4.15 identify the world's climatic regions and the ways in which they influence lifestyle.
- SS.7.4.16 analyze renewable and nonrenewable resources (e.g., hydroelectric power and fossil fuels), and explain how technology affects the ways in which culture groups perceive and use their resources.
- SS.7.4.17 analyze the technological improvements in transportation and communication that have helped create a global society.
- SS.7.4.18 explain the common geographic factors associated with the development of world urban centers.
- SS.7.4.19 explain cooperation and conflict over control of the world's resources.
- SS.7.4.20 compare and contrast the characteristics of demographic structure through population pyramids (e.g., total size, birth rates, age, distribution, doubling time).

- SS.7.4.21 define the term culture and use the term in a geographic context (e.g., isolation, core area, movement).
- SS.7.4.22 investigate and describe new geographic frontiers such as the oceans, Antarctica and airspace.

Performance Descriptors (SS.PD.7.4)

- **Distinguished**
Seventh grade students performing at the distinguished level use precise geographic terminology in the construction and/or use of geographic tools such as special purpose maps to draw conclusions using spatial data. They compare and contrast geographic regions of the world and clearly explain the connections between them. Students analyze and describe how the physical and human processes interact to shape the environment. They investigate and describe new geographic frontiers.
- **Mastery**
Seventh grade students performing at the mastery level use appropriate geographic terminology in the construction and/or use of geographic tools such as special purpose maps to draw conclusions from spatial data. They compare and contrast geographic regions of the world and the connections between them. Students describe how the physical and human processes interact to shape the environment. They investigate and describe new geographic frontiers.
- **Partial Mastery**
Seventh grade students performing at the partial mastery level use geographic terminology and geographic tools such as special purpose maps to sometimes recognize information from spatial data. Students identify geographic regions of the world and the connections between them, and describe the physical and human processes that shape the environment. They identify new geographic frontiers.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.7.5.1 describe the development of early civilizations (e.g., Mesopotamia, Egypt, Greece, China, India).
- SS.7.5.2 draw world history conclusions from maps, globes, charts, posters, graphs and timelines.
- SS.7.5.3 identify conditions that have influenced or altered the movement of people throughout the world.
- SS.7.5.4 identify religious and secular celebrations observed around the world.
- SS.7.5.5 explain the role of racial and ethnic minorities and women in the advancement of civil rights.
- SS.7.5.6 compare and contrast the beliefs, religion and mythology of native cultures throughout the world.
- SS.7.5.7 explain what occurs when people from different regions interact.
- SS.7.5.8 draw conclusions about the effect of the environment on native cultures (e.g., Native Americans, Australian Aborigines, African Berbers).

- SS.7.5.9 identify and use processes important to reconstruction and reinterpreting the past such as using a variety of sources, providing, validating and weighing evidence and checking creditability of sources.
- SS.7.5.10 describe the role geo-politics played in historic events of the twentieth century (e.g., Cold War, Vietnam, Persian Gulf War).

Performance Descriptors (SS.PD.7.5)

■ **Distinguished**

Seventh grade students performing at the distinguished level evaluate the significance of people, places, documents, ideas and events in their correct period and context. They examine the impact of migration on religions, governments, societies, cultures, and find evidence of cultural assimilation.

■ **Mastery**

Seventh grade students performing at the mastery level identify people, places, documents, ideas and events in their correct historical period and context. They trace and describe the effects of migration on religions, governments, societies and cultures past and present.

■ **Partial Mastery**

Seventh grade students performing at the partial mastery level identify key people, places, documents, ideas and events in their correct historical period and context. They explain major migrations and describe the spread of major religious, political and cultural beliefs.

Eighth Grade Social Studies Content Standards and Objectives

The eighth grade program of study consists of a comprehensive course on West Virginia, from the Pre-Columbian period to present day. Special emphasis is placed on the interdependence of geographic, cultural, political, environmental and economic factors involved in the history of the state. Citizenship and how the citizen influences public policies will be emphasized. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.8.1.1 evaluate how citizens can participate in government at the local, state and national levels (e.g., voting, community service, letter writing).
- SS.8.1.2 identify and practice forms of civic discussion and participation consistent with the ideals of citizens in a democratic republic.
- SS.8.1.3 analyze the effectiveness of selected public policies and citizen behaviors in recognizing the stated ideas of a democratic republic.

- SS.8.1.4 explain the relationship between policy statements and action plans used to address issues of public concern.
- SS.8.1.5 explain the political process and the opportunities for citizens to influence government.
- SS.8.1.6 locate, access, analyze, organize and apply information about selected public issues, recognizing and explaining multiple points of view.
- SS.8.1.7 explain and analyze various forms of citizen action that influence public policy. (e.g., how groups can work with governmental agencies to impact the development of tourism).
- SS.8.1.8 analyze the influence of diverse forms of public opinion on the development of public policy and decision making.
- SS.8.1.9 examine the strategies designed to strengthen the common good, which consider a range of options for citizen action.
- SS.8.1.10 identify, analyze, evaluate and interpret sources and examples of the responsibilities, privileges and rights of citizens.
- SS.8.1.11 explain the role and importance of voting in the democratic process and practice the voting process by participating in a class/school/state mock election.
- SS.8.1.12 identify voting as a responsibility and right of citizens, and identify the legal voting age.
- SS.8.1.13 identify ways students can participate in the governance of their school and community.
- SS.8.1.14 develop and utilize a process to express opinion, resolve problems and/or seek assistance.
- SS.8.1.15 examine and analyze a local community and propose ways in which tourism can be developed.
- SS.8.1.16 develop a mock bill to promote tourism in West Virginia.

Performance Descriptors (SS.PD.8.1)

- **Distinguished**
Eighth grade students performing at the distinguished level evaluate and predict how citizen actions and civic participation influence public policy, action plans and public opinion reflecting the common good and the core democratic values of American democracy.
- **Mastery**
Eighth grade students performing at the mastery level describe and classify actions and participation that influence public policy, action plans and public opinion reflecting the common good and the core democratic values of American democracy.
- **Partial Mastery**
Eighth grade students performing at the partial mastery level identify citizen actions and participation that influence public policy, action plans, and public opinion reflecting the common good and the core democratic values of American democracy.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives:

Students will:

- SS.8.2.1 analyze the division of powers and responsibilities of the executive, legislative and judicial branches of United States and West Virginia state government.
- SS.8.2.2 identify the duties and requirements of elected officials at the national, state and local levels (e.g., President, Governors, Senators, Representatives/Delegates, Members of Board of Public Works, County Commissioners).
- SS.8.2.3 examine the amendment process of the West Virginia Constitution.
- SS.8.2.4 identify and chart the process of how a bill becomes law in West Virginia. (e.g., a bill to promote tourism).
- SS.8.2.5 analyze the functions and jurisdictions of the federal, state, local and special courts (e.g., United States Supreme Court, State Supreme Court, circuit courts, magistrate courts, family courts).
- SS.8.2.6 identify various types of elections in West Virginia (e.g., primary/general, state/local, partisan/non-partisan).
- SS.8.2.7 research and describe how special interest groups influence government and the law-making process in West Virginia. (e.g., West Virginia Education Association, United Mine Workers, Division of Tourism).
- SS.8.2.8 identify major sources and uses of revenue for state and local governments (e.g., property tax, income tax, fees and licenses, excise tax, levies)
- SS.8.2.9 identify and analyze individual rights and privileges protected by the United States and West Virginia Constitutions and laws.
- SS.8.2.10 explain major principles of American constitutional government, (e.g., federalism, separation of powers, the elastic clause, checks and balances, government by consent of the governed, individual rights) and compare to the West Virginia Constitution.
- SS.8.2.11 analyze conditions under which constitutional government flourishes.
- SS.8.2.12 compare and contrast rights and privileges of the individual citizen.
- SS.8.2.13 examine laws passed in a legislative session and list those that impact the development of tourism.

Performance Descriptors (SS.PD.8.2)

- **Distinguished**

Eighth grade students performing at the distinguished level compare and contrast the structure and function of the governments of West Virginia and the United States. They analyze the purpose of taxation to determine its importance to the function of government. They compare and contrast the contributions of individuals and groups who have influenced the law-making process.

- **Mastery**

Eighth grade students performing at the mastery level define the structure and function of the governments of the United States and West Virginia, including finance. They describe how individuals and groups have influenced government and the law-making process.

- **Partial Mastery**

Eighth grade students performing at the partial mastery level identify the three branches of West Virginia and United States government and list functions of each. They list individuals/groups that influence the law-making process.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.8.3.1 describe how West Virginia's economic condition affects social conditions (e.g., employment, in/out migration).
- SS.8.3.2 define and explain the importance of West Virginia's renewable and non-renewable resources and how absentee ownership of these resources impacts the state's economy.
- SS.8.3.3 explain the benefits of trade to West Virginia's economy.
- SS.8.3.4 examine economic reasons for the deterioration of some downtown areas in twentieth century West Virginia and the renaissance of others.
- SS.8.3.5 determine the factors that caused West Virginia to become a leader in the production of salt, coal and electricity.
- SS.8.3.6 identify industries and products (e.g., tourism, coal, glass, recreation, agriculture) that are important to the economy of the four regions of West Virginia and how they relate to occupations.
- SS.8.3.7 describe and analyze the effects of national and state governmental actions on West Virginia's economy.
- SS.8.3.8 describe and analyze the importance of banking in West Virginia's economy (e.g., savings, interest, loans).
- SS.8.3.9 analyze and predict the changes in West Virginia's economy and people due to industrial development, and debate the issue of industrialization vs. preserving history.
- SS.8.3.10 examine the effect of technological changes on West Virginia's economy (e.g., in employment, agriculture, tourism, education, industry).
- SS.8.3.11 identify the labor/management strategies that have affected West Virginia's economy (e.g., strikes, boycotts, yellow-dog contracts).
- SS.8.3.12 list some of the major industries in West Virginia and identify representative jobs under each. (e.g., manufacturing, mining, tourism, health care).
- SS.8.3.13 describe the economic benefit of changing tourist attractions from seasonal to year round. (e.g., Snowshoe).

Performance Descriptors (SS.PD. 8.3)

■ Distinguished

Eighth grade students at the distinguished level apply economic principles to design an economic development plan for West Virginia, which provides for the future development of infrastructure, industry, agriculture and human services.

■ Mastery

Eighth grade students at the mastery level explain the government policies, technological changes, private institutions, factors of production and competition affecting changes in labor/management relations, resource use and industrial development and occupation choices in West Virginia.

■ Partial Mastery

Eighth grade students at the partial mastery level identify the government policies, private institutions and labor/management relations, and recognize the effect on West Virginia employment over time.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives:

Students will:

- SS.8.4.1 describe West Virginia's location in relationship to the Prime Meridian, Equator, Tropic of Cancer, Tropic of Capricorn, Arctic and Antarctic Circles.
- SS.8.4.2 identify West Virginia's location by latitude and longitude including degrees, minutes and seconds.
- SS.8.4.3 identify West Virginia's man-made and natural borders.
- SS.8.4.4 use a map to identify the four major geographic regions, major rivers, landforms and points of interest in West Virginia.
- SS.8.4.5 identify, analyze and discuss West Virginia's geographic regions through reading descriptive literature.
- SS.8.4.6 identify the location of West Virginia in relationship to neighboring states and the eastern United States.
- SS.8.4.7 use a map to identify the counties and major cities in West Virginia.
- SS.8.4.8 cite reasons for the development of the West Virginia transportation system.
- SS.8.4.9 draw conclusions about climate, landforms and resources in West Virginia's four geographic regions using special purpose maps.
- SS.8.4.10 explain how the cultural and economic isolation of different areas of the United States and West Virginia have been changed through technological advances (e.g., TV, radio, telephone, computers, highways).
- SS.8.4.11 describe West Virginia's climate, its effect on people's lives.
- SS.8.4.12 use a map to explain the settlement, exploration and population patterns of West Virginia in relation to geographic features.
- SS.8.4.13 identify the geographic factors which lead to development of agriculture, coal, glass, chemical, metallurgical and tourism industries in West Virginia.
- SS.8.4.14 define region and list various regions found in West Virginia. (e.g., geographic, tourist).
- SS.8.4.15 identify and locate counties in the 8 tourist regions of West Virginia.
- SS.8.4.16 explain how West Virginia's environment affects tourism.

Performance Descriptors (SS.PD.8.4)

■ Distinguished

Eighth grade students performing at the distinguished level differentiate ways that physical and cultural processes impact human environment interaction in West Virginia. Students use a broad variety of resources to evaluate spatial information about infrastructure and industry in West Virginia.

■ Mastery

Eighth grade students performing at the mastery level explain ways the physical and cultural processes impact on human environment interaction in West Virginia. Students use a variety of resources including maps, Geographic Information System (GIS), fiction and non-fiction literature to interpret spatial information about infrastructure and industry in West Virginia.

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level identify the ways physical and cultural processes impact on human environment interaction in West Virginia. Students use resources such as maps, Geographic Information System (GIS) and literature to describe spatial information about infrastructure and industry in West Virginia.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives:

Students will:

- SS.8.5.1 list reasons for exploration, major explorers, their routes and discoveries on the western Virginia frontier.
- SS.8.5.2 sequence the events and incentives for Virginia's expansion west to the Ohio River.
- SS.8.5.3 compare and contrast French and English explorers, settlers and settlements on the western frontier.
- SS.8.5.4 sequence the events that led to the formation of the state of West Virginia.
- SS.8.5.5 identify characteristics of various Native American cultures in West Virginia from the pre-Columbian period to the arrival of Europeans.
- SS.8.5.6 identify the types of transportation which facilitated the growth of West Virginia and western expansion.
- SS.8.5.7 sequence and analyze the impact of contemporary social, economic and technological developments on people and culture in West Virginia and the United States.
- SS.8.5.8 describe and analyze the evolution of the labor movement in West Virginia and the United States.
- SS.8.5.9 identify the role of ethnic and racial minorities and women in West Virginia's history.
- SS.8.5.10 explain reasons for and resulting consequences of conflicts and wars as they pertain to the development of West Virginia (e.g., French and Indian War, American Revolution, Civil War).
- SS.8.5.11 draw conclusions about West Virginia and other areas from various types of charts, graphs, maps, pictures, models and timelines.
- SS.8.5.12 describe the cultural conflict between the Europeans and Native Americans as it relates to West Virginia.
- SS.8.5.13 explain the effect of immigration on the culture of West Virginia from European settlement through the early twentieth century.
- SS.8.5.14 identify men and women in West Virginia who have made significant contributions to our history in the public and/or private sectors (e.g., statehood movement, abolition movement, education, industry, literature).
- SS.8.5.15 identify and explain the significance of historical experience and of geographical, social and economic factors that have helped to shape both West Virginian and American society.
- SS.8.5.16 describe the moral, ethical and legal tensions that led to the creation of the new state of West Virginia and how those tensions were resolved.
- SS.8.5.17 identify and locate places of historical importance in West Virginia that can be visited by tourists.

- SS.8.5.18 list fairs and festivals in West Virginia that can be attributed to the influence of various cultural groups who have settled in the state.

Performance Descriptors (SS.PD.8.5)

■ **Distinguished**

Eighth grade students performing at the distinguished level evaluate and demonstrate a comprehensive understanding of the significance of people, places, documents, ideas and events in their correct historical context and their impact on future events. Students explain how the conflicts and differences within the state led to regionalism. They examine how the economy, government, society and diverse cultures influenced the formation and growth of the state. They examine significant industry, labor, transportation and technology issues and propose solutions to current problems in these areas. Students identify the art, literature and music that define the unique character of the state.

■ **Mastery**

Eighth grade students performing at the mastery level explain the significance of people, places, documents, ideas and events in their correct historical period and context. Students explain the conflicts within the state and the effects of national events on the state. They explain how the economy, government, society and diverse cultures influenced the formation of the state. They examine significant industry, labor, transportation and technology issues and describe challenges facing West Virginia today. Students identify the art, literature, and music that define the unique character of the state.

■ **Partial Mastery**

Eighth grade students performing at the partial mastery level identify key people, places, documents, ideas and events in their correct historical period and context. Students describe conflicts affecting the state. They explain how the economy, government, society and diverse cultures influenced the formation and growth of the state. They examine issues from a historical perspective and identify challenges facing West Virginia today. Students identify art, literature and music that define the unique character of the state.

Ninth Grade Social Studies Content Standards and Objectives

This program of study follows the evolution of the Constitution as a living document and the role of participatory democracy in the development of a rapidly changing technological society. This study of the United States is an examination of the formative years from the Pre-Columbian civilizations to its transformation as a dominant political and economic influence in the world. Special emphasis is placed on how the challenges of settling expansive and widely-differing environments were met by a diverse population. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.9.1.1 compare and contrast various citizens' responses to controversial government actions.
- SS.9.1.2 justify the importance of the fundamental democratic values and principles of United States constitutional democracy to individuals, communities and nations.
- SS.9.1.3 make informed decisions as to what government should and should not do.
- SS.9.1.4 explain how citizens, interacting with one another, monitor and influence their government.
- SS.9.1.5 evaluate ways conflicts can be resolved in a cooperative, peaceful manner that respects individual rights and promotes the common good.
- SS.9.1.6 evaluate, take and defend positions on issues in which fundamental democratic values and principles are in conflict, (e.g., liberty and equality, individual rights and the common good, majority rule, minority rights).
- SS.9.1.7 define United States citizenship and evaluate the characteristics of a citizen.
- SS.9.1.8 evaluate, take and defend positions on issues regarding the criteria used for naturalization.
- SS.9.1.9 evaluate sources of information related to public policy issues.
- SS.9.1.10 participate in a project of volunteer service.
- SS.9.1.11 assess and evaluate responsibilities, privileges and rights of United States citizens.

Performance Descriptors (SS.PD.9.1)

- **Distinguished**

Ninth grade students performing at the distinguished level draw conclusions about the effects of government actions. Students assess the reasons why citizens monitor and influence U.S. government, evaluate the way conflicts can be resolved that respects individual rights, and evaluate the criteria used in the naturalization process.

- **Mastery**

Ninth grade students performing at the mastery level compare and contrast government actions. Students explain how citizens monitor and influence U.S. government, draw conclusions about the way conflicts can be resolved that respects individual rights and describe the criteria used in naturalization.

- **Partial Mastery**

Ninth grade students performing at the partial mastery level identify various government actions, describe how citizens monitor and influence U.S. government, recall ways conflicts can be resolved that respect individual rights, and identify some of the criteria used in naturalization.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.9.2.1 identify and describe the fundamental democratic principles and values in core American documents and identify the discrepancies between the ideals expressed and realities.

- SS.9.2.2 identify fundamental American democratic principles using primary sources and significant political speeches and writings.
- SS.9.2.3 explain the purpose of the United States government and analyze how its powers are acquired, used and justified.
- SS.9.2.4 summarize documents and philosophies that are the basis for representative democracy in the United States.
- SS.9.2.5 explain the purpose, organization and functions of the legislative, executive and judicial branches, and analyze separations of powers and checks and balances.
- SS.9.2.6 explain the steps required to amend the United States Constitution.
- SS.9.2.7 analyze the presidential election process, the continued use of the Electoral College and the order of presidential succession.
- SS.9.2.8 explain federalism and give examples of shared, delegated, reserved and implied powers.
- SS.9.2.9 summarize the Constitution's Articles and Amendments.
- SS.9.2.10 analyze the fundamental ideas found in the nation's core documents and relate them to the subsequent periods in United States history.
- SS.9.2.11 evaluate the degree to which public policies and citizen behaviors reflect or foster the stated ideals of a democratic republican form of government.
- SS.9.2.12 evaluate, take and defend positions about the functions of political leadership and the importance of public service in American democracy.

Performance Descriptors (SS.PD.9.2)

- **Distinguished**
Ninth grade students performing at the distinguished level differentiate between the documents and philosophies that are the basis for United States democracy. They relate the fundamental ideas in the nation's core documents to subsequent periods of United States history. They determine how citizens influence public policy.
- **Mastery**
Ninth grade students performing at the mastery level summarize the documents and philosophies that are the basis for United States democracy. They give examples of fundamental ideas from core national documents. They explain methods used for citizens to influence public policy.
- **Partial Mastery**
Ninth grade students performing at the partial mastery level recall the documents and philosophies that are the basis for United States democracy. They identify the fundamental ideas in the nation's core documents. They list methods that citizens use to influence public policy.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.9.3.1 determine the relationship among the law of supply and demand, production and consumption.
- SS.9.3.2 examine the role of the United States government in banking, finance and monetary systems.
- SS.9.3.3 describe how the United States economic system changed from mercantilism to free enterprise capitalism.

- SS.9.3.4 differentiate among various types of taxes and relate them to taxation controversies in the United States during their era.
- SS.9.3.5 describe the cause and effect relationship between the labor movement and industrialization in the United States.
- SS.9.3.6 explain the concept of capitalism and compare the basic components to other economic systems.
- SS.9.3.7 identify and analyze the role of market factors in the settlement of the United States and the development of the free enterprise system.
- SS.9.3.8 analyze the effects of foreign trade and tariff policies on the United States.

Performance Descriptors (SS.PD.9.3)

■ **Distinguished**

Ninth grade students at the distinguished level use primary sources to evaluate the impact of monetary and fiscal policies, industrialization and commerce patterns on the creation and evolution of the United States economic system to 1900.

■ **Mastery**

Ninth grade students at the mastery level examine how the development of the banking system, taxation policies, industrialization and trade policy affected the creation/evolution of the United States economic system (and immigration and migration to 1900).

■ **Partial Mastery**

Ninth grade students at the partial mastery level explain the development of mercantilism, the banking system, industrialization, taxation and trade policies in the creation and evolution of the United States economic system and immigration and migration to 1900.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.9.4.1 locate major meridians of longitude and parallels of latitude.
- SS.9.4.2 locate states and capitals, landforms and major events in United States history.
- SS.9.4.3 analyze the role of mental maps in the movement of people across the United States.
- SS.9.4.4 use the most appropriate maps and graphics in an atlas to answer specific questions about geographic issues (e.g., topography, transportation routes).
- SS.9.4.5 evaluate the effects of population growth on urbanization
- SS.9.4.6 interpret how people express attachment to places and regions (e.g. by reference to essays, novels, poems, short stories, feature films, traditional musical compositions such as "God Bless America" and "America the Beautiful").
- SS.9.4.7 explain the impact of health and cultural considerations on the quality of life over different historical time periods.
- SS.9.4.8 analyze the relationship of Native American cultures to their physical environment.
- SS.9.4.9 describe geographic differences which contributed to economic development and regionalism prior to the Civil War.
- SS.9.4.10 identify and describe major landforms, cities, rivers and climate areas of the United States and compare to those throughout the world.
- SS.9.4.11 explain settlement, population patterns and the growth of service centers from reading and interpreting maps, graphs and charts.

- SS.9.4.12 analyze the impact of the environment, including the location of natural resources, on immigration and settlement patterns.
- SS.9.4.13 describe the socioeconomic changes that occur in regions that experience population change.
- SS.9.4.14 explain and analyze the human impact on the environment throughout the American experience.
- SS.9.4.15 analyze the ways in which physical and human features have influenced the evolution of significant historic events and movements.

Performance Descriptors (SS.PD.9.4)

- **Distinguished**
Ninth grade students' performing at the distinguished level explain how physical processes create, sustain and modify natural environments. They analyze and predict the impact of human activities on the environments of the United States. Students interrelate the physical and human characteristics of place and describe how the cultures are linked. They apply geographic perspective through the construction and/or use of tools and techniques to the evolution of significant historical events and social movements to 1900.
- **Mastery**
Ninth grade students performing at the mastery level explain how physical processes create, sustain and modify natural environments. Students interpret the impact of human activities on the environments of the United States, and explain the physical and human characteristics of place and describe how the cultures are linked. They apply geographic perspective through the construction and/or use of tools and techniques to the evolution of significant historical events and social movements to 1900.
- **Partial Mastery**
Ninth grade students performing at the partial mastery level identify physical processes that affect the environment and identify the human activities that impact the environments of the United States. Students describe the physical and human characteristics of place, sometimes recognize how the cultures are linked and identify geographic perspective through the use of tools and techniques to the evolution of significant historical events and social movements to 1900.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives:

Students will:

- SS.9.5.1 describe life in America before the 17th century.
- SS.9.5.2 analyze and explain the contacts that occurred between Native Americans and European settlers during the age of discovery.
- SS.9.5.3 trace the roots and evaluate early explorations of America, and describe and analyze the attraction of the New World to Europeans (religious, social, political, economic).
- SS.9.5.4 explain and sequence the effects of European empire building , and explain how it led to the American Revolution.
- SS.9.5.5 identify and explain problems between the British government and the American colonies (e.g. Parliament's right to rule, taxation, trade restrictions).

- SS.9.5.6 describe and analyze the content of the Declaration of Independence and the factors which led to its creation.
- SS.9.5.7 analyze, explain and sequence major events and ideas of the Revolutionary War.
- SS.9.5.8 analyze and evaluate the United States Constitution and the Bill of Rights, and describe challenges faced by the new United States government.
- SS.9.5.9 identify the Constitution as a response to the political, economic and social conditions that existed after the American Revolution.
- SS.9.5.10 explain the major challenges faced by the framers of the United States Constitution, and describe the compromises reached at the Constitutional Convention.
- SS.9.5.11 evaluate how nationalism affected the constitutional, political, economic and foreign policy issues faced by the United States in its formative years.
- SS.9.5.12 identify and explain the impact of United States Supreme Court decisions (e.g., Marbury v. Madison, McCullough v. Maryland, Dred Scott, Plessy v. Ferguson).
- SS.9.5.13 describe and explain the growth and change in the United States from 1801 to 1861.
- SS.9.5.14 identify and explain the factors that led to exploration, settlement and expansion across the United States.
- SS.9.5.15 assess the effect of United States policy on Native Americans.
- SS.9.5.16 describe the institution of slavery and its effect on the political, economic and social development of the United States.
- SS.9.5.17 compare and contrast the political, economic and social conditions in the United States before and after the Civil War.
- SS.9.5.18 analyze and sequence the causes and effects of the major events of the Civil War and reconstruction.
- SS.9.5.19 describe the effects of technological change on the United States (e.g., agriculture, transportation, industry, labor, society).
- SS.9.5.20 describe and analyze the goals and actions of reformers and reform movements.
- SS.9.5.21 describe the influence and impact of diverse cultures on United States society and their assimilation into American life.
- SS.9.5.22 explain the development of representative democracy in the United States.
- SS.9.5.23 explain major conflicts in terms of causes and consequences.
- SS.9.5.24 identify, analyze and interpret primary sources (e.g. artifacts, diaries, letters, photographs, art, documents, newspapers) and contemporary media (e.g. television, movies, computer information systems) to better understand events and life in the United States to 1900.
- SS.9.5.25 construct various timelines of American history from pre-Columbian times to 1900 highlighting landmark dates, events, technological changes, major political and military events and major historical figures.
- SS.9.5.26 develop skills in discussion, debate and persuasive writing by analyzing historical situations and events to 1900.

Performance Descriptors (SS.PD.9.5)

■ Distinguished

Ninth grade students at the distinguished level evaluate and demonstrate a comprehensive understanding of the significance of people, places, documents, ideas and events in their correct historical period and context, and their impact on future events. Students explain the evolution and assess the effects of expansion, conflict and emerging technologies in creating a new nation. Students demonstrate an intricate knowledge of the framework and workings of the federal government. They develop well-reasoned arguments regarding complex, critical issues.

■ Mastery

Ninth grade students performing at the mastery level explain the significance of people, places, documents, ideas and events in their correct historical period and context. Students explain the evolution and effects of expansion, conflict and emerging technologies in creating a new nation. Students describe the development of the federal government and explain governmental actions. They develop well-reasoned arguments regarding critical themes and issues.

■ **Partial Mastery**

Ninth grade students performing at the partial mastery level identify key people, places, documents, ideas and events in their correct historical period and context. Students describe the causes and effects of expansion and conflict and the results of emerging technology in creating a new nation. They explain the development of the federal government and describe governmental actions.

Tenth Grade Social Studies Content Standards and Objectives

This study of the world emphasizes the historic, economic, geographic, political, and social structure of various cultural regions of the world from the dawn of civilization to the interdependent world of the twentieth century. Special attention is given to the formation and evolution of societies into complex political and economic systems. Geography/map skills and critical thinking skills are emphasized. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives

Students will:

- SS.10.1.1 describe the evolution of the roles and responsibilities of individuals and groups leading to the formation of nation states.
- SS.10.1.2 analyze the reasons for and the consequences of the breakdown of order among nations and the impact on the lives of individuals.
- SS.10.1.3 analyze the nature of civic responsibility in various cultures.
- SS.10.1.4 analyze the causes of conflict and propose resolutions.
- SS.10.1.5 participate in a project of volunteer service.

Performance Descriptors (SS.PD.10.1)

■ **Distinguished**

Tenth grade students performing at the distinguished level predict how the roles and responsibilities of United States citizenship will change and evaluate them in terms of other cultures in relation to foreign policy issues to 1900.

■ **Mastery**

Tenth grade students performing at the mastery level recognize the changing roles and responsibilities of United States citizenship and identify their relationship to other cultures in light of significant political developments, trends and foreign policy issues to 1900.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery level identify some of the changing roles and responsibilities of United States citizenship and identify their relationship to other cultures in light of significant political developments, trends and foreign policy issues to 1900.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.10.2.1 evaluate diverse ideas about the purposes of government.
- SS.10.2.2 identify and evaluate the contributions of the classical civilizations to the development of the United States Constitution.
- SS.10.2.3 discuss world historical events which affected the development of representative democracy in the United States and other countries.
- SS.10.2.4 analyze how the United States has influenced other nations and how other nations have influenced the American political process and society.
- SS.10.2.5 compare, contrast and evaluate alternative ways of organizing constitutional governments.
- SS.10.2.6 identify significant political philosophers and their contributions.

Performance Descriptors (SS.PD.10.2)

■ **Distinguished**

Tenth grade students performing at the distinguished level draw parallels between the influence of the United States on other nations and the influence of other nations on the American political process and documents and draw conclusions about those influences. They discriminate between different structures/types of constitutional governments.

■ **Mastery**

Tenth grade students performing at the mastery level use examples, (e.g., classical civilizations), to show how the United States has influenced other nations and how other nations have influenced American political processes and documents. They compare and contrast alternative ways of organizing constitutional governments.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery level list examples of United States' influence on other nations and the influence of other nations on American political processes and documents. They categorize different forms of constitutional governments.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives

Students will:

- SS.10.3.1 define and illustrate the trade patterns of regions of the world across time.
- SS.10.3.2 describe and analyze how various societies developed economic systems.
- SS.10.3.3 analyze the role of exchange/trade systems as economic systems developed.
- SS.10.3.4 compare and contrast fiscal policies of several world societies.
- SS.10.3.5 identify a cause and effect relationship of economic change and its effect on the job market. (e.g., the growth of tourism in West Virginia and the resulting change in types of jobs that are available).
- SS.10.3.6 describe and explain global economic interdependence and competition using examples to illustrate their influence on national and international policies.

Performance Descriptors (SS.PD.10.3)

■ **Distinguished**

Tenth grade students at the distinguished level use factors of production, scarcity and competition to evaluate the development, interactions and choices made by different economic systems regarding the evolution of institutions, resource use, government spending, trade policy and the impact on the worker/consumer and global economy to 1900.

■ **Mastery**

Tenth grade students at the mastery level use factors of production, scarcity, and competition to explain and compare the development, interactions and choices made by different economic systems regarding the evolution of institutions, resource use, government spending, trade policy and the impact on the worker/consumer and global economy to 1900.

■ **Partial Mastery**

Tenth grade students at the partial mastery level recognize and describe the evolution of institutions, resource use, government spending, production, scarcity, competition and trade policy associated with the economic systems in selected nations to 1900.

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives

Students will:

- SS.10.4.1 read and interpret information using maps, graphs and charts.
- SS.10.4.2 identify and label geographic features of the continents (e.g., plateaus, high points, low points, bodies of water major river valleys).
- SS.10.4.3 identify world language patterns.
- SS.10.4.4 describe the evolution of significant world trade routes.
- SS.10.4.5 describe and analyze the migration of people during this era.
- SS.10.4.6 identify world resources and explain how the location of resources influenced economic development and the global economy.
- SS.10.4.7 identify the effect of geographic features, including climate, upon the environment.
- SS.10.4.8 explain the development of major political boundaries of the world and relate these to the theme of geo-politics.
- SS.10.4.9 identify and analyze the physical and cultural patterns of settlement.
- SS.10.4.10 identify and explain geographic reasons for the development of major world cities and trends in urban population growth.
- SS.10.4.11 locate and identify major world rivers, climate areas and rain forests.

Performance Descriptors (SS.PD.10.4)

■ **Distinguished**

Tenth Grade students performing at the distinguished level independently interpret, construct and use geographic tools to analyze and classify spatial information to further their understanding of geographic perspective. The students synthesize the physical and human process interaction responsible for the characteristics of regions.

■ **Mastery**

Tenth Grade students performing at the mastery level interpret, construct and use geographic tools to analyze and classify spatial information to further their understanding of geographic perspective. The students explain and analyze the physical and human processes responsible for the characteristics of regions.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery level use geographic tools to explain spatial information. The students recognize the physical and human processes responsible for the characteristics of regions.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives

Students will:

- SS.10.5.1 examine the contributions of different historical periods through art and literature.
- SS.10.5.2 describe the changes in the status of women and children throughout different historical periods.
- SS.10.5.3 read and interpret historical charts, tables, graphs, narratives, primary source documents, political cartoons and timelines.
- SS.10.5.4 identify and explain the effects of significant political developments and trends in the world before 1900.
- SS.10.5.5 identify and evaluate the interaction of early humans with their environment.

- SS.10.5.6 explain the causes for the rise and decline of ancient civilizations (e.g., the river civilizations, Greek, Roman, Indian and Chinese).
- SS.10.5.7 explain the basic tenets of major world religions and philosophies, their places of origin and the status of those religions today.
- SS.10.5.8 describe the location, unique contributions and characteristics of Arab/Islamic society.
- SS.10.5.9 discuss how feudalism affected the development of societies around the world.
- SS.10.5.10 identify and evaluate the political and economic roles and the cultural contributions of religious institutions in medieval society.
- SS.10.5.11 compare and contrast the acceptance of diversity in hierarchical societies.
- SS.10.5.12 analyze and assess the concept of nation building (e.g., city states, Rome, rise of European nation states).
- SS.10.5.13 relate the worth of the individual in society to the growth of the concept of the Renaissance man.
- SS.10.5.14 describe how European needs/wants for foreign products contributed to the Age of Exploration.
- SS.10.5.15 describe the role of the Enlightenment in European society.
- SS.10.5.16 analyze the historical developments of the Protestant Reformation including the effects of theology, politics and economics.
- SS.10.5.17 identify and assess the Agricultural and Industrial revolutions.
- SS.10.5.18 analyze and assess the impact of political revolutions on society. (e.g., French, Italian, German, Latin American).
- SS.10.5.19 compare and contrast the American and French revolutions and their aftermaths.
- SS.10.5.20 explain reasons for and consequences of the breakdown of order among nation-states.
- SS.10.5.21 identify legal systems which influenced western civilization.
- SS.10.5.22 compare and contrast absolute and constitutional monarchies and identify representative leaders of each.
- SS.10.5.23 identify and assess foreign colonization.

Performance Descriptors (SS.PD.10.5)

■ **Distinguished**

Tenth grade students performing at the distinguished level evaluate and demonstrate a comprehensive understanding of the significance of people, places, documents, ideas and events in their correct historical period and context, and their impact on future events. They describe cultures, economies and political systems and assess their impact on regional, national and international relations that led to conflict and/or cooperation and change.

■ **Mastery**

Tenth grade students performing at the mastery level explain the significance of people, places, documents, ideas and events in their correct historical period and context. They describe cultures, economies and political systems and determine their impact on regional, national and international relations that led to conflict and/or cooperation and change.

■ **Partial Mastery**

Tenth grade students performing at the partial mastery level identify key people, places, documents, ideas and events in their correct historical period and context. They describe the characteristics of cultures, economies and political systems. Students recognize the reasons for regional, national and international conflicts and/or cooperation and change.

Eleventh Grade Social Studies Content Standards

The focus of this course is an identification and study of the interaction of geographic, political, economic and historical factors. Such factors provide students a framework to examine and appreciate the changing nature of societies and the increasing interdependency of the United States and the world. Students will contrast and evaluate past and present world concerns and hypothesize about problems and solutions for the future. Students will realize the importance of well-informed citizens in a diverse society and their place in the democratic process. Global economic interdependency and its impact on the individual person will be emphasized.

Standard 1: Citizenship (SS.S.1)

Students will:

- describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions);
- develop a respect for symbols, ideas and concepts of the United States and describe the roles of significant individuals (Respect For People, Events, and Symbols);
- develop and employ the civic skills necessary for effective citizenship by using criteria to make judgments, arrive at and defend positions and evaluate the validity of the positions or data (Evaluation Skills);
- demonstrate and employ the participatory skills of interacting, monitoring and influencing that are essential for informed, effective and responsible citizenship, including participation in civic life to shape public policy (Participatory Skills); and
- explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).

Citizenship Objectives:

Students will:

- SS.11.1.1 cite examples of working cooperatively and resolving personal and world conflicts peacefully.
- SS.11.1.2 analyze and evaluate the influence of citizen action on public policy and law making.
- SS.11.1.3 analyze the changing nature of civic responsibility.
- SS.11.1.4 develop positions and formulate actions on the problems of today and predict challenges of the future. (e.g., describe the changing job market in West Virginia and the impact of tourism).
- SS.11.1.5 evaluate historical and contemporary political communication using such criteria as logical validity, factual accuracy and emotional appeal.
- SS.11.1.6 participate in a project of volunteer service.
- SS.11.1.7 identify and explain the importance of the personal and political responsibilities, privileges and rights of citizens.
- SS.11.1.8 explain the concept of civil disobedience, provide examples and evaluate its use.

Standard 2: Civics / Government (SS.S.2)

Students will:

- identify, examine and analyze the purposes and basic principles of the United States government (Purposes of Government);
- explain, evaluate and analyze the origins and meaning of the principles, ideals and core democratic values expressed in the foundational documents of the United States (Ideals of United States Democracy);
- identify, examine and explain the structure, function and responsibilities of governments and the allocation of power at the local, state and national levels (United States Government and Politics); and
- analyze how the world is organized politically and describe the role and relationship of the United States to other nations and to world affairs (United States Government and World Affairs).

Civics/Government Objectives

Students will:

- SS.11.2.1 explain the reasons for amendments ratified since 1900 and analyze their effects on American society.
- SS.11.2.2 explain the role of the president in the formation of national and foreign policy.
- SS.11.2.3 critique the interaction of the three branches of the federal government in an increasingly complex society.
- SS.11.2.4 analyze the election process and the role of political parties and special interest groups.
- SS.11.2.5 evaluate the formation, role and impact of third parties in the United States.
- SS.11.2.6 examine historical and current conflicts and crises, and compare resolutions within the framework of constitutional and totalitarian systems of government.
- SS.11.2.7 analyze judicial review and the procedure used to render decisions.
- SS.11.2.8 analyze the changing nature of federalism and the growth of national government.
- SS.11.2.9 critique the purposes and performance of international governmental and non-governmental organizations.

Standard 3: Economics (SS.S.3)

Students will:

- analyze the role of economic choices in scarcity, supply and demand, resource allocation, decision making, voluntary exchange and trade offs (Choices);
- research, critique and evaluate the roles of private and public institutions in the economy (Institutions);
- compare and contrast various economic systems and analyze their impact on individual citizens (Economic Systems);
- describe and demonstrate how the factors of production apply to the United States economic system (Factors of Production);
- analyze the elements of competition and how they impact the economy (Competition); and
- examine and evaluate the interdependence of global economies (Global Economies).

Economics Objectives:

Students will:

- SS.11.3.1 evaluate the life style changes brought on by industrialization and technology. (e.g., debate industrialization vs. maintaining natural environment and the implications for tourism).
- SS.11.3.2 analyze the production of services in developed and developing nations.
- SS.11.3.3 explain monetary policy and its effect on society.
- SS.11.3.4 explain the business cycle and how different political systems formulate policy.
- SS.11.3.5 analyze the causes and consequences of the United States' national debt and its effect on the world economic system.
- SS.11.3.6 apply Gross Domestic Product and per capita income calculations to compare the economies of different nations.
- SS.11.3.7 compare and contrast basic economic systems according to how the system deals with demand, supply, labor unions, savings, investment and capital.
- SS.11.3.8 analyze and evaluate the economies of developing nations.
- SS.11.3.9 explain the impact of technology and industrialization on the development of mass production and mass consumption.
- SS.11.3.10 assess national and international economic interdependency.
- SS.11.3.11 predict the outcomes of changes in all types of taxation (e.g., property, income, sales).

Standard 4: Geography (SS.S.4)

Students will:

- interpret, use and construct maps, globes and other geographic tools to locate and derive information about personal directions, people, places and environments (The World in Spatial Terms);
- describe the physical and human characteristics of place and explain how the lives of people are rooted in places and regions (Places and Regions);
- describe and explain the physical processes that shape the earth's surface and create, sustain and modify the cultural and natural environment (Physical Systems);
- identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems);
- analyze the interaction of society with the environment (Environment and Society); and
- explain geographic perspective and the tools and techniques available for geographic study (Uses of Geography).

Geography Objectives:

Students will:

- SS.11.4.1 read and interpret maps, graphs, charts, cartoons and timelines.
- SS.11.4.2 identify and locate the places significant to each period of study.
- SS.11.4.3 transform primary data into maps, graphs and charts.
- SS.11.4.4 relate and interpret the importance of geographic factors to social, political, economic and technological change. (e.g., describe how West Virginia's geography has influenced laws that impact business, including tourism, as well as the quality of life in the state).
- SS.11.4.5 identify United States settlement patterns after 1900 and draw conclusions about causes and effect.
- SS.11.4.6 analyze and assess the impact of human decision-making and technology on the environment. (e.g., discuss the geographic discrimination suffered by minority neighborhoods and how human use of the environment affects tourism).
- SS.11.4.7 interpret and assess the impact of predictable annual climate change (e.g., monsoon, flooding).
- SS.11.4.8 interpret and assess the impact of unpredictable environment and change. (e.g., earthquakes, El Nino, drought).
- SS.11.4.9 apply geographic factors/features in relationship to development of civilizations.
- SS.11.4.10 relate and interpret the importance of geographic resources to international conflicts and cooperation since 1900 (e.g., discuss how U. S. dependence on Middle Eastern oil resulted in geo-political consequences).
- SS.11.4.11 predict how physical and human features influence the evolution of significant historic events and movements.

Standard 5: History (SS.S.5)

Students will:

- examine, analyze and explain historical relationships using chronology to sequence and organize events and people in history (Chronology);
- use the processes and resources of historical inquiry to gather, examine, compare, analyze and interpret historical data (Skills and Application);
- examine, analyze and synthesize historical knowledge of major events, individuals, cultures and the humanities in West Virginia, the United States and the world (Culture and Humanities);
- use historical knowledge to analyze local, state, national, global interdependence (Interpretation and Evaluation); and
- examine political institutions and theories that have developed and changed over time (Political Institutions).

History Objectives:

Students will:

- SS.11.5.1 analyze and explain the response of the United States and the world to industrialization and urbanization.
- SS.11.5.2 assess the impact of United States foreign policy on different world regions (e.g., Open Door Policy, Good Neighbor Policy, Lend-Lease).

- SS.11.5.3 critique United States immigration policies and assess the contributions of immigrant groups and individuals.
- SS.11.5.4 analyze and explain the political, social and economic importance of World War I.
- SS.11.5.5 analyze and explain the effects of the Great Depression on worldwide economic conditions.
- SS.11.5.6 identify the major goals and analyze the impact of the New Deal.
- SS.11.5.7 analyze and evaluate the major causes, events, personalities and effects of World War II.
- SS.11.5.8 explain and assess the economic, social and political transformation of the United States since World War II.
- SS.11.5.9 analyze and explain United States and World foreign policy since World War II.
- SS.11.5.10 describe the development and impact of the United State's labor movement.
- SS.11.5.11 trace and analyze the world labor movement and its political, social and economic effects.
- SS.11.5.12 investigate concerns, issues and conflicts related to universal human rights. (e.g., Holocaust, diversity, tolerance, genocide).
- SS.11.5.13 compare and contrast worldwide de-colonization and independence movements in the 20th century (e.g., Israel, India, Indo-China, third world countries).
- SS.11.5.14 sequence and assess the development of civil rights in the United States and the world, and describe the contributions of significant civil rights leaders.
- SS.11.5.15 research the origins and implications of the nuclear age and the Cold War.
- SS.11.5.16 explain the rise of Communism and describe its current status, including the breakup of the Soviet Union.
- SS.11.5.17 identify and analyze the causes and consequences of regional conflicts (e.g., Middle East, Latin America, Africa, Europe).
- SS.11.5.18 analyze the effects of extremists and terrorists within and among nations, and predict their future effects.
- SS.11.5.19 describe the effect of technology and its impact in creating a global community (e.g., computers, space exploration, medicine).
- SS.11.5.20 explain how emerging nations influence world events.
- SS.11.5.21 compare and evaluate the impact of stereotyping, conformity, acts of altruism and other behaviors on individuals and groups.
- SS.11.5.22 explain how language, art, music and other cultural elements can facilitate global understanding, (e.g., use West Virginia's fairs and festivals as examples).
- SS.11.5.23 evaluate the role of technology in communications, transportation, information processing, weapons development and other areas as it contributes to or helps resolve conflicts.
- SS.11.5.24 evaluate, take and defend positions on foreign policies issues in light of American national interests, values and principles.
- SS.11.5.25 compare and contrast Fascism, Nazism and Communism.
- SS.11.5.26 identify and analyze world conflicts, including causes and consequences (e.g. World War I, World War II, Korea, Vietnam, Gulf War, Operation Enduring Freedom/Afghanistan Military Crisis).
- SS.11.5.27 analyze the goals and actions of reformers and reform movements (e.g., social, economic, political).
- SS.11.5.28 develop skills in discussion, debate and persuasive writing by evaluating different assessments of the causes, costs and benefits of major events in the 20th century.

TECHNOLOGY

West Virginia's vision for education includes the integration of technology throughout the curriculum so that all West Virginia students will develop technology skills that support lifelong learning (Policy 2510, 2470, 2320). Successful learning environments provide opportunities for students to use educational technology interwoven with curricular content.

The technology foundation standards for students are divided into six strands:

- Basic operations and concepts
- Social, ethical and human issues
- Technology productivity tools
- Technology communication tools
- Technology research tools
- Technology problem-solving and decision-making tools

Each strand provides a description of the technology skills and competencies required for students in grades K-12. The technology curriculum is sequential and comprehensive to provide a rigorous and challenging program of studies in all content areas. The classroom teacher should review the objectives of the previous grade level to serve as a starting point for review and maintenance in the sequential curriculum.

The West Virginia technology standards are based upon the *National Educational Technology Standards for Students* published by the International Society for Technology in Education (ISTE). Other references to support the development of the technology standards and objectives include the computer/technology standards from North Carolina, Texas, Michigan, Virginia, Wisconsin, Alaska, and the West Virginia Instructional Goals and Objectives.

As stated in West Virginia Policy 2470, "Students of all ages and citizens as lifelong learners require both the necessary skills and access to technology tools to take responsibility for their own learning, to be actively involved in critical thinking and problem solving, to collaborate and cooperate and to develop as productive citizens. Technology must be interwoven with educational improvements and reform to accomplish educational goals, increase student achievement and provide increased opportunities for lifelong learning."

West Virginia teachers are responsible for integrating technology appropriately into the learning environment to prepare students to live, learn, and work in an information-rich society. The state provides a number of resources through statewide technology initiatives for use by students and teachers. See <http://access.k12.wv.us>.

Technology Standards K-12

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Kindergarten Technology Standards and Objectives

The kindergarten student will begin to develop basic proficiency in the use of technology. The student will develop an awareness of responsible use of technology systems and begin to discover the purpose of productivity tools. At this introductory level, the student will collaboratively locate information through technology resources. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

- TEC.K.1.1 locate and use letters, numbers and special keys on a keyboard [e.g., Enter, Space Bar, Letters (in student's name), and number keys];
- TEC.K.1.2 use a mouse to point and click, and place the cursor at a specified location;
- TEC.K.1.3 log on to computer and start and exit programs.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

- TEC.K.2.1 discuss ownership of computer created work.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.K.3.1 identify word processing software as a tool for writing.

Standard 4: Technology Communication Tools (TEC.S.4)

Objectives for this standard begin at third grade.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

- TEC.K.5.1 participate as a group in locating information in a variety of developmentally appropriate technology resources (interactive books, educational software and elementary multimedia encyclopedias);
- TEC.K.5.2 identify the Internet as a source for information.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Objectives for this standard begin at second grade.

First Grade Technology Standards and Objectives

The first grade student will continue to develop fundamental proficiency in the use of technology. The student will begin to use productivity tools while exploring the ethical issues related to products created electronically. The first grade student will continue to collaborate in locating information through technology resources. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

- TEC.1.1.1 use a keyboard to input information using letters, numbers, arrow key, and delete key; begin to use left/right hand position;
- TEC.1.1.2 use a mouse to click and drag;
- TEC.1.1.3 start and exit programs as well as locate files.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

- TEC.1.2.1 discuss ownership of computer created work.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.1.3.1 type words and/or sentences using word processing software;
- TEC.1.3.2 create text and insert images.

Standard 4: Technology Communication Tools (TEC.S.4)

Objectives for this standard begin at third grade.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

TEC.1.5.1 participate as a group in locating information in a variety of developmentally appropriate technology resources (e.g., interactive books, educational software and elementary multimedia encyclopedias);

TEC.1.5.2 identify the Internet as a source for information.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Objectives for this standard begin at second grade.

Second Grade Technology Standards and Objectives

The second grade student will begin to practice correct keyboarding and basic operations. The student will expand use of productivity tools, and understand the ownership of computer-generated works. The students will begin to explore the purpose of software programs to collaboratively gather information. The second grade student will begin to locate electronic information independently. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

TEC.2.1.1 demonstrate correct keyboarding posture and finger placement for the home row and upper and lower case letters;

TEC.2.1.2 utilize the skill of right clicking with a mouse;

TEC.2.1.3 handle and use diskettes and CD's with care.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

TEC.2.2.1 recognize an individual's rights of ownership to computer-generated work.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

TEC.2.3.1 use a word processing program, to create, save, print and open existing files;

TEC.2.3.2 enter data and create graphs electronically as a group activity.

TEC.2.3.3 identify and use electronic drawing/paint programs to combine graphics and text.

Standard 4: Technology Communication Tools (TEC.S.4)

Objectives for this standard begin at third grade.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

TEC.2.5.1 begin to locate information in a variety of developmentally appropriate technology resources (interactive books, educational software and elementary multimedia encyclopedias);

TEC.2.5.2 discuss, as a group, how the Internet and email are tools to gather and locate information.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

TEC.2.6.1 begin to identify the different purposes among software applications (e.g., puzzles, writing tools, graphing tools).

Third Grade Technology Standards and Objectives

The third grade student will continue to practice correct keyboarding skills and basic operations. The student will use word processing and spreadsheet applications and explore databases and presentation software. The third grade student will understand the use of email as a communication tool. The student will continue to expand use of appropriate technology resources, looking at book-marked locations and evaluating their usefulness. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

- TEC.3.1.1 demonstrate correct keyboarding posture and finger placement for the home row keys and symbol keys (e.g., period, question marks caps lock, arrow keys, shift, esc, plus, minus, equal, dollar signs);
- TEC.3.1.2 handle diskettes, CDs, zip disks, and other computer equipment with care.

Performance Descriptors (TEC.PD.3.1)**■ Mastery**

Third grade students performing at the mastery level use input and output devices to successfully operate computers.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

- TEC.3.2.1 recognize that the copyright law protects the electronic products that a person, group, or company has created.

Performance Descriptors (TEC.PD.3.2)**■ Mastery**

Third grade students performing at the mastery level demonstrate positive social and ethical behaviors when using technology; practice responsible use of technology systems and software.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.3.3.1 use a word processor to enter text with some formatting (e.g., boldface, underlining and font size), cut and paste, spell check, and edit text;
- TEC.3.3.2 begin to enter and graph data electronically;
- TEC.3.3.3 organize and arrange information for a multi-media presentation as a group activity.

Performance Descriptors (TEC.PD.3.3)**■ Mastery**

Third grade students performing at the mastery level use a variety of media and technology resources for directed and independent learning activities; create developmentally appropriate multimedia products with support from teachers, family members, or student partners; use technology resources (e.g., puzzles, logical thinking programs, writing tools, drawing tools) for illustration of thoughts, ideas, and stories.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

TEC.3.4.1 understand the use of email as a communication tool;

TEC.3.4.2 participate in a curriculum-based telecommunications project as a group activity.

Performance Descriptors (TEC.PD.3.4)**■ Mastery**

Third grade students performing at the mastery level gather information and communicate with others using telecommunications, with support from teachers, family members, or student partners; use technology resources for communication (i.e., email).

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

TEC.3.5.1 locate information in a variety of developmentally appropriate technology resources (interactive books, educational software and elementary multimedia encyclopedias);

TEC.3.5.2 use bookmarked URL's as a tool for locating information.

Performance Descriptors (TEC.PD.3.5)**■ Mastery**

Third grade students performing at the mastery level use technology resources for gathering information (bookmarked URL's and multimedia encyclopedias).

Standard 6: Technology Problem-solving and Decision-making Tools

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives (TEC.S.6)

Students will:

TEC.3.6.1 discuss, as a group, appropriate technology tools to perform a task.

Performance Descriptors (TEC.PD.3.6)**■ Mastery**

Third grade students performing at the mastery level use technology resources (e.g., puzzles, logical thinking programs) for problem solving.

Fourth Grade Technology Standards and Objectives

The fourth grade student will demonstrate some proficiency in proper keyboarding skills. The student will understand the meaning of acceptable use and personal responsibility in the use of technology. The student will continue to expand the use of word processing software, begin to use a spreadsheet to perform calculations, understand the functionality of a database and create a simple multi-media project as a group. The fourth grade student will begin to understand telecommunications, to select appropriate electronic tools such as search engines, and use software for problem solving. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

- TEC.4.1.1 demonstrate with some proficiency proper finger placement for all keys on the keyboard;
- TEC.4.1.2 troubleshoot simple problems in software (e.g., reboot, use help systems).

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

- TEC.4.2.1 identify the need for acceptable use policies (AUP);
- TEC.4.2.2 identify violations of the copyright law and recognize correct use of copyrighted materials in electronic products.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.4.3.1 use a word processing program to create and format a document (e.g., paragraph, tabs, justification, margins) and review cut and paste, spell check and text formatting;
- TEC.4.3.2 enter data into a prepared spreadsheet to perform calculations and recognize the changes that occur;
- TEC.4.3.3 create a multi-media project as a class group activity.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

- TEC.4.4.1 participate in several curriculum-based telecommunication projects as class activities. (e.g., web quests, ask an expert, collaborative email projects).

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

- TEC.4.5.1 select and use appropriate software and/or other technologies to locate and acquire information from electronic resources (interactive books, educational software and elementary multimedia encyclopedias);
- TEC.4.5.2 explore grade level appropriate search engines as tools to locate information electronically;
- TEC.4.5.3 evaluate information found via telecommunications for content and usefulness.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

- TEC.4.6.1. apply, in a group situation, software programs to solving problems (e.g., word processors, graphing programs, other special purpose programs).

Fifth Grade Technology Standards and Objectives

The fifth grade student will use touch-typing skills to improve speed and accuracy. Students will practice responsible use of technology systems, information and software. The student will use the editing functions of word processing software, perform simple calculations using spreadsheets, locate and use information in a simple electronic database, and begin to use presentation software. Fifth grade students will use telecommunications for a curriculum based telecommunications project and continue to evaluate electronic information for appropriateness, content, and usefulness. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

- TEC.5.1.1 use touch typing skills to improve speed and accuracy;
- TEC.5.1.2 diagnose and solve common technology problems;
- TEC.5.1.3 manage and maintain technology tools (i.e., properly shut down system).

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

TEC.5.2.1 describe the use of acceptable use policy (AUP);

TEC.5.2.2 demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects and multimedia presentations.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

TEC.5.3.1 use the editing functions of a word processor (e.g. spell check, grammar check, thesaurus) and review paragraph, tabs, justification, margins;

TEC.5.3.2 create/modify and use spreadsheets to perform simple calculations (+, -, *, /);

TEC.5.3.3 begin to use presentation software; use design template to create a minimum of 3 slides.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

TEC.5.4.1 Participate in curriculum-based telecommunication projects as a class activity.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

TEC.5.5.1 use telecommunications to locate information as a group/class project;

TEC.5.5.2 evaluate information found via telecommunications for appropriateness, content and usefulness.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

TEC.5.6.1 select the appropriate technology resource to solve problems in content area.

Sixth Grade Technology Standards and Objectives

The sixth grade student will demonstrate proficiency in the use of technology and a sound understanding of the nature and operation of technology systems. Students will understand the issues related to protection of software and hardware. The student will model ethical behavior in the use of technology systems, information and software. Students will use advanced features of word processing software, enter and edit data in a spreadsheet, collaboratively develop a simple database, and use presentation software with appropriate design layouts. The student will continue to use telecommunications to gather information and evaluate information for appropriateness, content and usefulness. The student will use technology resources for self-directed problem solving. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

TEC.6.1.1 use touch typing skills to improve speed and accuracy;

TEC.6.1.2 recognize the need for protection of software and hardware from computer viruses and vandalism;

TEC.6.1.3 continue to manage and maintain technology tools (e.g., properly shut down system(s), load printer paper).

Performance Descriptors (TEC.PD.6.1)

■ Mastery

Sixth grade students performing at the mastery level use keyboards and other common input and output devices efficiently and effectively.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

TEC.6.2.1 model ethical behavior relating to security, privacy, passwords and personal information;

TEC.6.2.2 demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects and multimedia presentations.

Performance Descriptors (TEC.PD.6.2)

■ Mastery

Sixth grade students performing at the mastery level model responsible use of technology and information and describe personal consequences of inappropriate use.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.6.3.1 use advanced features and utilities of a word processor (e.g., bullets, tables, find and replace) and review spell check, grammar check, thesaurus;
- TEC.6.3.2 enter and edit data into a prepared spreadsheet to test simple "what-if?" statements and equations;
- TEC.6.3.3 use presentation software demonstrating appropriate design layouts and formatting features (e.g., fonts, color, background designs) to effectively communicate.

Performance Descriptors (TEC.PD.6.3)**■ Mastery**

Sixth grade students performing at the mastery level use general purpose productivity tools and peripherals to support personal productivity, develop organizational skills, remediate skill deficits, and facilitate learning throughout the curriculum; use technology tools for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences, inside and outside the classroom.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

- TEC.6.4.1 use telecommunication tools to collaborate with an expert in gathering information for a class assignment.

Performance Descriptors (TEC.PD.6.4)**■ Mastery**

Sixth grade students performing at the mastery level use telecommunications efficiently and effectively to access remote information, communicate with others in support of direct and independent learning, and pursue personal interests.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

- TEC.6.5.1 develop a search strategy using keywords that define the topic;
- TEC.6.5.2 evaluate information found via telecommunications for validity, appropriateness, content and usefulness.

Performance Descriptors (TEC.PD.6.5)

■ Mastery

Sixth grade students performing at the mastery level use telecommunications and online resources to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom; evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

TEC.6.6.1 use technology resources for problem solving, self-directed learning, and extended learning activities.

Performance Descriptors (TEC.PD.6.6)

■ Mastery

Sixth grade students performing at the mastery level determine when technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems.

Seventh Grade Technology Standards and Objectives

The seventh grade student will demonstrate proficiency in the use of technology and a sound understanding of the nature and operation of technology systems. The student will practice responsible use of technology systems, information and software. The student will use advanced features and utilities of word processing software, select appropriate spreadsheet functions to solve problems, create a database as a group activity, and use presentation software with graphics. The seventh grade student will use telecommunication tools to collaborate, publish and interact with peers, experts and other audiences. The student will produce a product using online sources, evaluate the information, and use other technology resources for self-directed problem solving. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

TEC.7.1.1 use touch typing skills to improve speed and accuracy;

TEC.7.1.2 recognize the need for protection of software and hardware from computer viruses and vandalism;

TEC.7.1.3 continue to manage and maintain technology tools (e.g., properly shut down system(s), load printer paper).

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

- TEC.7.2.1 model ethical behavior relating to security, privacy, passwords, and personal information;
- TEC.7.2.2 demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects and multimedia presentations.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.7.3.1 use the advanced features and utilities of a word processor (e.g., help menu, toolbars) and review bullets, tables, grammar check, find and replace;
- TEC.7.3.2 select appropriate spreadsheet functions to organize data and solve problems;
- TEC.7.3.3 use presentation software demonstrating the use of animation and graphics.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

- TEC.7.4.1 use telecommunication tools to collaborate with an expert in gathering information for a class assignment.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

- TEC.7.5.1 produce a product using online sources;
- TEC.7.5.2 evaluate information found from electronic sources for validity, appropriateness, content and usefulness.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

TEC.7.6.1 use appropriate computer-based productivity tools to create and modify solutions to problems.

Eighth Grade Technology Standards and Objectives

The eighth grade student will demonstrate proficiency in the use of technology and a sound understanding of the nature and operation of technology systems. The student will practice responsible use of technology systems, information and software. Students will begin to integrate two or more productivity tools into a document and use expanded features of spreadsheet, database and presentation software. Eighth grade students will use telecommunications to publish information and produce a project using online and non-electronic resources. The student will evaluate the information and cite its source. The student will select and use technology tools to solve problems and make decisions related to content areas. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

TEC.8.1.1 use touch typing skills to improve speed and accuracy;

TEC.8.1.2 recognize the need for protection of software and hardware from computer viruses and vandalism;

TEC.8.1.3 continue to manage and maintain technology tools (e.g., properly shut down system(s), load printer paper).

Performance Descriptors (TEC.PD.8.1)**■ Mastery**

Eighth grade students performing at the mastery level apply strategies for identifying and solving routine hardware and software problems that occur during everyday use; demonstrate an understanding of concepts underlying hardware, software, and connectivity.

Standard 2: Social, Ethical and Human Issues (TEC.8.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

TEC.8.2.1 model ethical behavior relating to security, privacy, passwords and personal information;

TEC.8.2.2 demonstrate an understanding of copyright by citing sources of copyrighted materials in papers, projects and multimedia presentations.

Performance Descriptors (TEC.PD.8.2)

■ **Mastery**

Eighth grade students performing at the mastery level exhibit legal and ethical behaviors when using information and technologies and discuss consequences of misuse.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.8.3.1 integrate two or more productivity tools into a document including, but not limited to tables, charts, graphs, inserting hyperlinks, and graphics;
- TEC.8.3.2 use spreadsheets to explore various formulas, functions and relationships;
- TEC.8.3.3 begin to use databases relevant to class assignments;
- TEC.8.3.4 use presentation software's advanced features such as inserting pictures, charts, objects and hyperlinks.

Performance Descriptors (TEC.PD.8.3)

■ **Mastery**

Eighth grade students performing at the mastery level use content-specific tools, software and simulations to support learning; apply productivity tools and peripherals to support personal productivity, organizational skills, group collaboration, and learning throughout the curriculum; design, develop, publish and present products using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

- TEC.8.4.1 use telecommunications to share and publish information (e.g., email attachments, web pages).

Performance Descriptors (TEC.PD.8.4)

■ **Mastery**

Eighth grade students performing at the mastery level collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report results;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

- TEC.8.5.1 produce a product using online sources combined with other resources;
- TEC.8.5.2 conduct online research and evaluate the information found as to the validity, appropriateness, content and usefulness.

Performance Descriptors (TEC.PD.8.5)

■ Mastery

Eighth grade students performing at the mastery level research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

- TEC.8.6.2 select and use technology tools to solve problems and make decisions related to content areas.

Performance Descriptors (TEC.PD.8.6)

■ Mastery

Eighth grade students performing at the mastery level select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems; demonstrate an understanding of practical applications of technology to learning and problem solving.

Ninth - Twelfth Grade Technology Standards and Objectives

The high school student will demonstrate proficiency in the use of technology and a sound understanding of the nature and operation of technology systems. The student will practice responsible use of technology systems, information and software. The student will integrate advanced technology application skills in the use of word processor, database, spreadsheet and presentation software. The student will select and use appropriate technology tools to efficiently collect, analyze and display data that is relevant to classroom assignments. The high school student will use telecommunications and a variety of media and formats to communicate information effectively to multiple audiences. The student will use technology resources for solving problems and making informed decisions. The student will use resources provided through statewide technology resources.

Standard 1: Basic Operations and Concepts (TEC.S.1)

Students will:

- demonstrate a sound understanding of the nature and operation of technology systems;
- demonstrate proficiency in the use of technology.

Basic Operations and Concepts Objectives

Students will:

- TEC.9-12.1.1 use data input skills appropriate to the task;
- TEC.9-12.1.2 demonstrate knowledge and appropriate use of hardware components, software programs, and their connections.

Performance Descriptors (TEC.PD.9-12.1)**■ Mastery**

High school students performing at the mastery level make informed choices among technology systems, resources, and services.

Standard 2: Social, Ethical and Human Issues (TEC.S.2)

Students will:

- demonstrate understanding of the ethical, cultural, and societal issues related to technology;
- practice responsible use of technology systems, information, and software;
- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Social, Ethical and Human Issues Objectives

Students will:

- TEC.9-12.2.1 practice ethical behavior in using computer-based technology for class assignments and projects;
- TEC.9-12.2.2 adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects and multi-media presentations.

Performance Descriptors (TEC.PD.9-12.2)**■ Mastery**

High school students performing at the mastery level demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information.

Standard 3: Technology Productivity Tools (TEC.S.3)

Students will:

- use technology tools to enhance learning, increase productivity, and promote creativity;
- use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives

Students will:

- TEC.9-12.3.1 integrate advanced technology application skills in the use of the word processor, database and spreadsheet;
- TEC.9-12.3.2 select and use appropriate technology tools to efficiently collect, analyze and display data that is relevant to class assignments;
- TEC.9-12.3.3 practice and refine knowledge and skills in databases in preparing classroom assignments and projects;
- TEC.9-12.3.4 create, publish, and present projects related to content areas using a variety of technological tools.

Performance Descriptors (TEC.PD.9-12.3)**■ Mastery**

High school students performing at the mastery level use technology tools and resources for managing and communicating personal/professional information; use technology to compile, synthesize, produce and disseminate information, models, and other creative works.

Standard 4: Technology Communication Tools (TEC.S.4)

Students will:

- use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences;
- use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Technology Communication Tools Objectives

Students will:

- TEC.9-12.4.1 use telecommunications and online resources for the purpose of communicating with audiences inside and outside of the classroom.

Performance Descriptors (TEC.PD.9-12.4)

■ Mastery

High school students performing at the mastery level collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom.

Standard 5: Technology Research Tools (TEC.S.5)

Students will:

- use technology to locate, evaluate, and collect information from a variety of sources;
- use technology tools to process data and report result;
- evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

Technology Research Tools Objectives

Students will:

- TEC.9-12.5.1 use a variety of strategies to acquire information from electronic resources;
- TEC.9-12.5.2 conduct online research and evaluate the information found as to the validity, appropriateness, content and usefulness.

Performance Descriptors (TEC.PD.9-12.5)

■ Mastery

High school students performing at the mastery level research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems; routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity.

Standard 6: Technology Problem-solving and Decision-making Tools (TEC.S.6)

Students will:

- use technology resources for solving problems and making informed decisions;
- employ technology in the development of strategies for solving problems in the real world.

Technology Problem-solving and Decision-making Tools Objectives

Students will:

- TEC.9-12.6.1 investigate and apply expert systems, intelligent agents, and simulations in real world situations.

Performance Descriptors (TEC.PD.9-12.6)

■ Mastery

High school students performing at the mastery level select and apply technology tools for research, information analysis, problem solving, and decision-making in content learning.

FISCAL NOTE WORKSHEET

(Submit 4 Copies)

HD NO _____ DRAFT NO _____ BILL NO _____ RESOLUTION NO _____

SUBJECT Policy 2520: Content Standards and Objectives for West Virginia Schools FUND _____

SOURCE OF REVENUE: ☐ GENERAL FUND ☐ SPECIAL ☐ OTHER (SPECIFY) _____

COST OF ESTIMATE BASED ON: ☐ AN ORIGINAL ESTIMATE ☐ BUDGET BILL ☐ OTHER (SPECIFY) _____

INCOME ESTIMATE BASED ON: ☐ AN ORIGINAL ESTIMATE ☐ BUDGET BILL ☐ OTHER (SPECIFY) _____

SHOW OVER-ALL EFFECT IN ITEMS 1 AND 2 & GIVE EXPLANATION OF BREAKDOWN BY FISCAL YEAR INCLUDING LONG-RANGE EFFECT

EFFECT OF PROPOSAL	ANNUAL		FISCAL YEAR		
	INCREASE	DECREASE	CURRENT	NEXT	THEREAFTER
1. ESTIMATED TOTAL COST	\$	\$	\$	\$	\$
PERSONAL SERVICES CURRENT EXPENSES REPAIRS/ALTERATIONS EQUIPMENT OTHER	\$	\$	\$	\$	\$
2. ESTIMATED TOTAL REVENUES	\$	\$	\$	\$	\$

3. EXPLANATION OF ABOVE ESTIMATES (INCLUDING LONG-RANGE EFFECT):

NO COST.

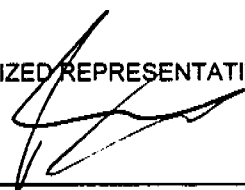
DATE

AGENCY

AUTHORIZED REPRESENTATIVE

August 31, 2001

West Virginia Department of Education



POLICY 2520: Content Standards and Objectives for West Virginia Schools

COMMENT LOG

October 11, 2001 - November 27, 2001

ACTION TYPE
 N: No Response - Negative
 N/A: Not Accepted + Positive
 A: Accepted o Neutral

Date	Individual/Organization	Comments	Action/Type	Rationale
Mathematics				
Introduction to Mathematics				
November 1, 2001	Joyce L. Kirkwood, Teacher Mineral County Alternative 50 Clary Street Keyser, WV 26726	The policy does not address issues of character/social education required for those teaching students in the alternative school across the state. The addition of these objectives would give teachers a more professional method for recommending the return of students to their home schools. Also, the policy does not adequately address performance indicators directly. Following is an example: The student will (State Objective) nine out of ten times, score 80% on a teacher made test. Finally those who teach students with disabilities, and students in alternative programs would be greatly helped by the addition of a section that compiles objectives into across grade categories.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	Fine.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Would we write D, M, PM or N for each objective for each student?		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	OK.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Introduction is thorough and complete with Content Standards and Objectives challenging for both students and teachers. Add website address for National Council of Teachers of Mathematics.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 23, 2001	Theresa Hucik 2 nd Grade Teacher Long Drain School Mez, WV 26585	It covers expectations at all levels.		
November 23, 2001	Olivia Gump Long Drain School Rt. 1, Box 108A Mez, WV 26585	Good expectations of all levels.		
November 23, 2001	Denise Huggins Special Education Teacher HC 62, Box 14 Burton, WV 26562	Seems a bit too ambitious. Are there pre-requisites for pre-school? Many just getting their first experience with school may not have the time in one year to master all the objectives. Do we want them to get last/left behind right off the bat?		
November 28, 2001	Diane Munza Math Teacher Rt. 3, Box 414 Fairmont, WV 26554	Excellent!		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Sounds terrific!		
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	#3 - Teaching - be more specific - well?		
Mathematics Content Standards K-12				
November 20, 2001	B. McGlumphy Box 830 Hundred, WV 26575	The mathematics content standards are geared too high for special education students.		
November 20, 2001	Terri Locke Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	Items were mentioned that were not in the IGOs such as the algebraic symbols. Are these testable: improper fractions and mixed numbers?		
November 20, 2001	Carolyn Zeppuhar 20 E. Benjamin Dr. New Martinsville, WV 26155	The objectives are easy to read and to understand.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Dorothy Downing 20 E. Benjamin Dr. New Martinsville, WV 26155	I like fewer objectives. They are more specific.		
November 20, 2001	Janice Kasseman 20 E. Benjamin Dr. New Martinsville, WV 26155	Specific and concise without being too wordy.		
November 20, 2001	Patricia Roberts 20 E. Benjamin Dr. New Martinsville, WV 26155	I like fewer objectives. They are more specific. They are not repeated as in the past.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	Easy to read and find out what students will need to know.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Math standards seem very similar to the previous document.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Clear and concise- much improved.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Standard 2: Algebra- this is completely unrealistic for first grade.		
November 20, 2001	Nutter Fort Primary Harrison County	Color coded Concise Appropriate for grade level Goal 2 (Algebra) 1.2.7 more clarification needed realistic goals in measurement		
November 20, 2001	Nutter Fort Primary Harrison County	Numbers and Operations- a. fractions b. ordinal numbers to 20 th Measurement a. estimating part at this level is too abstract. b. using multi measurement tools for measuring aren't age appropriate (ex: cm and inches can be confusing at this level).		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Is the state going to provide graphing calculators for the standards 6.5.1 and training for teachers who have little knowledge of this skill? This skill is not presented in the 6 th grade text.		
November 20, 2001	Teresa Standford 20 E. Benjamin Dr. New Martinsville, WV 26155	Very Specific - I liked the fewer objectives.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Content Standards indicate broad areas of knowledge and skills.		
November 23, 2001	Olivia Gump Long Drain School Rt. 1, Box 108A Metz, WV 26585	Content standards are provided to offer an equal foundation for all students.		
November 23, 2001	Janet Park First Grade Teacher Box 108A Metz, WV 26585	Good overview of all grade levels.		
November 23, 2001	Teresa Shackleford Teacher, Long Drain School Metz, WV 26585	Measurement and geometry very good.		
November 23, 2001	Theresa Hucik 2 nd Grade Teacher Long Drain School Metz, WV 26585	Content standards are needed to provide an equal foundation for all students.		
November 23, 2001	David Pethiel P. O. Box 990 Hundred, WV 26575	Measurement and geometry have been done well in third grade.		
November 28, 2001	Diana Munza Math Teacher Rt. 3, Box 414 Fairmont, WV 26554	Directly aligned with NCTM.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Good.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	Third grade - x facts thru 9 not 5.		
Kindergarten				
November 20, 2001	Lee Ann Horn Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	Please change: K.1.1 to count forward to twenty and back from 10.		
November 20, 2001	Tammy Chambers Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	Recommend to change to K1.1 - Count forward to 20 back from 10.		
November 20, 2001	Barbara Daly 20 E. Benjamin Dr. New Martinsville, WV 26155	All objectives are clearly stated and on target for kindergarten students except for K1.1 counting <u>Backwards</u> from 20. Counting <u>backwards</u> from 10 is more appropriate.		
November 20, 2001	Betty Wilson 20 E. Benjamin Dr. New Martinsville, WV 26155	All objectives are clearly stated and on target for kindergarten students except for K1.1 counting <u>Backwards</u> from 20. Counting <u>backwards</u> from 10 is more appropriate.		
November 20, 2001	Vicki Batton 20 E. Benjamin Dr. New Martinsville, WV 26155	All objectives are clearly stated and on target for kindergarten students except for K.1.1 counting <u>backwards</u> fro 20. Counting <u>backwards</u> from 10 is more appropriate.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	K.1.1 - Counting backward from 20 is too difficult.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Don't need & aren't ready for odd and even in kind. Need to add "identify quarter, dollar, and half-dollar." K.2.4 - what does this mean?		
November 20, 2001	Nutter Fort Primary Harrison County	K.1.5 - not acceptable. K.2.5 - not clear on what the goal is.		

Date	Individual/Organization	Comments	Action/Type	Rationale
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	K.1.4 - modeling odd and even numbers seems too difficult for kindergarten students. K.1.5 - eliminate expanded form K.1.10- eliminate commutative property K.3.5 - add half hour to telling time		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	K.1.1 - change wording to count forward and backward to 10 with and without objects. K.1.3 - eliminate this objective. K.4.3 - are these examples or comprehensive? This should be noted.		
November 23, 2001	Johanna Lemasters Long Drain School Rt. 1, Box 108A Meitz, WV 26585	K.1.1 - count forward to 100, backward from 10 to 0. K.1.2 - read, write, order numbers to 100. K.1.5 - expanded form through 20 too difficult.		
November 23, 2001	Julia Rush Title I Teacher Long Drain School Meitz, WV 26585	K.1.1 - count backward only to 10 not 20. K.1.2 - read, write, and order numbers to 100, not just to 20. K.1.5 - expanded form through 20 too difficult.		
November 23, 2001	Denise Huggins Special Education Teacher HC 62, Box 14 Burton, WV 26562	K.1.11 - ambiguous.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Main change - condensed - not a bad idea.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	K.3.6 - add identify quarter. K.4.3 - add over, under and center; corner.		
First Grade				
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	We advocate memorization of math facts to 12. We feel this needs further explanation. 1.2.7 We feel this needs further explanation. 1.3.3 Our first grade level-conversions are not applicable. 1.4.8 Not applicable.		
November 20, 2001	Nancy VanScoy Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	1.1.1 Not realistic to have first graders to count back from 100. It would require too much class time. Counting back from 20 is sufficient. 1.1.3 First graders should only have to identify odd and even numbers to 20. 1.4.2 First graders should recognize the models, but should not have to construct them.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	John Watson Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	1.1.1 - Not realistic to count back from 100 in first grade. They should only be expected to count back from 20. Students have enough trouble counting forward to 100. 1.1.3 - First grade students should only have to identify odd/even numbers to 20. Anything past this would be too difficult for the students to grasp. 1.4.2 - The word "construct" should be deleted. The students in first grade should only have to identify the geometric shapes.		
November 20, 2001	Shawna L. Matheny Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	1.1.1 - Not realistic to count backwards from 100. It would require too much class time. 1.1.3 - First graders should only have to identify odd and even numbers to 20. 1.4.2 - First graders should "identify" three dimensional objects instead of "constructing" the figures.		
November 20, 2001	Dorothy Downing 20 E. Benjamin Dr. New Martinsville, WV 26155	Confused about AB forms and T-charts on Obj 1.2.5		
November 20, 2001	Lee Ann Schenbach 20 E. Benjamin Dr. New Martinsville, WV 26155	Algebra Obj. 1.2.5 Unclear about AB form and T-charts for first grade.		
November 20, 2001	Patricia Roberts 20 E. Benjamin Dr. New Martinsville, WV 26155	Confused about AB forms and T-charts on Obj. 1.2.5.		
November 20, 2001	Mary Mahurin 20 E. Benjamin Dr. New Martinsville, WV 26155	Better organized. Easier to follow. 1.2.5 - Unclear. Do first graders need T-chart.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Need to include practice with minuends and sums to 18. Should only include reading ordinal numbers first-tweith. Coordinate geometry is too difficult for first grade. Terminology bad- (solve the algorithm) (using algebraic symbols) way too hard.		
November 20, 2001	Teresa Standford 20 E. Benjamin Dr. New Martinsville, WV 26155	They are very specific and having fewer objectives is very nice. * Need information on T-chart/AB form.		
November 23, 2001	Janet Park First Grade Teacher Box 108A Metz, WV 26585	Like money - penny, nickel, dime. 1.2.5 - T-chart - what is a T-chart? 1.48 - this is very difficult for 1 st graders. Like - the overall IGO form. 1.1.1 - counting backward from 100 - very difficult.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 23, 2001	Sharla Hummelrick First Grade Teacher Long Drain School Meitz, WV 26585	1.11 - counting backward from 100 is too much. 12.5 - T-chart? Don't like this! 14.8 - this is very difficult for first grade. Overall I'm pleased with this new format and I like the revised objectives much better than IGOs.		
November 23, 2001	Julia Rush Title I Teacher Long Drain School Meitz, WV 26585	1.2.5 - What is a T-chart? 1.4.8 - This is very difficult for first graders, not developmentally appropriate.		
November 23, 2001	Denise Huggins Special Education Teacher HC 62, Box 14 Burton, WV 26562	1.3.9 - Difficult for a first grader adding on 5 and 10 and ones with a mixed collection of coins - like sets (all 5's/10's/25's) seems more reasonable.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Clear, concise and easy to use.		
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	Please make new teachers aware of these concepts and applicable teaching techniques. Need performance descriptions at first grade level. Need to know the mastery level expected. Overall standards are clear, concise and easier to attain.		
Second Grade				
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	The number of objectives are appropriate for our grade level. The textbook we are now using covers the objectives for second grade.		
November 20, 2001	Carolyn Zeppuhar 20 E. Benjamin Dr. New Martinsville, WV 26155	The math standards are reasonable. The textbook we are using covers these content standards. The number of standards is reasonable.		
November 20, 2001	Janice Kasseman 20 E. Benjamin Dr. New Martinsville, WV 26155	The number of standards and content are appropriate to children in second grade. I like that they are specific and concise and written so that many standards can be viewed on one page at a time.		
November 20, 2001	Nutter Fort Primary Harrison County	2.2.2 - rewrite the objective so it is clear. 2.3.4 - feel it is too difficult for this level.		

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October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	2.2.3 - counting by 3's and 4's - not second grade appropriate. 2.3.9 - calculate elapsed time to the half hour not grade appropriate. To the hour is more realistic. 2.5.1 - less than a simple unit, not clear meaning, not grade appropriate. Why such emphasis on metric units when our society uses Standard English units the majority of the time? So much to be taught by teachers, so much to be absorbed by students, in so little time to fulfill the goals our society expects from each of us. The numbers may have gone down but the expectations are still very high for our country's students. Everything is so overwhelming for our students.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Content Standards are acceptable.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	Number of objectives is fine. Please no more! Our text book teaches these objectives.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Need more explanation for algebra standard concrete grouping by 1000's (?) (Number and Op. Objectives).		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	2.1.13 - Intro. Mult. Facts. Leave division until 3 rd grade. 2.1.13 - Mult. Facts should be a 3 rd gd. Skill.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	We are very impressed with the math standards. Every concept necessary to achieve success in math well past second grade has been incorporated in these standards. We are pleased to see a rigorous program and one that introduces higher math skills.		
November 23, 2001	Theresa Huck Olivia Gump 2 nd Grade Teacher Long Drain School Metz, WV 26585	Standards are not clear or specific.		
November 23, 2001	Julia Rush Title I Teacher Long Drain School Metz, WV 26585	Standards not clear or specific.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Objectives are easy to follow. No objectives were given for calculator use.		
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	2.2.6; 2.1.12; 2.3.4; vague - grade level appropriate? No performance descriptors. Expanded notation 6 th place in 3 rd grade - too much of a jump (2.1.4). 2.1.10 - should be able to solve without modeling @ time.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	Strengthen addition and substitution skills before moving on to multiple skills. 2.1.6 - change to nearer 10.		
Third Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	Appreciate more simplified form of IGO's.		
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P.O. Box 848 Franklin, WV 26907	A big improvement in this area.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Very pleased with the more realistic expectations with multiplication and division.		
November 20, 2001	Terri Locke Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	Algebra Obj. What does 3.2.6 mean? Solve grade level appropriate problems involving analysis of change.		
November 20, 2001	Dana Smith Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	I'm happy to see read, write, and order numbers to 10,000 instead of 100,000 as previously on the IGO's. I don't think modeling improper fractions is necessary. I'm not sure why the word "Algebra" has been added to third grade math.		
November 20, 2001	Pat Wildman 20 E. Benjamin Dr. New Martinsville, WV 26155	We do not have enough time to <u>master</u> all of these objectives in one year. There are still too many objectives.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	I believe there are still <u>too many objectives</u> to expect children to "master" or become "distinguished." We may be able to introduce all of these concepts, but time prohibits full mastery of so many concepts.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Mary Toth 20 E. Benjamin Dr. New Martinsville, WV 26155	I think there still too many objectives. We can cover them but to expect "mastery" or "distinguished" levels will take more time than we have to spend.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Why can't these be written in plain English? Developmentally inappropriate 1. + & - of fractions. 2. Proper and improper fractions. 3. Right and obtuse angles. 4. Finding the mean. 3 rd graders need practice, addition, sub ^t , mult, of whole numbers rather than intro. Into abstract skills.		
November 23, 2001	Teresa Shackelford Teacher, Long Drain School Metz, WV 26585	Descriptors not specific, clear enough.		
November 23, 2001	3 rd Grade Teacher Long Drain School Metz, WV 26585	Some content standards seem redundant. For instance, objective for patterns of 3 and 4 and the objectives for multiplications to 5.		
November 23, 2001	Julia Rush Title I Teacher Long Drain School Metz, WV 26585	Some seem redundant.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Well organized --n clear content areas and expectations.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	3.1.4 - change to nearer 100. 3.1.6 - take out unlike denominators.		
Third Grade Performance Descriptors				
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P.O. Box 848 Franklin, WV 26807	Big improvement.		
November 20, 2001	Terri Locke Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	What algebraic methods are needed to extend a pattern?		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Dana Smith Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	I always strive for all to have mastery on all math objectives. I'm not sure why we even have partial mastery or novice included in these descriptors.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	The descriptors would be useful in evaluation. I believe factors such as <u>class size</u> and <u>time restrictions</u> greatly affect results.		
November 20, 2001	Mary Toth 20 E. Benjamin Dr. New Martinsville, WV 26155	I like the inclusion of performance standards into the content standards.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	We like the fact that students are not "required" to memorize multiplication and division facts through the nines to master the objective.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	How are we supposed to use these?		
November 23, 2001	3 rd Grade Teacher Long Drain School Meiz, WV 26585	Descriptors seem to general for this grade level.		
November 23, 2001	David Pethtel P. O. Box 990 Hundred, WV 26575	The descriptors for third grade are not specific enough.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Like the descriptions given.		
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	3.1.1 - three 100,000 (not 10,000) 3.1.3 - thru 100,000 place. 3.1.4 - estimate to nearest 100 (not 1,000) 3.1.13 - thru 9s. 3.2.3 - not clear, just 3's and 4's.		

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Fourth Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	4.1.13 - Basic multiplication facts and corresponding division should be a 3 rd grade objective. Fourth grade should be only to review this concept.		
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P.O. Box 848 Franklin, WV 26807	Skills still seem too advanced for fourth graders.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	4.2.4 - What is the nth term?		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	We agree with all.		
November 23, 2001	Karen Mitchell 505 Maple Avenue New Martinsville, WV 26155	I found that 12 items of the original IGOs were eliminated but 17 were added. I was happy to see that one-digit multiplication and division were added instead of starting with two digits. I am not sure that fourth graders need to know the distributive property. It's hard enough for algebra students to absorb. In the introduction, two- and three-digit numbers should be hyphenated. I was happy to see that comparison of metric and standard units were no longer part of this curriculum. I also found that most fourth graders do not really have a concept of time zones and was glad to see that no longer addressed. How much should fourth graders be able to understand circle graphs?		
November 23, 2001	David Pettel P.O. Box 990 Hundred, WV 26575	Content standards and objectives are clear and have been summarized from previous years.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	Marion County text does not include tree diagrams (4.5.4). 4.3.7 - eliminate elapsed time to the minute. 4.1.4 - change to nearer 1,000.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Clear, easy to understand and follow.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Fourth Grade Performance Descriptors				
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P. O. Box 848 Franklin, WV 26807	Too many skills to cover in one year, still way too advanced for current fourth graders.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	We agree with performance descriptors.		
Fifth Grade				
November 20, 2001	Linda Fonner 740 4 th St. New Martinsville, WV 26155	5.4.4 - listed objective sounds like an activity instead of a content standard.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Performance descriptors are nice as they specifically describe/explain student levels of performance.		
November 23, 2001	Mary Hayes 20 E. Benjamin New Martinsville, WV 26159	5.4.4 - this is an activity not a content standard objective.		
November 23, 2001	Lawrence Koehrsen Mary Palma Patrick Riddle Sherry Sapo Grades 6-8 Math Teachers Wheeling, WV 26003	5.1.6 - introduce here. Master in grade 6. 5.2.1 - move Aular number to grade 6. 5.3.2 - should be in either grade 5 or 6. 5.3.3 - should be in grade 6 or 7. 5.3.9 - should be in grade 7 or 8. 5.4.6 - move to grade 7 or 8. 5.5.1 - not necessary skill.		
November 23, 2001	David Peittel P. O. Box 990 Hundred, WV 26575	Performance descriptors are clear and well thought out.		
November 23, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	What criteria will be used to determine level of mastery? Will mastery be awarded once a year or at specific times throughout year?		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Fifth Grade Performance Descriptors				
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	We do not want to have to document performance because we are evaluating by a grading system. The paperwork is overwhelming as it is. Please do not give us more paperwork to do!		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Are more time consuming paperwork for teachers. Larger class sizes & more paperwork = teacher burnout!		
Sixth Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	6.1.1 and 6.1.2 - it is not necessary for the 6 th grade students to know place value to the millionths. They have trouble remembering the first 3 places to the right of decimal. Otherwise, much better.		
November 20, 2001	Markay G. Corliss 814 Allen St. New Martinsville, WV 26155	I feel that some of the algebra objectives, such as the perfect square and square root should be eliminated.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Some of these standards are now added to the 6 th grade which had originally been 7 th . For example 6.1.1, scientific notation, has not been taught in 6 th grade. Are we to assume that this standard has been added to the standardized tests? How are we to know?		
November 23, 2001	Rebecca Goff BD Specialist	I feel the standards and objectives are to broad, especially when writing IEPs.		
November 23, 2001	Lawrence Koehrsen Mary Palma Patrick Riddle Sherry Sapo Grades 6-8 Math Teachers Wheeling, WV 26003	6.1.1 - seventh grade. 6.1.7 - identify only. 6.3.8 - move to 8 th grade. 6.3.5 - move to 7 th or 8 th grade. 6.4.3 - compass? 6.5.1 - graphing calculator.		
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	Would like more explanation of how performance descriptors and levels of mastery will be utilized. Many IGOs have been simplified may be to vague.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Sounds Good! We like terminology. Maybe teachers will change.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Sixth Grade Performance Descriptors				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Does this mean that students will be tested to move on to the next grade level?		
November 23, 2001	Lawrence Koehrsen Mary Palma Patrick Riddle Sherry Sapo Grades 6-8 Math Teachers Wheeling, WV 26003	Relatively prime numbers. Determine scale factor (Numbers and operations) mastery (Measurement) mastery, partial		
November 28, 2001	East Dale Math Curr. Committee Teachers K-6 Rt. 3 Meadowdale Fairmont, WV 26554	See above.		
Seventh Grade				
November 20, 2001	Fay Shank 20 E. Benjamin Dr. New Martinsville, WV 26155	Amount of objectives are overwhelming! Clearly stated objectives. Computational skills need to be maintained.		
November 20, 2001	April Stoufen 20 E. Benjamin Dr. New Martinsville, WV 26155	Paper /pencil computations need to be maintained and calculator use integrated within the classroom sitting. Objectives are clearly stated- material could be covered in seventh grade if reteaching is not needed.		
November 20, 2001	Jeff Derby 20 E. Benjamin Dr. New Martinsville, WV 26155	Paper/pencil computation need to be maintained, anc calculator use integrated. Objectives are clearly stated- a lot of material to be covered before state testing.		
November 23, 2001	Lawrence Koehrsen Mary Palma Patrick Riddle Sherry Sapo Grades 6-8 Math Teachers Wheeling, WV 26003	7.2.5 & 7.2.6 - spreadsheets 7.2.12 - graphing calculators 7.2.13 - slope 7.2.15 - graphing calculators 7.2.16 - slope 7.3.4 - correct measurement 7.4.7 - scale 7.5.3 - spread sheets and graphing calculator		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Pg. 30 Data Analysis and Probability- Should they be listed as 7 th objectives or is this a typo?		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 28, 2001	Dannette DeVaul Miller JHS 201 Penna. Avenue Fairmont, WV 26554	If we are to use graphing calculators and dynamic geometry software, will these be provided by the state?		
November 28, 2001	EF JHS Math Teachers 1 Oron Lane Fairmont, WV 26559	7.2.5 & 7.2.6 – are the same. 7.2.12 - 7.2.15 - 7.2.18 are the same 7.2.14 - 7.2.17 - 7.2.20 are the same 7.2.13 - 7.2.16 - 7.2.19 are the same		
November 28, 2001	Dunbar Middle School 101 High Street Fairmont, WV 26554	Could mention manipulative use as appropriate.		
Seventh Grade Performance Descriptors				
November 20, 2001	Fay Shank 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many.		
November 20, 2001	April Stoufen 20 E. Benjamin Dr. New Martinsville, WV 26155	<u>Too many</u> - have mastery and partial mastery		
November 20, 2001	Jeff Derby 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many- should have 2. <u>Mastery and Distinguished</u> are different because of one word <u>complex</u> .		
November 28, 2001	EF JHS Math Teachers 1 Oron Lane Fairmont, WV 26559	OK - Will this be used like writing is done now? It seems like extra work for us if it's an end of year item for us to generate.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High St. Fairmont, WV 26554	Lots of duplicates in Objectives> 7.2.14, 7.2.17, 7.2.20 and others. Descriptors need to address use of solving problems in more than one way is encouraged.		
Eighth Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	Glad to see there is still and emphasis on reinforcing basic skills (8.1.7) at the 8 th grade level. It is needed for some students. All look good...simpler is better!		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 20, 2001	Fay Shank 20 E. Benjamin Dr. New Martinsville, WV 26155	Amount of objectives are overwhelming-limiting the amount of time for any reteach.		
November 20, 2001	April Stoufen 20 E. Benjamin Dr. New Martinsville, WV 26155	Good use of calculations and cooperative learning- computational skills need to be maintained and problem solving expanded. Objectives are clearly stated- material could be covered in 8 th grade if reteaching is not needed.		
November 20, 2001	Jeff Derby 20 E. Benjamin Dr. New Martinsville, WV 26155	Paper/pencil computation need to be maintained, and calculator use be integrated. Objectives are clearly stated.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	OK.		
November 23, 2001	Rebecca Goff BD Specialist	The objectives are to broad when writing IEPs.		
November 28, 2001	Carla Luktic Miller JHS 2 Penna. Avenue Fairmont, WV 26554	Will graphing calculators and dynamic geometry software be provided by the state? If provided, will each teacher receive classroom sets of graphing calculators? (Sharing greatly limits the use) Will each school receive a site license for the software so that it may be used in both labs and individual classrooms? Should 8.1.7 include rational numbers?		
Eighth Grade Performance Descriptors				
November 20, 2001	Fay Shank 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many.		
November 20, 2001	April Stoufen 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many- have mastery and partial mastery.		
November 20, 2001	Jeff Derby 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	OK.		

Date	Individual/Organization	Comments	Action/Type	Rationale
Algebra/Geometry Preparation Objectives				
November 20, 2001	Nutter Fort Primary Harrison County	a. more challenging than other basic skills. b. some goals under algebra section might be too challenging for normal students. 1.2.3 1.2.7 1.2.8		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	OK.		
November 28, 2001	Diana Munza Math Teacher Rt. 3, Box 414 Fairmont, WV 26554	Include order of operations?		
Algebra I Objectives				
November 20, 2001	April Stoufen 20 E. Benjamin Dr. New Martinsville, WV 26155	Clearly stated...use of calculations enhance learning for the students... 8 th grade students taking Alg I are still responsible for the SAT-9 Test their 8 th grade year (concepts need retaught).		
		Should include work with translating word phrases to algebraic expressions. Perhaps factoring by grouping should appear here (before Algebra II A2.2). Especially because this is often used with the factoring of trinomials where the coefficient of the square term is other than one.		
November 28, 2001	Coleen Casto Marion County Loop Park Fairmont, WV 26554	Take out A1.19 and A1.21 - not enough time for everything. These not necessary.		
November 28, 2001	Susan White Fairmont SHS Fairmont, WV 26554	Take out A1.19 and A1.21 - not enough time for everything. These not necessary		
November 28, 2001	Linda King Teacher FSHS	I would like to see an objective for translating verbal expressions to algebraic expressions.		
November 20, 2001	Jeff Derby 20 E. Benjamin Dr. New Martinsville, WV 26155	Clearly stated - objectives are well written and easy to follow. Calculator use should be an important tool in algebra.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Applied Mathematics I Objectives				
November 20, 2001	B. McGlumphy Box 830 Hundred, WV 26575	We need to have more math for the real world objectives.		
November 28, 2001	Linda King Teacher, FSHS	For AM1.3 - we would need to purchase measuring tools like micrometers, calipers, etc. Will state pay for these? And as slow as you have to teach these classes, when will there be time to use these instruments.		
November 28, 2001	Jeanina Bubtee Teacher, FSHS	The objectives for this level are appropriately for this level. Hearing taught this class for several years. I know these objectives are reasonable. AM 1.3 (we don't have micrometers).		
Applied Mathematics II Objectives				
November 28, 2001	Coleen Casto Manton County Loop Park Fairmont, WV 26554	Take out AM2.11 and AM2.12 - not enough time for everything. These not necessary. Graphics, Calculators - Please!		
Geometry and Applied Geometry				
November 20, 2001	B. McGlumphy Box 830 Hundred, WV 26575	We need more real world math.		
November 20, 2001	Tammy Chambers Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	K.4.1 - add oval and diamond.		
November 20, 2001	Lee Ann Horn Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	Please add: K.4.1 - add oval and diamond.		
November 28, 2001	Diana Munza Rt. 3, Box 414 Fairmont, WV 26554	Does Applied Geometry include formal proofs? (G.4)		
November 28, 2001	Fairmont Senior High School Fairmont, WV 26554	G.8 - include kites. Basic constructions using a compass and straightedge added in or no construction at all (G.18). G.15, G.19, G.20 should be optional activities if teacher has time.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 28, 2001	Coleen Casto Marion County Loop Park Fairmont, WV 26554	G.25, G.29, G.30 can be extra activities if teacher has time. Most of time, there's not enough hours in the day. So take these out! G.18 - Rewrite. They should know about these things but not have to do construction, not enough time.		
November 28, 2001	Linda King Teacher, FSHS	Looks like the book.		
November 28, 2001	Jeanina Bultree Teacher, FSHS	All of the objectives for geometry are appropriate. I feel that they are too many to cover in a single school year. So much emphasis is put on proofs in our textbook that we don't have as much time to do the application part of the geometry when students really get to discover.		
Algebra II Objectives				
November 28, 2001	Diana Munza Rt. 3, Box 414 Fairmont, WV 26554	A2.2 might need to be in Algebra I. Should A2.10 not also include square root functions?		
November 28, 2001	Fairmont Senior High School Fairmont, WV 26554	Systems of equations (2 variable - Cramer's rule) (3 variables - elimination, substitution, Cramer's rule) Rational expression. A.25 add integral exponents.		
Conceptual Mathematics				
November 28, 2001	Diana Munza Rt. 3, Box 414 Fairmont, WV 26554	This is the only course where the length (one year) is specified. Good course!		
November 28, 2001	Coleen Casto Marion County Loop Park Fairmont, WV 26554	It says it is a one-year course. The rest should say it's a one-year course too.		
Trigonometry				
November 28, 2001	Coleen Casto Marion County Loop Park Fairmont, WV 26554	One-year course?		
November 28, 2001	Diana Munza Rt. 3, Box 414 Fairmont, WV 26554	Having never taught Trigonometry, I cannot really evaluate. Is this class a full year or one semester? I have seen it both ways throughout the state. Is that up to the individual county?		

Date	Individual/Organization	Comments	Action/Type	Rationale
Probability and Statistics				
November 28, 2001	Diana Munza Rt. 3, Box 414 Fairmont, WV 26554	Is this a one-semester class? (Often taught along with Trig?)		
November 28, 2001	Coleen Casto Marion County Loop Park Fairmont, WV 26554	One half year course?		
Other Math Comments				
November 28, 2001	Coleen Casto Marion County Loop Park Fairmont, WV 26554	I do not believe that students should be given a year end test that determines whether they pass or fail the class or that is to be averaged in with their grade in the class. Many students do not test well especially on a comprehensive test. Besides, if you start these tests in April, the year hasn't been completed yet, has it?		
Pre-calculus				
November 28, 2001	Diana Munza Rt. 3, Box 414 Fairmont, WV 26554	Additional suggestions: partial fraction decomposition and mathematical induction.		
November 28, 2001	Jeanina Bublree Teacher, FSHS	Pre-calculus objectives are also appropriate. Again, every objective is so broad that it is almost impossible to cover all of them in one school year.		

Reading and English Language Arts				
Date	Individual/Organization	Comments	Action/Type	Rationale
Introduction to Reading and English Language Arts				
November 20, 2001	Nutter Fort Primary Harrison County	OK.		
November 20, 2001	Barbara Quiret 20 E. Benjamin Dr. New Martinsville, WV 26155	Fine job.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	K.2.7 - Be specific about which marks. Standard 1- "Development independent readers"??		
November 20, 2001	Nutter Fort Primary Harrison County	Acceptable.		
November 20, 2001	Nutter Fort Primary Harrison County	Reading: Meets realistic standards that are challenging to students.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	The objectives are targeted to connect to the students' personal experiences which will help them understand new knowledge.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Add website addresses for International Reading Association and National Council of Teachers of English.		
November 23, 2001	North Marion High School Language Arts Depart. Chairman Rt. 1, Box 100 Farmington, WV 26571	Performance descriptors need a level between mastery and partial mastery. Are these levels to be aligned with the grade the student receives in the class?		
November 23, 2001	Sharla Himmelrick Long Drain School Box 108A Metz, WV 26585	Very poor sentence structure - last sentence second paragraph. It should read - each reference was reviewed and its relevance was determined in order to produce a solicit curriculum for West Virginia students.		
November 23, 2001	Wheeling Middle School Reading Department 3500 Chap Wheeling, WV 26003	8.5.10 - Make life tell and world text connections - like. Independent reading is a positive. Satisfied with changes.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Karen Whinnie, Chair East Fairmont High School 1993 Airport Road Fairmont, WV 26554	Content standards and objectives are both challenging and relevant in each grade level. They seem very "do-able."		
November 28, 2001	Johanna Lemasters Long Drain School Metz, WV 26585	Poor sentence structures within.		
November 28, 2001	Carol Roberts Long Drain School Rt. 1, Box 108A Metz, WV 26585	Content-rich communication. This could be eliminated due to ambiguity. The explanation that follows is more pertinent.		
November 28, 2001	Wheeling Middle School 3500 Chapline Street Wheeling, WV 26003	8.5.10 - Make life tell and world text connections - like independent reading is a positive. Satisfied with changes.		
November 28, 2001	Blackshore Elem. Faculty Senate 77 Blackshore Drive Mannington, WV 26582	Standards need to be listed in a sequential order.		
November 28, 2001	EEJH 7 th & 8 th Grade LA Reading 1 Orion Lane Fairmont, WV 26554	1. Agree with spiraling and sequential theory. 2. Satisfied with multi cultural effort. 3. Appreciate the "guide" design. 4. More attention to prior and future grade objectives for teachers.		
November 28, 2001	East Dale Elementary Rt. 3 Fairmont, WV 26554	1. For the novice teacher, many objectives are vague; for experienced teachers, many objectives have been combined. 2. Too wordy - singly stated goals are easier to strive for and detect mastery. 3. We question the subjectivity of the performance descriptors.		
November 28, 2001	Dunbar Middle School Teachers	Fine as stated.		
Reading and English Language Arts Content Standards K-12				
November 20, 2001	Lee Ann Horn Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	K.1.14 Increase exposure to literary forms. Independent reading is just beginning in kindergarten at the end of the year. Writing Objectives K.2.5 and K.2.7 Most writing is done as a group, therefore written compositions with correct punctuation and spelling do not apply to the developmental level of kindergarten students.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 20, 2010	Tammy Chambers Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	K.1.14 - Increase exposure to various literary forms. Independent reading is just beginning in kindergarten, at the end of the year. Writing Objectives K.2.5 and K.2.7. Most writing is done as a group therefore written compositions with correct punctuation and spelling do not apply to the developmental level of kindergarten students.		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	The objectives are easy to read and to understand.		
November 20, 2001	Janice Kassemann 20 E. Benjamin Dr. New Martinsville, WV 26155	Specific, concise, all inclusive.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	Fine.		
November 20, 2001	Betty Wilson 20 E. Benjamin Dr. New Martinsville, WV 26155	I am glad to see that we have fewer objectives. Very appropriate!		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	K.1.6 - Need to separate sight words and vocab words. Some teachers will expect kids to read positional words.		
November 20, 2001	Nutter Fort Primary Harrison County	Color coded Clear and concise Goal 5.1.5.1 Divide the objective into 2 objectives ex- read and understand high frequency words. Understand antonyms, synonyms, multiple meaning words. Realistic standards		
November 23, 2001	North Marion High School Language Arts Depart. Chairman Rt. 1, Box 100 Farmington, WV 26571	Many of these are repeated each year. We do not have time to reteach all of the items that are repeated.		
November 23, 2001	Margaret Sine Principal Paden City Elementary Paden City, WV 26159	I do not believe there is a consistency across the grade levels as far as the expectations are concerned. There does not seem to be evidence that each grade level's standards build upon those from the previous level. A second area of concern I have addresses the expectations as they relate to the WV Writing Assessment. Areas on which students are to be evaluated on that assessment should certainly be clearly addressed (at all grade levels) in the standards.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	JoEllen Snider Long Drain School P.O. Box 108-A Mez, WV 26585	Second paragraph/last sentence needs reworded.		
November 23, 2001	Olivia Gump Long Drain School Box 108 Mez, WV 26585	Content standards are listed clearly.		
November 23, 2001	Janet Park First Grade Teacher Long Drain School Mez, WV 26585	Good overview. Second paragraph - poor sentence structure (introduction page).		
November 23, 2001	Theresa Hucik Long Drain School Mez, WV 26585	Content standards are listed clearly.		
November 23, 2001	Denise Huggins Special Education Teacher HC 62, Box 14 Burton, WV 26562	Concerned about those students just entering school (no previous preschool experience). This seems too ambitious for the amount of time they have.		
November 23, 2001	Julia Rush Long Drain School Mez, WV 26585	Good overview. Second paragraph - poor sentence structure (introduction page).		
November 23, 2001	Johanna Lemasters Long Drain School Mez, WV 26585	K.1.6 - what frequency words? List them if you expect us to know them.		
November 28, 2001	EEJH 7 th & 8 th Grade LA Reading 1 Orion Lane Fairmont, WV 26554	More concise than IGOs. Agree with viewing addition.		
November 28, 2001	Dunbar Middle School Teachers	Fine as stated.		
Kindergarten				
November 20, 2001	Barbara Daly 20 E. Benjamin Dr. New Martinsville, WV 26155	I am pleased to see fewer objectives addressing the standards.		
November 20, 2001	Vicki Batton 20 E. Benjamin Dr. New Martinsville, WV 26155	Very appropriate! Glad to see that there are fewer objectives.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	Good.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	Vowel sounds should not be covered in Kindergarten, consonant sounds are enough. Standards are developmentally inappropriate for this age group. Too much, too soon. Reading objectives K.1.9 is basis for standards and acceptable. Writing standards are unrealistic.		
November 28, 2001	East Date Elementary Rt. 3 Fairmont, WV 26554	Sequencing of standards is not appropriate. Change order of writing.		
First Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	- Much better - More simplified, realistic - Teachers will feel more confident in ability to cover the IGO's - Love the reading goals - Vocabulary is basis of reading		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	We approve of the changes and like the concise but inclusive approach for the skills.		
November 20, 2001	Dorothy Downing 20 E. Benjamin Dr. New Martinsville, WV 26155	Fewer- Great!		
November 20, 2001	Patricia Roberts 20 E. Benjamin Dr. New Martinsville, WV 26155	Wonderful! <u>Fewer</u> .		
November 20, 2001	Mary Mahurin 20 E. Benjamin Dr. New Martinsville, WV 26155	Good. Clear-concise.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Need to include word usage such as subject/verb agreement.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 20, 2001	Teresa Standford 20 E. Benjamin Dr. New Martinsville, WV 26155	The content standards and objectives are specific and to the point. Again, having fewer objectives are great.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	1.1.3 - should be a kindergarten objective. Division of language arts in these strands is a good idea. Standard 1 places emphasis on phonics and comprehension which is wonderful. Standard 2 is important because skills taught will be used throughout life. Standard 3 will encourage teachers to allow time for students to take pride and pleasure in speaking in front of an audience while appreciating literary works. The new standards are compact but meaty. They leave no stone unturned.		
November 23, 2001	Sharla Hummelrick Long Drain School Metz, WV 26585	Don't like the use of word conventions in these objectives at all! These objectives are much better than old form!		
November 23, 2001	Janet Park Julia Rush Long Drain School Metz, WV 26585	Like reading/language arts/writing grouped together. Like the standard at the beginning for an overview.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	1.1.5 - prefix, suffix, structural analysis are unrealistic expectations. 1.2.2 - are not ready for writing developed story as listed. Research purposes from what they can't read well enough to gather information.		
Second Grade				
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	The broader groupings of content standards into comprehension skills, etc. are much easier to work with.		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	The objectives are more suitable for second grade. The amount of objectives are appropriate for this grade level.		
November 20, 2001	Carolyn Zeppuhar 20 E. Benjamin Dr. New Martinsville, WV 26155	The reading content standards are reasonable for second grade. I like how you combined and cut back on the number of standards.		
November 20, 2001	Janice Kasseman 20 E. Benjamin Dr. New Martinsville, WV 26155	I like that there are fewer objectives, though some of them are broader in content and the concepts covered are appropriate to second grade. I like that standards are specific and concise without being too wordy. I like the format where many objectives are visible on one page. I also like that grammar has been included with writing.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	I like how they organized and cut down on the number of L.O. It is easy to follow the standards.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Good to see specific grammar and writing objectives.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Great rewrite.		
November 23, 2001	Julia Rush Olivia Gump Long Drain School Metz, WV 26585	Many are covered by Saxon phonics. Charts for sight words and phonic rules are displayed on the classroom walls.		
November 23, 2001	Theresa Huck Long Drain School Metz, WV 26585	Many are covered by Saxon phonics - charts, irregular spelling books, and phonics rules.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	Standards listed are appropriate to grade level.		
Third Grade				
November 20, 2001	Dana Smith Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	These all seem much the same as they did on the IGOs.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many objectives.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Again, so many objectives! We need to focus on fewer objectives. The children we work with are 8, 9, and 10 years old.		
November 20, 2001	Mary Toth 20 E. Benjamin Dr. New Martinsville, WV 26155	It would be more realistic to teach fewer objectives. With so many objectives, "mastery" is not a reasonable goal for most of our students. We can introduce the skill or concepts but can not expect "mastery" or "distinguished" levels of understanding.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Can we have cursive writing as a separate objective and <u>clearly</u> specify when it should be introduced and mastered (required for written by all students)?		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Need practice with topic and main idea before trying to paraphrase.		
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P.O. Box 848 Franklin, WV 26807	Big improvement.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Easily identifiable and user-friendly as well as concise and to the point. They are also workable with lesson plans.		
November 23, 2001	David Peithel Teresa Shackelford Julia Rush Long Drain School Metz, WV 26585	Reading - useable. Writing 3.2.4 - plan research - not developmentally appropriate - too advanced for this age level.		
November 23, 2001	Long Drain School Metz, WV 26585	Content standards and objectives are easily understood and make sense. Developmentally appropriate.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	These standards are appropriate.		
Third Grade Performance Descriptors				
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	O.K.		
Fourth Grade				
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P.O. Box 848 Franklin, WV 26807	Too advanced for fourth grade.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	I like the addition of performance descriptors as they will also be used to categorize and explain student performance on statewide assessment instruments. Standards seem broader and inclusive. Including listening as a reading strategy is a good idea. It is great that the writing process is a part of the language curriculum, and that legibility is at least mentioned.		
November 23, 2001	Elliott Kendle Rebecca Kerr Paden City Elementary 510 2 nd Avenue Paden City, WV 26159	Study skills are not addressed. No IGO addresses basic skills such as ABC order, guide words, pronunciation....		
November 23, 2001	David Peithel Teacher PO Box 990 Hundred, WV 26575	I am glad to see the number of objectives have been summarized from previous years. The eleven objectives are more realistic for students to accomplish.		
November 28, 2001	Blackshere Elem. Faculty Senate 77 Blackshere Drive Mannington, WV 26582	These are level appropriate.		
Fifth Grade				
November 20, 2001	Linda Fonner 740 4 th St. New Martinsville, WV 26155	5.1.2 - instead of "increase," incorporate independent reading into the curriculum. Some people may already be doing quite a bit of it. Cutting down on the number of standards is more realistic! Thanks!		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Most draft standards seem to be the same as our present IGOs. 5.3.3 - is important because students should be able to complete a recitation on some memorization from any content area. 5.1.1 - books by West Virginia authors should be provided. 5.1.10 - 5.1.13 - these objectives seem to overlap media objectives.		
November 23, 2001	John Ice, Jr. Sue Flesher Paden City Elementary School 510 N. 2 nd Avenue Paden City, WV 26159	Fifth grade standards will come in handy when doing lesson plans. They are written to encompass a broader spectrum of concepts whereas the previous IGOs were more specific and at times redundant. Please note that my comments are listed at the end of fourth grade because 5 th grade was not listed.		
November 23, 2001	Mary Hayes 20 E. Benjamin New Martinsville, WV 26159	5.1.2 - increase is not the word. I would use incorporate might be a better word. It is good that the standards have been lowered.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 28, 2001	JoEllen Snider Long Drain School P.O. Box 108-A Metz, WV 26585	You forgot to enter 5 th grade section. "The forgotten Fifth Grade." I like the fact they are more specific rather than broad (objectives). I like descriptors to use as a rubric. I like writing process objectives (go with curriculum writing process).		
November 28, 2001	Dunbar Middle School Teachers	Fine as stated.		
Sixth Grade				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	6.1.2 - how do you "teach" increase amount & indep. reading? 6.1.7 - for what reason? 6.2.6 - already in grammar section- should not be in writing. 6.2.15 through 6.2.18 - should not be under English. This should be under study skills or reading. 6.2.21 - shouldn't be English skills. This is taught more in soc. St. & science.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	6.2.6 - should be changed to a three paragraph essay. 6.3.4 - should be removed. An objective should be added to include organization patterns (i.e., time, order, cause and effect, compare and contrast, simple listing, problem solving) in expository texts.		
November 23, 2001	Wheeling Middle School Reading Department 3500 Chap Wheeling, WV 26003	In like the addition of "Performance Descriptors at all grade levels. 6.3.1 - like "audience" etiquette.		
November 28, 2001	Dunbar Middle School Teachers	Fine as stated.		
Seventh Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	I like the conciseness of the new objectives. I truly like the new format. The new goals and objectives are a major improvement over our current ones.		
November 20, 2001	Fay Shank 20 E. Benjamin Dr. New Martinsville, WV 26155	Fine.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	7.2.13 - should be covered in a higher grade level. 7.2.3 - leave out articles and research/reports in seventh grade. 7.2.13 - leave out in seventh grade. 7.1.9 - what is a clipped or shortened word? Slang?		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 23, 2001	Charles Sebroski 59 E. Thistle Drive New Martinsville, WV 26155	Add objectives that address the following: 1. Correct use of comparative and superlative forms of adjectives. 2. Correct use of adjective or adverb format a word. 3. Avoid use of double negatives.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	7.2.7 - should read, "and/or complex sentences." 7.3.6 - should be removed. An objective should be added to include organization patterns (i.e., time, order, cause and effect, compare and contrast, simple listing, problem solving) in expository texts.		
November 23, 2001	Carol Roberts Long Drain School Metz, WV 26585	7.1.4 - is too broad and includes too many skills to be measured accurately. 7.1.7 - current testing does not include these areas - future state testing should include literacy elements since these are basic to understanding literature. 7.1.9 - is not particular important skill - more emphasis should be placed to 7.1.12.		
November 23, 2001	Nancy King New Martinsville School 20 E. Benjamin Drive New Martinsville, WV 26155	The content standards and objectives are more defined than our present IGOs. I feel there needs to be more specific CSOs for spelling. I could find only one, 7.1.12, and it did not really address anything specific.		
November 28, 2001	Jim Archer Teacher Short Line School	There is a clarity in the current version that is a great improvement over the old IGOs. (Seventh and eighth grade) A set of examples would bring even greater clarity to each of the specific objectives. I would recommend an ancillary document of examples that teachers could use if any doubt was present. As examples: (Reading 7.1.8 read types of poetry and the use of inversion...) I have no idea what the author intended. (Reading 7.1.9 recognize and understand clipped or shortened words...) Will my notion of clipped be correct? Should a specific listing of clipped terms be provided? The entire set of Content Standards is peppered with presumed understanding. Precluding the misjudgements of novice and veteran teachers alike would bring these standards the unified trait that is desired. The onus of selecting measurable objectives to be transposed into measurable lessons that will result in gains for our students in testing requires a diligence for commonality that can only be delivered from the central body.		
November 28, 2001	EEJH 7 th & 8 th Grade LA Reading 1 Orion Lane Fairmont, WV 26554	Please consider clarifying your standards with a broad delivery of content specimens. Content with objectives. Need more clarification with performance descriptors, especially between distinguished and mastery (for 7 th & 8 th).		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Eighth Grade				
November 20, 2001	Brian Croasmun 20 E. Benjamin Dr. New Martinsville, WV 26155	I like that the objectives are much more concise. I also like that some of the broad objectives, such as comprehension strategies, are listed together. There is no mention of context clues anywhere. Objective 8.1.10 is all of the spelling objectives needed at this level. Poetry is now mentioned in a usable fashion.		
November 20, 2001	Fay Shank 20 E. Benjamin Dr. New Martinsville, WV 26155	Fine.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	We like the broader statements- easier to use! Not sure how to use the Performance Descriptors? (Just for our own knowledge, in preparation for the achievement test?) 8.2.12 - very difficult for 8 th graders. 8.2.10 is okay. 8.2.13 is okay.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	8.3.6 should be removed. An objective should be added to include organization patterns (i.e., time, order, cause and effect, compare and contrast, simple listing, problem solving) in expository texts.		
November 23, 2001	Carol Roberts Long Drain School Metz, WV 26585	8.1.8 - is not an area that merits an objective - this is more incidental than relevant. 8.1.2 - is too broad and not as important as comprehensive written material/this is also something that would be difficult to evaluate due to experience and bias.		
November 23, 2001	Wheeling Middle School Reading Department 3500 Chap Wheeling, WV 26003	8.1.2 - relate literacy theme to global situations - timely!		
November 28, 2001	EEJH 7 th & 8 th Grade LA Reading 1 Orion Lane Fairmont, WV 26554	Appreciate the condensed version. Comment: Clarify performance descriptors. They are closely related and open to some subjectivity. Understand that these descriptors are in a general, working phase, but a clear line. A distinction is needed.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Ninth Grade				
November 23, 2001	North Marion High School Language Arts Depart. Chairman Rt. 1, Box 100 Farmington, WV 26571	9.1.3 — how will this be measured/evaluated? 9.3.3 — this should not be the responsibility of the English teacher.		
November 23, 2001	Karen Whinnie, Chair East Fairmont High School 1993 Airport Road Fairmont, WV 26554	Thanks for the precise wording. I am glad to see "parts of speech" included.		
Tenth Grade				
November 23, 2001	North Marion High School Language Arts Depart. Chairman Rt. 1, Box 100 Farmington, WV 26571	10.1.3 - how will this be measured/evaluated? 10.3.3 - with so many other objectives in the 10 th grade, identifying persuasive devices should be limited to written works.		
November 23, 2001	Cindy Kocher Hundred High School Weitzel County	Much more concise, not as repetitive as current IGOs; may be too concise; need to have separate objectives for vocabulary and grammar instead of putting them in with reading, writing; standard should be one concise sentence instead of being followed by bullets; performance descriptors are unnecessary — students grades indicate whether they've mastered the objectives.		
Eleventh Grade				
November 20, 2001	B. McGlumphy Box 830 Hundred, WV 26575	Most Special Ed. students do not read at a high school level. Therefore, challenging research and writing will not be an option.		
November 23, 2001	Cindy Kocher Hundred High School Weitzel County	More concise, not as repetitive as current IGOs; need separate objectives for vocabulary and grammar; 11 th & 12 th objectives almost identical — need to differentiate, i.e., focus on American classics for 11 th and British for 12 th ; do not see performance descriptors for 11 th and 12 th — as stated in 10 th grade comments, they're not needed anyway; standard should be one sentence with no bullets.		
Twelfth Grade				
November 20, 2001	B. McGlumphy Box 830 Hundred, WV 26575	For special education students will need basic English skills to function in the real world.		

Science

Date	Individual/Organization	Comments	Action/ Type	Rationale
Science Content Standards K-12				
November 20, 2001	Lee Ann Horn Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	Nicely condensed format of science IGOs.		
November 20, 2001	Tammy Chambers Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	Nicely condensed format of science IGO's.		
November 20, 2001	Linda Fonner 740 4 th St. New Martinsville, WV 26155	Glad to see we're aligned to the national standards!		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	Standards are reasonable for this grade level.		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	Content standards and objectives are easier to read and understand.		
November 20, 2001	Carolyn Zeppuhar 20 E. Benjamin Dr. New Martinsville, WV 26155	Will students in K-2 be tested on science standards?		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	Easy to read and comprehend. Easy to understand. I don't know how I can teach all of this.		
November 20, 2001	Nutter Fort Primary Harrison County	We like goal 4. Gal 3 is more clear than stated in the past.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Standards are too complex for an elementary classroom.		
November 23, 2001	Theresa Hucik Long Drain School Metz, WV 26585	These are not repetitive. They will give a good basis to build on.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Olivia Gump Long Drain School Metz, WV 26585	Listed clearly.		
November 23, 2001	Janel Park First Grade Teacher Long Drain School Metz, WV 26585	Looks Good!		
November 23, 2001	JoEllen Snider Long Drain School Metz, WV 26585	Good explanations of standards, page 81.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Content instruction suffers when 50% hands-on is implemented.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	Kindergarten is fine - well done.		
November 28, 2001	Blackshere Elementary F.S. 77 Blackshere Drive Mannington, WV 26582	There is a more unified approach to all grade level instruction.		
Kindergarten				
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Standards are repeated, i.e., Geog. K4.1 is the same or similar as one of the science standards. This makes them hard to check. Keep all Earth standards together. If it needs repeated, note...see K4.1.		
November 20, 2001	Barbara Daly 20 E. Benjamin Dr. New Martinsville, WV 26155	The objectives are more clearly stated.		
November 20, 2001	Betty Wilson 20 E. Benjamin Dr. New Martinsville, WV 26155	Better stated objectives!		
November 20, 2001	Vicki Batton 20 E. Benjamin Dr. New Martinsville, WV 26155	Better stated objectives.!		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Kindergarten students do not understand the concept of length of time.		
November 23, 2001	Johanna Lemasters Long Drain School Meiz, WV 26585	Standard 6 is too difficult for kindergarten students in a rural area. They need to see urban areas to compare.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	Very pleased with the standards and objectives. No comments other than they follow the curriculum and can be easily covered during the year.		
November 28, 2001	White Wall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	These seems a bit extreme for kindergarten students - especially some of Standard 1. Demonstrate history of science - what does this mean for kindergarten?		
November 28, 2001	Blackshere Elementary F.S. 77 Blackshere Drive Mannington, WV 26582	These new standards are more concrete, using the word demonstrate (using your hands).		
First Grade				
November 20, 2001	Dorothy Downing 20 E. Benjamin Dr. New Martinsville, WV 26155	Too much with all that first graders need to know! (Phonics, Lang. Arts, and math).		
November 20, 2001	Lee Ann Schambach 20 E. Benjamin Dr. New Martinsville, WV 26155	Seems to be a lot of science information to be taught in first grade along with Phonics, Lang. Arts, and math.		
November 20, 2001	Patricia Roberts 20 E. Benjamin Dr. New Martinsville, WV 26155	Too much with all that first graders <u>must</u> learn (such as, math & reading).		
November 20, 2001	Mary Mahurin 20 E. Benjamin Dr. New Martinsville, WV 26155	Too much.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Terminology is poor.		
November 20, 2001	Nutter Fort Primary Harrison County	Too many goals for 1 st grade. (Goal 1 & 6).		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Teresa Standford 20 E. Benjamin Dr. New Martinsville, WV 26155	* Seems like a lot for the amount of time we have to teach.		
November 13, 2001	Facility Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	There are too many content standards for first grade science. Time constraints do not allow us to teach science in depth.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	1.4.5 Unsure about this standard.		
November 23, 2001	Sharla Hummelrick Long Drain School Metz, WV 26585	13.1 - don't think this is appropriate. 14.5 - too vague - what do you mean?		
November 23, 2001	Janet Park Long Drain School Metz, WV 26585	Standard 1 - can first graders really understand science history and the involvement of scientific knowledge. 1.4.5 - very hard to interpret.		
November 28, 2001	White Wall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	I like how everything is broken down specifically.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	Overall the standards are much more clear, concise and easier to attain in the classroom. Very realistic for first grade level.		
Second Grade				
November 20, 2001	Carolyn Zeppuhar 20 E. Benjamin Dr. New Martinsville, WV 26155	This was easy to read and comprehend. The standards are reasonable for second grade.		
November 20, 2001	Janice Kasserman 20 E. Benjamin Dr. New Martinsville, WV 26155	Objective 2.1.2 - I think this would be more effective and relevant done with an older child. I don't feel that I can do a thorough job of teaching <u>all</u> these objectives. There are <u>too</u> many for second grade.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Like the inquire-based program. Very comprehensive.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Standard 2: Who will provide funding for materials? Standard 6 is repetitive of standards 1-5 and could be left out.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	The content standards don't coincide with the current adopted science text. The content standards are too broad and the language should be simplified.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The standards are excellent. They touch on every component necessary to provide science instruction that deals with the environment, questions about the world and the humane treatment of living organisms. The hands-on activity emphasis is nice.		
November 23, 2001	Long Drain School Meiz, WV 26585	Content standards and objectives are developmentally appropriate, but it may be too difficult to cover all the curricula necessary in light of other programs such as life skills, career, multi-cultural, etc., They are fine.		
November 23, 2001	Teresa Shackleford Long Drain School Meiz, WV 26585	There is more than we can teach in a year. Eliminate or combine themes. We can't do justice to this many topics in a school year. Remember all the areas we must cover in this grade - include life skills, computer time, library, social studies. Be more realistic.		
November 23, 2001	Olivia Gump Theresa Hucik Long Drain School Meiz, WV 26585	To meet current IGO we are trained on handle on science kits.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	I found them to be similar to the old IGOs but much easier to understand and manage. How textbook should compliment the standards.		
November 28, 2001	White Wall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Science subject matter concepts are well organized.		
November 20, 2001	Terri Locke Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	The objectives are broad and not clear enough to know what should be taught. There is too much to be covered in third grade.		
November 28, 2001	Blackshere Elementary F.S. 77 Blackshere Drive Mannington, WV 26582	Technology is now separated from the science standards. Subject matter is good and covers a wide variety of theme areas.		

Date	Individual/Organization	Comments	Action/Type	Rationale
Third Grade				
November 20, 2001	Dana Smith Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	I think the third grade science objectives seem too massive and detailed. Too many areas of science are listed to be covered by third grade teachers and students.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many objectives prohibit mastery. We endeavor to teach as many as possible, but large class size and time available make the task very difficult.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	More training needed and materials provided. Texts supplied which actually provides support material to carry out these objectives. Very ambiguous- too many - won't obtain mastery.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Body systems now in Health text.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	The third grade is broken down nicely.		
November 28, 2001	White Wall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Content is thorough, clear and easy to follow.		
Third Grade Performance Descriptors				
November 20, 2001	Dana Smith Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	The performance descriptors in science sound fine in theory but in reality are too detailed when much of our curriculum/grading is based on participation, group discussion, pass/fail grading, etc.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Way too much info. For third graders to process efficiently - need less objectives.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	Well explained. However it may be hard to determine a student's level of mastery. Every objective is a lot or is it every standard to determine mastery.		

Date	Individual/Organization	Comments	Action/Type	Rationale
Fourth Grade				
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Standards are agreeable.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	Content standards and objectives are very clear, concise and easy to use/follow. These follow the concepts covered in our science textbook.		
November 28, 2001	White Wall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	These objectives are covered in our present science curriculum.		
Fourth Grade Performance Descriptors				
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Standards are agreeable.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	Performance and objectives are very clear and on children's level of learning. Very valuable tool in teaching science concepts. Descriptors help track all students learning of science concepts being presented.		
Fifth Grade				
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P. O. Box 150 Barrackville, WV 26559	IGOs are acceptable.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	We would like to have test items highlighted in all content areas.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The lack of adequate planning/preparation time, classrooms that are not conducive to investigations and hands-on activities, appropriate materials and textbooks, and schedules make the standards and objectives too complex and unrealistic for an elementary classroom.		
November 20, 2001	Linda Fonner 740 4 th St. New Martinsville, WV 26155	Good.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	JoEllen Snider Long Drain School Meiz, WV 26585	These are so much easier to follow and understand. I like the fact they have been combined and are more specific.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Fine as stated!		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	The standards fit nicely within the textbook we are using (Harcourt). The goals and objectives are clear, concise and easy to decode, therefore the instructor can quickly assess if the standards are being taught and mastered.		
Fifth Grade Performance Descriptors				
November 23, 2001	JoEllen Snider Long Drain School Meiz, WV 26585	I think these are great! We can use these as rubrics - this helps teacher to assess better.		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	The fifth grade performance objectives, the partial mastery is a skill base that students in this category fits well.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Standards are adequate!		
Sixth Grade				
November 20, 2001	Marikay G. Cortiss 814 Allen St. New Martinsville, WV 26155	At this time my text does not address the concept of energy and properties of matter.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Content standards are not different than IGO's, just rearranged. The content standards need a new, less confusing format. Content standards should be grouped in areas, i.e., - life, earth, physical science.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The instructional goals and objectives have been reorganized with different numbering schemes. The wording is the same.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Lois Cook, Debbie Clark Science Teachers 3500 Chapline Street Wheeling, WV 26003	6.4.5 a biotic and biotic factors not in kits provided. 6.4.7 not taught until 7 th grade - masses, ferns. 6.4.17 & 18 - not in 6 th grade material. Taught in 7 th . 6.4.27 - 8 th grade. 6.4.28 - 7 th grade		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	The standards fit nicely within the textbook we are using.		
Sixth Grade Performance Descriptors				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	We don't think these are necessary because our grading system reflects these. We don't want these to lead to an additional check-list type of evaluation.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The performance descriptors are new, but they seem fine.		
November 28, 2001	Dunbar Middle School Fifth & Sixth Grade Teachers 101 High Street Fairmont, WV 26554	Performance descriptors allow for various learning abilities. @ SUPER!		
November 28, 2001	East Dale Elementary Fairmont, WV 26554	The sixth grade descriptors are excellent. The mastery level is quite adequate and the distinguished is fair.		
Seventh Grade				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Standards seem to cover same areas but are more generalized. Are these more generic to fit the available series of books? Content standards should be grouped in areas, i.e., - life, earth, physical science. Our text/curriculum does not match the content standards.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The performance descriptors are new, but they seem fine.		
November 23, 2001	Lois Cook, Debbie Clark Science Teachers 3500 Chapline Street Wheeling, WV 26003	7.4.3 - 8 th grade; 7.4.7 - 6 th grade; 7.4.24 & 25 - 8 th grade; 7.4.30 - 6 th grade		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The instructional goals and objectives have been reorganized with a different numbering scheme. The wording is the same.		
Seventh Grade Performance Descriptors				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Do not need these- we do not need or want rubrics, portfolios or additional evaluation systems.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The performance descriptors are new, but they seem fine.		
Eighth Grade				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Standards should be listed together in groups- life science, earth science, physical science. Curriculum approved by the state does not provide material to teach subject/matter concepts objectives.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The instructional goals and objectives have been reorganized with a different numbering scheme. The wording is the same.		
November 23, 2001	Lois Cook, Debbie Clark Science Teachers 3500 Chapline Street Wheeling, WV 26003	8.4.13 — 8.4.15 — 8.4.17 → 9 th grade		
Eighth Grade Performance Descriptors				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	We see the performance descriptors as a "dumping down" of the grading system.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The performance descriptors are new, but they seem fine.		

Date	Individual/Organization	Comments	Action/Type	Rationale
Ninth Grade Content Standards and Objectives				
November 23, 2001	Nancy Talley Chemistry Teacher 506 Overlook Drive Beckley, WV 25801	I find missing all standards related to genetics. I believe this needs to be taught 9 th and 10 th CATS levels. The content stands 9.4.8 has general been taught in 10 th grade. Many students will not take biology and understanding of genetics is important. The descriptors require mastery in the Cell and Molecular Basis for Heredity, however there is no area of content standards for this genetics requirement.		
Ninth Grade Science Performance Descriptors				
November 23, 2001	Kimberly Edgell HHS Wetzel County School	Expand on novice level. Is there a category below this? Is this level failing? With novice level, will the student repeat the course?		
November 23, 2001	Nancy Talley Chemistry Teacher 506 Overlook Drive Beckley, WV 25801	This use of performance descriptors seems to be very ambiguous in defining levels of expertise. Setting the standards for each area is going to be nightmare for teachers. It is very open to subjective criteria for judging students. Teachers will use their own standards to judge who has met what descriptor. I see a possible area of abusive and/or neglect. I am very concerned in how these descriptors are going to be used to judge my students' abilities.		
Tenth Grade Science Performance Descriptors				
November 23, 2001	Kimberly Edgell Wetzel County School	The performance descriptors need specific percentages assigned to each category.		
Chemistry-Technical Content Standards and Objectives				
November 23, 2001	Brian Steinmiller HHS Box 830 Hundred, WV 26575	The more general content standards allow for teachers to have some control over planning. Less repetition of IGOs in CATS, which is good.		
November 23, 2001	Nancy Talley Chemistry Teacher 506 Overlook Drive Beckley, WV 25801	Good! I like the content standards and objectives for Technical Chemistry. I find these CSOs to be in keeping with the goals of the course.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Advanced Chemistry Content Standards and Objectives				
November 23, 2001	Brian Steinnmiller HHS Box 830 Hundred, WV 26575	The more general content standards allow for teaches to have some control over planning. Less repetition of IGOs in CATS, which is good.		
November 23, 2001	Nancy Talley Chemistry Teacher 506 Overlook Drive Beckley, WV 25801	EXCELLENT! The Advanced Chemistry content standards are more in line with what is actually being taught in Advanced Chemistry better than the IGOs. This is a great improvement. I find the content standards have a good progression of concepts being taught in the course.		
November 23, 2001	Brian Steinnmiller HHS Box 830 Hundred, WV 26575	AC6.1 and 6.2 are not chemistry.		
Other Comments				
November 28	Jody Cunningham President, WVSTA 420 Edgelawn Avenue Williamstown, WV 26187	As stated in the Executive Summary one of the goals was to "design a format that can easily be used and understood." In my opinion that is the true strength of this revision. In particular, Standard 4: Science Subject Matter/Concept Objectives, the format is very teacher friendly. One of our goals in teaching science has been the implementation of a coordinated and thematic science curriculum. This approach was chosen to see the progression from one grade level to the next in the major science themes. This new format will make it easy for the CATS science teacher to design instruction based on a student's exposure to a strong foundation and scope of many science concepts. Teachers will, "at a glance," be able to view the content objectives for previous grades and determine what students should know as they move through to the next level. This allows the teacher to design lessons taking into account prior knowledge of students.		

Social Studies				
Date	Individual/Organization	Comments	Action/ Type	Rationale
Introduction to Social Studies				
November 20, 2001	Nutter Fort Primary Harrison County	Goal 2 Gout. B too high. D too high. 2.2.3 in depth? Too high. Goal 3 is ok. History- ok.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	OK.		
November 20, 2001	Barbara Daly 20 E. Benjamin Dr. New Martinsville, WV 26155	Well done.		
November 20, 2001	Nutter Fort Primary Harrison County	1.2.3 Some goals are too abstract for students to understand. (Ex. Mayor). Acceptable.		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Performance Descriptors- Are they for teacher guidelines or are they to be used for student performance and grades? Character education under standard 1: Citizenship is covered under RSP/Character education school programs. (As a supplement). We are pleased with the explanations of the core disciplines.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The separation of citizenship as a separate standard will enhance its teaching. The geography and history standards are much more clear and very appropriate.		
November 23, 2001	Olivia Gump Long Drain School Meiz, WV 26585	Citizenship, geography and history is what second grade would like to be accountable for.		
November 23, 2001	Theresa Hucik Long Drain School Meiz, WV 26585	Good explanation, but no time to really include because of time needs for math and language arts.		
November 23, 2001	Janet Park Box 108 Meiz, WV 26585	Good.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Sharia Hummelrick Long Drain School Meiz, WV 26585	Fine.		
November 28, 2001	EFJHS 1 Orion Lane Fairmont, WV 26554	Goals are fine, but largely neglected before seventh grade level (K-6); students come to middle school often with little background in social studies.		
November 28, 2001	Dunbar Middle School	Gives an overview of the general program of study.		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26554	Wordy but does cover all points.		
Social Studies Content Standards K-12				
November 20, 2001	Terr Locke Paden City Elementary 510 N. 2 nd Ave. Paden City, WV 26159	Third grade has too many areas of study and too involved for the majority of third graders to comprehend. Why is it necessary to bombard them with so much at this maturity level?		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	The only problem I have about teaching all the objectives is the amount of time we have to work on them.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	OK.		
November 20, 2001	Nutter Fort Primary Harrison County	Some concepts are too difficult to grasp 1.2.3		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Content standards meet the needs of students and the curriculum as devised cover these standards. To further enhance student mastery of these standards a different course of study for eighth grade is needed. Perhaps one semester of WV Studies should be offered along with a semester course Civics/Government.		
November 23, 2001	Olivia Gump Long Drain School Meiz, WV 26585	Good explanation.		
November 28, 2001	Dunbar Middle School	Can see the sequential overview and interdependence of grade levels.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26554	Use layman terms - easily understood by educators and parents. Too much educational jargon is used!		
Content Standard 1: - Citizenship				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell Street Keyser, WV 26726	- Describe, demonstrate and employ the civic dispositions of good citizenship (Civic Dispositions); - Develop a respect for symbols which represent the United States and the concepts on which the United States was built and describe the roles of significant individuals (respect for People, Events, and Symbols); - Explain and practice the responsibilities, privileges and rights of United States citizens (Civic Life).		
Content Standard 2: Civics/Government				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell Street Keyser, WV 26726	Explain, analyze and evaluate the origins of meaning of the principles, ideas and core democratic values expressed in the foundation documents of the United States (Ideas of United States Democracy).		
Content Standard 4: Geography				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell Street Keyser, WV 26726	- Identify, explain and analyze how the earth is shaped by the movement of people and their activities (Human Systems). - Analyze the interaction of society with the environment (Environment and Society).		
Kindergarten				
October 1, 2001	Paullette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	Good.		
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	K.2.1 Explain why rules are important and participate in developing rules.		

Date	Individual/Organization	Comments	Action/Type	Rationale
November 20, 2001	Lee Ann Horn Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	K.1.2 Please add honesty to this IGO. Standard 2: Civics/Government: kindergarten students are just developing abstract thinking. They will not see or understand the concept of government as a political unit, and how it relates to "me."		
November 20, 2001	Tammy Chambers Paden City Elementary 510 2 nd Ave. Paden City, WV 26159	K.1.2 Please add honesty to this IGO. -Civics/Government- Standard 2:- Kindergarten students are just developing abstract thinking. They will not see or understand the concept of government, as a political unit, and how it relates to "me."		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Too abstract for K thinkers.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	K.2.1 Doesn't make sense		
November 23, 2001	Johanna Lemasters Long Drain School Meitz, WV 26585	Standard 4: Geography "Explain geographic perspective and the tools and techniques ..." Too difficult.		
November 28, 2001	Blackshore Elementary School 77 Blackshore Drive Mannington, WV 26554	The standards use too much education jargon. The objectives are more easily understood.		
November 28, 2001	White Hall Elementary School Route 7, Box 65 Fairmont, WV 26554	Things like standard 3 sound a bit difficult for Kindergarten. Standards 2, 3 and 5 will be very difficult to apply to kindergarten.		
First Grade				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	1.2.1 OK 1.2.2 Recognize the need for authority figures 1.2.3 OK 1.2.4 explain why different forms of governments are necessary. In 1.2.1 students cannot write, so how can they practice being a "recorder"?		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Dorothy Downing 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many! 1.2.2 Why do 6-7 yrs. Need to know why different forms of govt. are necessary.		
November 20, 2001	Lee Ann Schambach 20 E. Benjamin Dr. New Martinsville, WV 26155	Too much information to teach in first grade along with phonics, lang. Arts and math. 1.2.2 Why do 6-7 yrs need to know why different forms of govt. are necessary.		
November 20, 2001	Patricia Roberts 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many- first graders need to learn to read and write and to do math.		
November 20, 2001	Mary Mahurn 20 E. Benjamin Dr. New Martinsville, WV 26155	Too much. 1.2.2 Why do we need to teach different forms of govt.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Terminology is bad. Way too difficult for 1 st gd. Students.		
November 20, 2001	Teresa Standford 20 E. Benjamin Dr. New Martinsville, WV 26155	Content standards and objectives are specific but seems like some of them could be incorporated into other areas.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	1.2.2 and 1.2.3 seem too advanced for this grade level.		
November 23, 2001	Janet Park Box 108 Metz, WV 26585	1.5.6 - This would be hard for six year old students. 1.21		
November 23, 2001	Sharia Hummelrick Long Drain School Metz, WV 26586	1.2.1 & 15.6 - This is nuts! Who thinks this garbage up? Just when do we have time to do this? The rest of the objectives are acceptable.		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26554	Content standards are very hard to understand - too much jargon and general terminology without the objectives it is hard to understand what the standards mean.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Second Grade				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	2.1.4 - conflicts with 1.1.5 recite the Pledge of Allegiance, participate in patriotic singing and celebrate national holidays. I believe it is correct in 1.1.5. 2.4.3 - is the same skill as 1.4.2. 2.5.5 - eliminate spoken before languages		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Content standards don't coincide with adopted texts, specifically in areas of civics/government.		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	I like the objectives that have been added about WV studies. Objectives are appropriate for our grade level.		
November 20, 2001	Carolyn Zeppuchar 20 E. Benjamin Dr. New Martinsville, WV 26155	I like having WV state content in objectives. I feel these are reasonable for second grade.		
November 20, 2001	Janice Kassemann 20 E. Benjamin Dr. New Martinsville, WV 26155	I like the wording of the citizenship objectives. I also like the addition of West Virginia knowledge to Geography objectives. I think that the number of objectives is appropriate for second graders.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	This is good. I'm glad that 2.4.1 is included.		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	Like the return to specific geography and history objectives.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Standard 3- Economics is too advanced for this age level. Analyzing the impact is a bit ridiculous. 2.5.1- Children may not be able to get pictures and interviews for 3 generations.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The citizenship standard is excellent, especially the volunteering. The government standard is necessary. Map study is essential and students love to draw maps. Standard 2.2, 1 — local, state, and federal government. As with all the standards, we like the emphasis on technology.		
November 23, 2001	Olivia Gump Long Drain School Meiz, WV 26585	Time doesn't allow for all the standards and objectives at this level.		
November 23, 2001	Theresa Hucik Long Drain School Meiz, WV 26585	Time does not allow for all of standards and objectives in second grade, citizenship, geography and history should be the only standards.		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26554	Content standards are very hard to understand — too much jargon and general terminology without the objectives it is hard to understand what the standards mean.		
November 28, 2001	White Hall Elementary School Route 7, Box 65 Fairmont, WV 26554	Most objectives are the same. History objective 2.5.1 seems to difficult for this grade level.		
Third Grade				
November 20, 2001	Dana Smith Paden City Elementary 510 N. 2nd Ave. Paden City, WV 26159	Like science, the third grade objectives seem to have too many areas of study.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many objectives.		
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Too many objectives- too little time!		
November 20, 2001	Dave Taylor, Principal Cherry River Elementary Curriculum Committee Riverside Drive Richwood, WV 26261	3rd graders are not mature enough to mastery the civics objectives particularly 3.2.5 (third one in the list) BTW- are those numbered correctly? 3.5.1- Which events? Which people? Need more specificity 3.5.3 3.5.6		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Clearly written objectives which can be understood easily. What are "civic dispositions"? Why not choose 1 or 2 areas like geog. And history for this level. States and capitals is not something 3 rd graders need to know. TOO MANY.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	1. Glad to see that Character Education has been incorporated into the social studies curriculum. 2. We feel the present adopted text is too "cluttered" with nonessential information new text needs to be more content standard oriented.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Citizenship — could the recitation of the Pledge of Allegiance and singing of patriotic songs be made part of every grade level K-12?		
		3.1.1 — why not list all six character traits as specified in WV Character Education materials?		
November 23, 2001	Teresa Shackelford Long Drain School Meitz, WV 26585	Again - not very realistic for children who still believe in Santa Claus. Third graders can not understand economics in a measurable format. Focus on history and geography. Economics and civics will come later.		
November 23, 2001	Long Drain School Box 108 Meitz, WV 26585	Content standards and objectives need to be reduced. Some areas do not seem appropriate such as economics. These areas can be addressed but not in a testable measure for this age. Not enough time.		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26554	We need to know the standard of performance descriptors - what is the expectation for each grade? The standards are not totally clear but the objectives are.		
November 28, 2001	White Hall Elementary School Route 7, Box 65 Fairmont, WV 26554	History and economic objectives are difficult and vague.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Third Grade Performance Descriptors				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	3.1.7 define the concept of the common good. Performance Descriptors - Distinguished This is not clear. I would suggest this change: Third grade students performing at the distinguished level evaluate how the responsibilities of citizenship such as honesty, justice, patriotism, and respect at school, at home, in the community and in the state are important for the common good and predict situations where students will use these responsibilities. Note: I can see little difference in the performance descriptors from partial to mastery to distinguished. 3.5.3 discuss and draw conclusions about current events.		
Fourth Grade				
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Page 187 - DISTINGUISHED — last sentence is vague where other levels are specific. Standard 4 should say "world" not "earth." Available curriculum does not match these standards and objectives.		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26554	We need to know the standard of performance descriptors - what is the expectation for each grade? The standards are not totally clear but the objectives are.		
November 28, 2001	White Hall Elementary School Route 7, Box 65 Fairmont, WV 26554	Too much material to be taught and mastered in one year's time.		
Fourth Grade Performance Descriptors				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Fourth grade students performing at the distinguished level explain the basic democratic values, principles, and beliefs expressed in the Declaration of Independence and analyze how they relate to rights and responsibilities of Americans today, and the, find examples of them in today's news and activities. They assess and critique the significance of US and WV patriotic symbols, holidays and celebrations. They generate strategies which will enhance conflict resolution skills.		

Civics/Government Performance Descriptors

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Fourth grade students performing at the distinguished level will verify the protection of minority rights in a democracy, cite examples of conflicts concerning individual rights and draw conclusions about how they have been resolved. They analyze symbols and celebrations and rank famous West Virginians according to the significance of their contributions. They compare and contrast the parts of government at the local, county and state levels.		

Economics Performance Descriptors

November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Economic Performance Descriptor for Distinguished is not clear. I would suggest the following: Fourth grade students at the distinguished level analyze the factors of production, scarcity, land use, consumer and produce choices and explain their impact on taxation, slavery, indentured servitude, and natural resources in the economic development of the colonies and the American Revolution. In West Virginia studies at the distinguished level, students explain how occupational choices are affected by resource use.		

Mastery

November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Fourth grade students at the mastery level identify the factors of production, scarcity, land use, choices of consumers and producers of goods and explain their impact on taxation, slavery, indentured servitude, and natural resources to explain the economic development of the colonies and the American Revolution. In WV studies at the mastery level, students identify how natural resources and geographic features affect the economic development of WV and the occupational choices of citizens.		

Partial Mastery

November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Occupation should be occupations in line 7.		

History Objectives

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	The History objectives are not in chronological order. They should be as follows: 4.5.1 - 4.5.7, 4.5.2 - 4.5.6, 4.5.3 - 4.5.13, 4.5.4 - 4.5.14, 4.5.5 - 4.5.4, 4.5.6 - 4.4.5, 4.5.7 - 4.5.2, 4.5.8 - 4.5.10, 4.5.9 - 4.5.8, 4.5.10 - 4.5.9, 4.5.11 - 4.5.12, 4.5.12 - 4.5.15, 4.5.13 - 4.5.11, 4.5.14 - 4.5.17, 4.5.15 - 4.5.3, 4.5.16 - 4.5.1, 4.5.17 - 4.5.16, 4.5.18 - 4.5.18, 4.5.19 - 4.5.19, 4.5.20 - 4.5.20. In 4.5.11 - the Stamp Act should be removed as it is not a part of the Revolutionary War. You could substitute Continental Congress, Declaration of Independence, appointment of George Washington as general. Also, margins are not straight on page twenty. In Course Description: Eliminate the last line "Teachers are encouraged to introduce students to geographic places and regions" as this was introduced in grade one on page 5.		
Fifth Grade				
November 20, 2001	Linda Fonner 740 4 th St. New Martinsville, WV 26155	Still too many standards. Citizenship objectives are ideas that are too abstract for this grade level. (Too high level) 5.2.1 too abstract 5.3.7 "Identify" instead of "apply" 5.5.2 create a time line (activity, not a standard)		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Instruction is not sequential in any way. It is jumping to cover tested questions. Unit studies too time consuming. It would take 2 years to cover these objectives in a sequential order that makes sense. This is written to cover what is on SAT test.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Fifth Grade Course Description: Line Two: <i>Students will examine the movement in the nation from rural to urban and from agriculture to industry focusing on the economic impact of these moves.</i> Objectives: 5.1.5 identify and analyze differences between individual responsibilities, privileges and rights of American citizenship. Fifth grade students performing at the distinguished level justify and defend the roles of an American citizen in relation to responsibilities, rights, involvement in political process and decision making. They explain sources of governmental power and analyze the belief in common values and principles as define by our core documents. Partial Mastery: "needs and wants" In line 4 should be <i>basic rights found in the Bill of Rights.</i> 5.4.8 explain the relationship of the environment to cultures of the United States.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	These standards are too difficult for this level.		
November 23, 2001	Mary Hayes 20 E. Benjamin New Martinsville, WV 26159	5.3.7 apply should be changed to identify. Social studies has to many objectives.		
November 28, 2001	Dunbar Middle School	General summary of standard makes it easier to see how the standard ties in with the text.		
Sixth Grade Social Studies				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	The 6 th grade objectives are an improvement over the ones we've been using because they are a better reflection of our curriculum. However, the question is, "Will the standardized test correlate with our objectives?"		
November 8, 2001	Mr. John Marra, Principal Franklin Elementary School P.O. Box 848 Franklin, WV 26807	Current S.S. series of textbooks does not cover American History, yet many IGO's stress developments in this area.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	These standards seem fine.		
November 23, 2001	Kathy Langwell Teacher Long Drain School Metz, WV 26585	New content standards and objectives do not coincide with our adapted text. Sixth grade books emphasize ancient civilizations - civics and history topics for U.S.A. are not the main areas of concentration. 19 th Century Western Europe is not emphasized other areas not clear are women in the U.S.A., civil war of U.S.A., U.S.A. constitution content.		
November 28, 2001	Dunbar Middle School	General summary of standard makes it easier to see how the standard ties in with the text.		

Sixth Grade Performance Descriptors

November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Sixth grade students performing at the distinguished level analyze various forms of governments and then compare the structures of governments for the power given to leaders. They identify strong leadership and evaluate their actions and the consequences. They will determine the function of governmental and non-governmental organizations.		
		Sixth grade students performing at the distinguished level explain the physical and human processes that shape the earth's surface and predict future changes. Students construct and/or use complex time zone maps, globes and population pyramids to derive information about their place in the world. They use maps to draw conclusions about human processes that shape the earth's surface.		

Seventh Grade

November 1, 2001	Bob Bonar Calhoun County High School	7.2.5 and 7.2.6 are <u>IDENTICAL</u> .		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	The 7 th grade objectives are an improvement over the IGO's now in use. We just hope that they also correlate closer to the standardized testing program.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	The seventh grade is a study of geography through the six elements. Students will examine people and places, and analyze the relationships between cultures, history, environmental concerns and political and economic systems. Students will use maps, graphs, charts, and other technologies in achieving an understanding of a geographical perspective. Students will formulate concepts directly related to those ideals that foster citizenship in a world of global economic interdependence.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	Observation - I see little difference in performance descriptors for the three levels. In Citizenship. In distinguished - Line 5, conclusions should be conclusions. In Mastery - They before compare in line 6. In Partial - They before identify in line 9.		
November 23, 2001	Kathy Langwell Teacher Long Drain School Meitz, W 26585	These standards are fine.		
November 28, 2001	EFJHS 1 Orion Lane Fairmont, WV 26554	New content standards and objectives does not coincide with adopted textbook. The areas not emphasized are ancient civilization, women (USA) civil rights, native Americans, cold war, Vietnam Persian gulf war, minorities as a unit of study, celebration around world. Page 206 - 7.2.5 & 7.2.6 are the same.		
Eighth Grade				
November 1, 2001	Bob Bonar Cathoun County High School	8.4.11- Delete last 3 words "...and vice versa." (It doesn't make sense).		
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	We feel the new objectives and performance descriptors are a significant improvement over the IGO's as long as they correlate with the required standardized tests.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
October 1, 2001	Paulette Trimble Faculty Senate President Barrackville Elem-Middle P.O. Box 150 Barrackville, WV 26559	The IGO's are great for the field of study, but they do not correlate with what is on the Stanford 9 Test. If the WVDE does not want to correlate the IGO's and the test, then let's change the test or the field of study for the 8 th grade curriculum.		
November 21, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	These should be added at the indicated placed: 1. History Objectives are not in chronological order. 2. Line four in Distinguished should have a They before Analyze. 3. 5.2.8 identify possible threats of terrorism and propose appropriate responses by citizens and government. 4. 6.2.8 identify governments which support terrorism as a form of nationalism and militarism. 5. 8.1.14 develop and utilize a process to express opinions, resolve problems and/or seek assistance during peace time and when the united States is at war or under attack by terrorists. 6. 9.3.14 describe the socioeconomic changes that occurred in regions that experienced population changes.		
	Jennie Shaffer continued	7. 8.1.14 develop and utilize a process to express opinions, resolve problems and/or seek assistance during peace time and when the united States is at war or under attack by terrorists. 8. 9.3.14 describe the socioeconomic changes that occurred in regions that experienced population changes. 9. Check margins on objectives and no capital on identify on 9.5.9. 10. 10.5.19 compare and contrast the American and French Revolutions and their aftermaths. 11. 10.5.21 analyze acts of terrorism in each historical era. 12. 10.5.22 and 10.5.23 - renunber. 13. 11.5.4 analyze and explain the political, social, and economic importance of World War I.		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	These standards are fine.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Carol Roberts Long Drain School Meitz, WV 26585	Citizenship standards: Civic dispositions of a good citizen - vague standard difficult to determine elements expected - expectations so broad it would be difficult to design curriculum to mastery. Civics standards are clear and within reason for 8 th grade. Economic standards are also appropriate as are geography standards and objectives.		
November 28, 2001	EFJHS 1 Otton Lane Fairmont, WV 26554	We will need a bank of information (e.g., WV Constitution) p. 211, under NOVICE, should read 8 th grade not 7 th . Why aren't we teaching civics for one semester instead of WV history all year?		
Eighth Grade Performance Descriptors				
November 2, 2001	Jennie Shaffer Keyser High School 1415 Cornell St. Keyser, WV 26726	Distinguished: Eight grade students performing at the distinguished level compare and contrast the structure and function of the governments of West Virginia and the United States. Mastery: Eight grade students performing at the mastery level define the structure and function of the governments of the United States and West Virginia. They identify various forms of taxation. They describe how individuals and groups have influenced government and the law-making process.		
Tenth Grade				
November 1, 2001	Bob Bonar Cathoun County High School	10.3.7 Only first line printed, next line(s) missing.		
Technology				
Kindergarten				
November 20, 2001	Barbara Daly 20 E. Benjamin Dr. New Martinsville, WV 26155	K.3.1- I am not certain that Word Processing software is appropriate for kindergarten. The technology section is more concise and I am pleased to see technology addressed separately.		
November 20, 2001	Betty Wilson 20 E. Benjamin Dr. New Martinsville, WV 26155	I am pleased that this has its own section and is not a part of the other areas. I question K.3.1. I don't feel that kindergarten children are developmentally ready for word processing skills on the computer.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	K.1.3 — change wording to, "start and exit programs."		
November 23, 2001	Johanna Lemasters Long Drain School Metz, WV 26585	Standard 2: Social, Ethical, and Human Issues. Junk and too difficult.		
November 28, 2001	Blackshire Elementary School 77 Blackshire Drive Mannington, WV 26582	Standards seem appropriate but language is difficult to understand.		
November 28, 2001	Leigh Ann Hood East Park Elementary 1025 Fairfax Street Fairmont, WV 26554	Hopefully standard K.5.2 doesn't mean that they will use the Internet. Using correct fingers needs for keyboard needs to start in Kindergarten. By the time they start typing they're already hunting and pecking.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Standard 2 - first one may be somewhat difficult for kindergarten. Ethical, cultural, and societal issues - does this mean apply to kindergarten?		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Without a mastery level, it is hard to determine if standard has been met.		
First Grade				
November 20, 2001	Dorothy Downing 20 E. Benjamin Dr. New Martinsville, WV 26155	Too advanced! 1.3.2 create text and import images?		
November 20, 2001	Lee Ann Schambach 20 E. Benjamin Dr. New Martinsville, WV 26155	How much do you expect first graders to do the computer? Too advanced. 1.3.2 create text and import images?		
November 20, 2001	Patricia Roberts 20 E. Benjamin Dr. New Martinsville, WV 26155	Not practical for a self-contained first grade teacher to be able to teach a class of 22 in 90 min/wk.		
November 20, 2001	Mary Mahurin 20 E. Benjamin Dr. New Martinsville, WV 26155	Sounds good on paper. Some objectives not practical for self contained- one teacher-classroom. We are teaching reading-writing processor too advanced.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Too wordy. <u>Bad</u> . Need media specialist in schools.		
November 20, 2001	Teresa Standford 20 E. Benjamin Dr. New Martinsville, WV 26155	Clear objectives and standards - seems a little advanced for first grade.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	First graders cannot locate files independently. 1.3.2 - Too advanced for first graders.		
November 23, 2001	Julia Rush Long Drain School Meiz, WV 26585	1.32 - No! No! Too advanced!		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	1.1.1 — left/right hand position is not reasonable to expect at this age. 1.3.2 — the ability to import images does not seem to be a reasonable expectation for six year olds. Standard — clarify ethical, cultural, and societal issues.		
November 23, 2001	Sharla Hummelrick Long Drain School Meiz, WV 26585	13.2 - NO! NO! NO! NO! Import Images: Get real! Kids can't read the menu.		
November 23, 2001	Janet Park Long Drain School Meiz, WV 26585	1.32 - Students need a lot of guidance importing pictures into text.		
November 28, 2001	Blackshore Elementary School 77 Blackshore Drive Mannington, WV 26582	Need examples to clarify standard 2.		
November 28, 2001	Leigh Ann Hood East Park Elementary 1025 Fairfax Street Fairmont, WV 26554	Ditto for first grade on Internet.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Standards and objectives are broken down well.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Standards language is vague and overwhelming. Does 1.2.1 really show competency of Standard 2. There's no mastery level indicated.		
Second Grade				
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	Teachers need to have more training in this area. I don't think 2 nd graders should handle the diskettes and CD's. 2.1.3.		
November 20, 2001	Carolyn Zeppuhar 20 E. Benjamin Dr. New Martinsville, WV 26155	If you want us to teach these standards we need more training.		
November 20, 2001	Janice Kasseman 20 E. Benjamin Dr. New Martinsville, WV 26155	Teachers will need more technology training to do graphing and database objectives. Objective 2.1.3- I will instruct the children on how to do this but I don't think they should be permitted to do this themselves.		
November 20, 2001	Sharon Burton Paden City Elementary School 510 N. Second Ave. Paden City, WV 26159	Standard 3- activities are too advanced for the students 2.3.2 and 2.3.4. Standard 1-(2.1.3) due to the fact that we do not save things through the disk at the level, we do not handle diskettes and CD's.		
November 20, 2001	Rachel Melott Paden City Elementary School 510 N. Second Ave. Paden City, WV 26159	In standard 3 (2.3.2 and 2.3.4) the activities are too advanced for the students. At this age we are beginning keyboarding practice and are not prepared to meet these objectives. In standard 1 (2.1.3) handling diskettes and CD's is not appropriate since we do not save information to the disk.		
November 20, 2001	Barbara Quinell 20 E. Benjamin Dr. New Martinsville, WV 26155	Teachers will need more technology training to complete the L.O. I question 2.1.3.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Content standards 3-6 are too advanced for 2 nd level students.		
November 20, 2001	Staff Roosevelt Elementary Rt. 2 Box 841 Point Pleasant, WV 25550	Standard 3- requires very abstract thinking skills and is not developmentally appropriate for 2 nd graders. Teachers will need additional classes to be able to teach.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	The six standards touch on all aspects of a sound technology program for second grade.		
November 23, 2001	Julia Rush Long Drain School Metz, WV 26585	Most standards not developmentally appropriate, especially 3, 5, 6. Keyboarding should come later because of fingers not being long enough and motor skills not developed.		
November 23, 2001	Theresa Hucik Long Drain School Metz, WV 26585	Keyboarding skills should come later because of motor skill development and growth. Some standards 3, 5, & 6 should begin at third grade level, not second. Most standards are not for second grade. They are not developmentally appropriate. Also, we need more computers for each classroom and more training for teachers in applied technology.		
November 23, 2001	Olivia Gump Long Drain School Metz, WV 26585	Keyboarding should come later due to motor development. Some standards 2, 5 and 6 should begin at third grade level. Most standards are not for second grade.		
November 28, 2001	Blackshire Elementary School 77 Blackshire Drive Mannington, WV 26582	Appropriate.		
November 28, 2001	Leigh Ann Hood East Park Elementary 1025 Fairfax Street Fairmont, WV 26554	I'll make this comment in this space. As usual, I see no mention of libraries included in the contents and standards. I would encourage the state to take a look at the ALA Information Power Information Literacy Standards attached.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Standards and objectives are well organized. Not sure objective 2.1.2 right clicking is necessary at this grade.		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Standard 2 - wording is not appropriate. 2.3.1 - unrealistic. Who is going to provide teacher training for the skills expected to be taught? 2.6.1 - if the foundation is not provided, this is unrealistic when most adults do not know how to identify the appropriateness of software.		
Third Grade				
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	Objectives are very unreasonable. We do not have the equipment, time, or training to do this.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Cary L. Parker 20 E. Benjamin Dr. New Martinsville, WV 26155	I cannot foresee my being able to teach all of these objectives due to lack of training, equipment, and time.		
November 20, 2001	Mary Toth 20 E. Benjamin Dr. New Martinsville, WV 26155	These objectives are unreal. Time, equipment, and teacher training are all drawbacks to achieving these objectives.		
November 23 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	OK		
November 23, 2001	Long Drain School Box 108A Meitz, WV 26585	Sounds Great! Standard #4 may present some parental problems for the age level. I.e., e-mail, chat rooms to collaborate.		
November 23, 2001	Teresa Shackleford Long Drain School Meitz, WV 26585	3.3.1 - Third graders can not use pull down menus. They can't read this material. Descriptors - time consuming. To many areas not developmentally appropriate. Is material/equipment available? Standard 4: Not acceptable to many parents. TIME/TIME/TIME		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26582	Appropriate.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Standard 3.3.1 to 3.3.4 seem difficult at this grade level - to publish/organize a multimedia presentation, spread sheet, etc. - too difficult.		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Spreadsheet applications are not appropriate for third graders.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Third Grade Performance Descriptors				
November 20, 2001	Staff Roosevelt Elementary Rt. 2, Box 841 Point Pleasant, WV 25550	If you are going to require all this technology use then you need to provide adequate training for all of us or provide a full time media specialist at every school. It is difficult to do all of the things with the amount of training we have. If each child had their own computers full time, maybe it could be done. Don't have time to teach spread sheets, databases, etc. to students who are in need to master basic skills.		
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	Third grade content standards expectations are totally unrealistic.		
November 23, 2001	Long Drain School Box 108A Meitz, WV 26585	In most cases not "Usable" most of these kids do not have computers at home, to develop URIS, bookmarks for research, practice etc.		
November 23, 2001	Theresa Shackelford Long Drain School Meitz, WV 26585	NUTS!! I love working with my computer, digital camera, etc. How much practice can students get in a classroom? This is not something they can practice.		
November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26582	Appropriate.		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Mastery for Standard 3 is very appropriate, however, the objectives 3.3.2, 3.3.4 terminology is inappropriate. Third graders or many teachers can not use spreadsheets - creating multi-media presentations are not realistic at this level.		
Fourth Grade				
November 13, 2001	Faculty Senate Nitro Elementary 1921 19 th Street Nitro, WV 25143	4.3.1 Is there a standard spell check to be used in each classroom? Will it be provided by the state? 4.3.2 Spreadsheet- teacher training provided?		
November 23, 2001	Ohio County Schools 2203 National Road Wheeling, WV 26003	This objective needs to be clarified.		

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November 28, 2001	Blackshere Elementary School 77 Blackshere Drive Mannington, WV 26582	Appropriate.		
November 28, 2001	White Hall Elementary School Rt. 7, Box 65 Fairmont, WV 26554	Broken down well - easy to follow. Will a manual be provided?		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Teachers have not received training themselves to teach skills such as spreadsheets. How can they possibly teach. The terms used to explain are inappropriate. How will teachers implementing these objectives be trained? Minimum standards can be easily met.		
Fourth Grade Performance Descriptors				
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Terminology in the performance descriptors are grade appropriate. How are other student learning levels, except mastery, addressed?		
Fifth Grade				
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Because teachers do not know how to do this, it's unrealistic to expect students to perform these goals.		
November 28, 2001	Dunbar Middle School	This looks good if schools have labs and technology staff to cover these objectives.		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Who will provide free trainings with incentives for teachers? Even our teacher training programs in colleges and universities do not train pre-service teachers in these areas.		
Fifth Grade Performance Descriptors				
November 28, 2001	Dunbar Middle School	Acceptable.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Sixth Grade				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	6.1 demonstrate and awareness of different technologies, i.e., CD-Rom, DVD, CDRW, Pchn Pilots. 6.3 use tools to develop organizational skills move 6.3.1 to 7 th grade 6.4 recognize a need to evaluated resources for validity, authenticity, accuracy, and content. 6.5-6.6 very appropriate.		
November 23, 2001	Lawrence Koehrsen Mary Palma Patrick Riddle Sherry Sapo Grades 6-8 Math Teachers Wheeling, WV 26003	Do not think data basing is an important concept.		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	6.3.1 - must develop this skill at a lower level. Standard 4 - who is an expert? What are the audiences? 6.3.4 - what kind of presentation software?		
November 28, 2001	Dunbar Middle School	Acceptable.		
November 28, 2001	East Dale Tech. Committee Rt. 3 Fairmont, WV 26554	Define "knowledge products for audiences"? Standard 4 - What kind of problem solving activities?		
Seventh Grade				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	7.3.1 - move to 6 th grade. 7.4 - add develop an awareness of online safety considerations. i.e., IM's, chatrooms 7.5 - develop bibliography to cite online sites and sources 7.6 - use appropriate tools to organize information It's a vast improvement. In the past we had very little to nothing to serve as guidelines for educators.		
November 23, 2001	Lawrence Koehrsen Mary Palma Patrick Riddle Sherry Sapo Grades 6-8 Math Teachers Wheeling, WV 26003	Do not think data basing is an important concept.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Eighth Grade				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Both categories are a vast improvement. In the past we had very little to nothing to serves as guidelines for educators.		
Eighth Grade Performance Descriptors				
November 20, 2001	Faculty Senate Bridgeport Middle School 413 Johnson Ave. Bridgeport, WV 26330	Both categories are a vast improvement. In the past we had very little to nothing to serves as guidelines for educators.		
Ninth-Twelfth Grade				
November 20, 2001	B. McGlumphy Box 830 Hundred, WV 26575	Again, I feel the need to say that these standards are too high for special ed. students.		
November 23, 2001	Karen Whinnie, Chair East Fairmont High School 1993 Airport Road Fairmont, WV 26554	I prefer teaching English skills rather than technology! This is taking hours from English instruction. This should be a class of its own!		
Ninth-Twelfth Grade Performance Descriptors				
	B. McGlumphy Box 830 Hundred, WV 26575	Special Ed. students will most likely never reach mastery level anything.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
Other Comments				
November 20, 2001	Nutter Fort Primary Harrison County	We do not feel the children are ready for standardized tests. We should complete a basic preassessment in September and then a final assessment to track individual progress of each student of the basic skills. We want to know what kind of informal testing will be done. How? When? Will all children be tested on the same level? What about children with 504's and special needs children? Will we test on teaching level or age level? Will make up test be given? Do we design the test or will it be a State devised test? Do we evaluate the test? If given how will it be graded to be fair? This testing in more fair and less objective. Goals and objectives are not repetitive, they are condensed. Science and social studies are too in depth and are not realistic for this level. Can they be achieved in the given period of time? Science and social studies are realistic for higher level children but not for low and average students.		
November 20, 2001	Barbara Quinet 20 E. Benjamin Dr. New Martinsville, WV 26155	For all subjects, will students be tested in all subject matter or reading, language arts and math?		
November 20, 2001	Nutter Fort Primary Harrison County	Introduction of the state goals to the children is acceptable, however, mastery level of such skills is not acceptable for every child. All students may not have access to materials to help meet the IGO's. Color code makes for easy reading. Great idea!		
October 18	Judy Cooper Secretary of State's Office	1. Where are the underlines and strike through? On the first two pages they are included, but left off the rest of the rule. I, at least need a marked-up copy that tells us where the changes were made, in case someone should ask. 2. Why the text boxes? This makes it harder to convert, and to put online. Double column is fine, but would prefer no boxes. 3. Headers on the pages should only read 126CSR44, not draft and dates. I know that we work mainly in WordPerfect, and you work mainly in Word. If we were to give you the finished rule in Word, could you please use this format for future rule changes? 4.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Jody Cunningham, President WV Science Teachers Association 420 Edgelaun Ave. Williamstown, WV 26187	I wanted to take this opportunity to comment on Policy 2520: Content Standards and Objectives for West Virginia Schools. First, I commend the group of teachers and Department of Education staff who worked during the spring and summer months to bring the revision process to a fruitful conclusion. Their dedication to the task is evident by the results of the document out for public comment. As stated in the Executive Summary for this document, one of the goals was to "design a format that can easily be used and understood". In my opinion that is the true strength of this revision. In particular, Standard 4: Science Subject Matter/Concept Objectives, the format is very teacher friendly. One of our goals in teaching science has been the implementation of a coordinated and thematic science curriculum. That approach was chosen to see the progression from one grade level to the next in the major science themes. This new format will make it easy for the CATS science teacher to design instruction based on a student's exposure to a strong foundation and scope of many science concepts. Teachers will, "at a glance", be able to view the content objectives for previous grades and determine what students should know as they move through to the next level. This allows the teacher to design lessons taking into account prior knowledge of students. Speaking from twenty years experience teaching science in West Virginia schools, I support the adoption of Policy 2520. West Virginia Science teachers and their students will be the beneficiary of this new and improved document.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Bruce Cole and Kathy Boone WVDE OTIS 1900 Kanawha Blvd. E. Charleston, WV 25305	This comment applies to all subject areas and grade levels: There is a critical need to map the current IGOs to the proposed objectives and standards in order to update the correlations of several electronic educational resources. While the effort to manually complete this mapping from the current standards to the proposed standards is significant, a permanent indexing system would reduce the work required at future revisions as the electronic format pervades our way of teaching and aligning to standards. By implementing a consistent indexing system so that a specific standard at a specific grade level electronic educational resources can maintain existing correlations, and changes are minimized as old standards are deleted and new standards are added as they evolve. Background information and an implementation process are included on attached sheets. Background: The West Virginia Department of Education and West Virginia teachers periodically revise the instructional goals, standards and objectives for the public schools. In the past, most educational resources were in a printed copy rather than posted electronically for teacher use; thus when the goals and objectives were revised, a consistent numbering process was not a critical factor in the process. Since changes in the instructional goals, standards and objectives required complete reprinting of supporting materials whether changes were minor or major, a consistent index or numbering system of goals, standards, and objectives would not have reduced the work required. In today's educational environment, the paradigm changes because an increasing amount of instructional resources is produced and distributed electronically. Electronically stored information, such as instructional goals, standards, and objectives that are directly related to curriculum resources and lesson plans, can be best managed with a well planned and consistent indexing or numbering system. In a well-indexed electronic information system, changes can be accommodated very quickly at the minimum cost. When changes occur in electronic information system that is poorly indexed and inconsistent, an onerous burden is created for both teachers who use the electronic lesson plans, and the creators of instructional plans and instructional resources that are linked to the standards and objectives.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
November 20, 2001	Bruce Cole and Kathy Boone (Continued)	Current Situation: As a leader in the instructional use of technology, West Virginia now has several electronic educational resources that teachers use on a daily basis that will be affected by the proposed revision of instructional goals, standards and objectives. As examples, the Reinventing Education site, the Phase 9 Solution Site, and the Basic Skills Compass Learning site are correlated to the current IGOs. Additional electronic resources are planned to be correlated to the West Virginia curriculum. Consequently, the need to map the current IGOs to the proposed objectives and standards is critical in order to update the correlations of these electronic educational resources. While the effort to manually complete this mapping from the current standards to the proposed standards is significant, a permanent indexing system would reduce the work required at future revisions as the electronic format pervades our way of teaching and aligning to standards. By implementing a consistent indexing system so that a specific standard at a specific grade level in a specific subject always has the same indexing number through future revisions, the electronic educational resources can maintain existing correlations, and changes are minimized as old standards are deleted and new standards are added as they evolve. Implementation: The process of mapping the current IGOs to standards that will be approved involves identifying standards that are nearly identical to the IGOs and annotating the new standards with the IGO number that is replaced. In some cases, a new standard might replace 2 or more IGOs. Other cases might occur where an IGO is not included in a new standard; in this case, that IGO number should be indicated as "deleted". In addition, new standards that cannot be mapped to a former IGO could be marked as "new." A cross-referenced map is an essential tool in order for the current electronic educational resources correlations to be accurately updated from IGO numbers to the newly approved standards numbers. Even with the mapping accomplished, intensive manual work will be required to make the changes in the electronic resources because no consistent indexing system has existed in the past to assign a unique electronic notation for each objective or standard. The establishment of a consistent indexing system for the proposed standards at this point will reduce the work required for correlating electronic instructional resources when the next revision of educational standards occurs because standards that remain consistent in future revisions would require no changes in the indices of electronic instructional resources.		

Date	Individual/Organization	Comments	Action/ Type	Rationale
	Bruce Cole & Kathy Boone continued	Once the State Board of Education approves the proposed standards, we must begin the process of completing the mapping of the previous IGOs to the new standards: April 2002. Upon completion of this mapping process, the task of updating the electronic resources to the new standards and objectives can occur in the summer so that most are completed before the 2002-2003 school year begins.		
November 20, 2001	Janice Kasserman 20 E. Benjamin Dr. New Martinsville, WV 26155	Will students be tested on all standards, and if not, will we know which will be tested and which won't?		
November 20, 2001	Jo Kirk 20 E. Benjamin Dr. New Martinsville, WV 26155	Will students be tested on all subjects? Also, will we be told which objectives will be tested and which ones won't?		