21st CENTURY

1st Grade MATH

CONTENT STANDARDS AND OBJECTIVES FOR WEST VIRGINIA SCHOOLS (2520.2)

The West Virginia Standards for 21st Century Learning include the following components: 21st Century Content Standards and Objectives and 21st Century Learning Skills and Technology Tools.

All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools and content standards and objectives.

First Grade

Grade 1	**Mathematics**
Standard 1	Number and Operations
M.S.1.1	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, 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.

Performance Descriptors (M.PD.1.1)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
First grade students at the distinguished level in mathematics read, write, order, compare and count numbers to 1000. They identify any number as odd/even. They model place value to 1000 in standard and expanded form. They create and model fractions of a whole and of a set (1/6, 1/8). They explain and justify the use of the relationship between addition and subtraction in solving problems. They create and present one-step problems and justify their results. They use concrete objects to solve addition and subtraction of two-digit numbers requiring regrouping. They create real-world grade-appropriate one- and two-step problems using multiple strategies, present and justify results.	First grade students at the above mastery level in mathematics read, write, order and compare numbers to 200. They identify any ordinal number. They model even/odd numbers to 100. They identify place value to 1000 in standard form and round numbers to the nearer 100. They create models for fractions of a whole and of a set (1/2, 1/3, 1/4). They demonstrate quick recall with basic addition and subtraction facts to 10 and use them to solve real-world problems. They use the relationship between addition and subtraction to solve problems. They use concrete models to solve addition problems of two-digit numbers with regrouping and present results. They create real-world grade-appropriate one-step problems using multiple strategies, and present and justify results.	First grade students at the mastery level in mathematics read, write, order, compare, count and estimate numbers to 100 and identify ordinal numbers to 20th. They model even and odd numbers to 20. They model and identify place value to 100 using standard and expanded form and round to the nearer 10. They use models to represent fractions (halves, thirds, fourths) as part of a set and part of a whole. They model meanings of operations and relationship between addition and subtraction of numbers to 18. They demonstrate quick recall with basic addition and subtraction facts to 10, models and solve two-digit addition and subtraction without regrouping and addition of three numbers with sums less than 18. They create one-step grade-appropriate problems using multiple strategies and present and justify results.	First grade students at the partial mastery level in mathematics read, write, and count numbers to 100 and recognize ordinal numbers to 10th. They identify odd and even numbers to 20, and identify place value to 100 using standard form. They identify fractions (halves, fourths) as part of a whole. They recognize the relationship between addition and subtraction of numbers to 18. They recall basic addition facts to 10. They model addition of three numbers with sums of 10 or less and present their solutions.	First grade students at the novice level in mathematics count to 100 and recite ordinal numbers to 10th.They identify odd and even numbers to 10 and read and write place value to 20 using standard form. They identify halves and wholes. They solve addition and subtraction facts to 10 with manipulatives.

Objectives	Students will
M.O.1.1.1	count forward to 100 and backward from 20 with and without manipulatives.
M.O.1.1.2	read, write, order, and compare numbers to 100 using multiple strategies (e.g. manipulatives, number line, symbols).
M.O.1.1.3	identify odd and even numbers to 20 and determine if a set of objects has an odd or even number of elements.
M.O.1.1.4	group and count manipulatives by ones, fives, and tens to 100.
M.O.1.1.5	model and identify place value of each digit utilizing standard and expanded form to 100.
M.O.1.1.6	round any two-digit number to the nearest 10.
M.O.1.1.7	use ordinal numbers 1^{st} - 20^{th} to identify position in a sequence .
M.O.1.1.8	estimate the number of objects in a group of 100 or less and count to evaluate reasonableness of estimate.
M.O.1.1.9	identify, name, and explain why a given part is a half, third or fourth of a whole or part of a group, using concrete models.
M.O.1.1.10	use concrete objects to model the addition of two or three addends and subtraction of whole numbers related to sums less than 18 and write the corresponding number sentence.
M.O.1.1.11	model operations, addition and subtraction, and the relationship between addition and subtraction (e.g., identity element of addition, commutative property, fact families, inverse operations) using concrete objects.
M.O.1.1.12	quick recall of basic addition facts with sums to 10 and corresponding subtraction facts.
M.O.1.1.13	model and solve 2-digit addition and subtraction without regrouping.
M.O.1.1.14	create grade-appropriate picture and story problems using a variety of strategies (with and without technology), present solutions and justify results.

Grade 1	**Mathematics**
Standard 2	Algebra
M.S.1.2	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, 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.

Performance Descriptors (M.PD.1.2)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
First grade students at the distinguished level in mathematics identify the sorting rule used by another student. They identify non-examples of the rule. They create an input/output model. They create, analyze and modify number patterns to create new number patterns based on real-life situations. They prove equivalency of both sides of a number sentence and relate to a real-world situation.	First grade students at the above mastery level in mathematics provide a sorting rule and evaluate correctness of resulting sorting by another student. They determine the input when given the rule and function of an input/output model. They create, analyze and modify a number pattern to create new number patterns based on real-life situations. They prove equivalency of both sides of a number sentence.	First grade students at the mastery level in mathematics sort and classify objects by more than one attribute using various strategies including Venn Diagrams. They determine the rule given an input/output model using addition or subtraction. They create and analyze number patterns based on real-life situations using word, AB form, and T-charts and present results. They demonstrate the equivalency of both sides of a number sentence.	First grade students at the partial mastery level in mathematics sort and classify objects by one attribute. They supply the output when given the input and function of an input/output model. They create number patterns based on real-life situations using word, AB form, and T-charts and present results. They recognize and describe the equivalency of both sides of a number sentence.	First grade students at the novice level in mathematics sort objects by one attribute. They recognize and create number patterns. They recognize equivalency of both sides of a number sentence.

Objectives	Students will
M.O.1.2.1	sort and classify objects by more than one attribute, using various strategies, including Venn Diagrams.
M.O.1.2.2	determine the rule or give the output given an input/output model using addition or subtraction.
M.O.1.2.3	identify and write number patterns by 2's, 5's, and 10's.
M.O.1.2.4	create and analyze number patterns based on real-life situations using words, AB form, and T-charts and present results.
M.O.1.2.5	use concrete materials to demonstrate that the quantities on both sides of a grade-appropriate number sentence are equivalent.

Grade 1	**Mathematics**
Standard 3	Geometry
M.S.1.3	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, 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.

Performance Descriptors (M.PD.1.3)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Students at the distinguished level in first grade mathematics construct representations of real-world three-dimensional shapes. They write about the shapes using numbers or words. They classify shapes as open and closed and congruent shapes, justifying their classification orally. They recognize and describe three-dimensional shapes in the environment and describe spatial relationships. They describe spatial relationships. They create pictures with points on a first quadrant grid. They create new figures as the result of combining or decomposing two/three dimensional figures.	Students at the above mastery level in first grade mathematics draw, label, and analyze plane figures. They construct, identify and classify three-dimensional objects and connect these shapes to the environment. They classify shapes as open, closed and congruent shapes. They recognize and describe three-dimensional shapes in the environment and describe spatial relationships. They describe spatial relationships. They find, name and describe locations on a first quadrant grid. They predict and draw the result of combining or decomposing two/three dimensional figures.	Students at the mastery level in first grade mathematics draw, label and sort plane figures. They construct, identify and classify three-dimensional figures. They draw and identify open, closed, and congruent shapes. They recognize and describe three-dimensional shapes in the environment and describe spatial relationships. They describe spatial relationships. They find and name locations on a first quadrant grid. They predict the result of combining or decomposing two/three dimensional figures.	Students at the partial mastery level in first grade mathematics identify plane shapes. They identify three-dimensional figures. They identify open and closed figures and congruent shapes. They identify three-dimensional shapes in the environment.. They name locations on a first quadrant grid. They draw decomposing two/three dimensional figures.	Students at the novice level in first grade mathematics recognize plane shapes and three-dimensional figures. They recognize open, closed and congruent shapes. They point to the location of a point on the first quadrant grid. They recognize three-dimensional shapes when given various shapes with which to choose.

Objectives	Students will
M.O.1.3.1	draw, label, and sort • circle, / rectangles including squares, / triangles, and / according to sides and vertices
M.O.1.3.2	use physical materials to construct, identify, and classify three-dimensional figures: • cube / cone / sphere / rectangular solid / pyramid / cylinder
M.O.1.3.3	recognize three-dimensional shapes in the environment.
M.O.1.3.4	draw and identify • open and closed figures / congruent plane shapes
M.O.1.3.5	create and describe simple symmetrical designs
M.O.1.3.6	describe spatial relationships: over/under, left/right.
M.O.1.3.7	find and name locations on a first-quadrant grid.
M.O.1.3.8	predict the result of combining or decomposing two or more two-dimensional/three-dimensional shapes.

Grade 1	**Mathematics**
Standard 4	Measurement
M.S.1.4	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, 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.

Performance Descriptors (M.PD.1.4)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Students at the distinguished level in first grade mathematics estimate, measure, compare, and order length of objects using customary, metric and nonstandard units justifying the comparison clearly in oral and written form. They use the calendar to identify important dates in the future. They demonstrate how to make change from a $1.00 and justify the procedures in oral and written form.	Students at the above mastery level in first grade mathematics estimate, measure, compare, and order length of objects using customary, metric, and nonstandard units, justifying the comparison. They describe how to use a calendar to determine the date. They read an analog clock to the quarter hour. They justify the change given from $1.00.	Students at the mastery level in first grade mathematics estimate, measure, compare, and order length of objects using customary, metric, and nonstandard units. They select the appropriate units and tools to measure length, height, weight, temperature, and volume. They use a calendar to identify the date, sequence of days of the week, and months of a year. They tell time to the half hour using an analog clock and a digital clock. They explain the relationship between coins and make change from a dollar.	Students at the partial mastery level in first grade estimate and measure objects using customary, metric and nonstandard units. Given the appropriate tool. They measure length, height, weight, temperature and volume. They use a calendar to identify the date and name the days of the week. They read time to the hour on an analog clock. They identify the penny, nickel, and dime and their value.	Students at the novice level in first grade use standard units to measure objects. They identify the tools used to measure length, height, weight, and temperature. They use calendar to identify the date. They read time on a digital clock. They recognize penny, nickel and dime.

Objectives	Students will
M.O.1.4.1	estimate, measure, compare and order using customary, metric, and nonstandard units to determine length to nearer whole unit.
M.O.1.4.2	select appropriate units and tools to measure and compare two objects or events according to one or more of the following attributes: length height weight temperature volume justify selection of units and tools used to measure the attributes and present results.
M.O.1.4.3	use calendar to identify date, sequence of days of the week, and months of the year.
M.O.1.4.4	explain time concept in context of personal experience.
M.O.1.4.5	read time to the half hour using an analog and digital clock.
M.O.1.4.6	identify, count, trade and organize the following coins and bill to display a variety of price values from real-life examples with a total value of 100 cents or less. • Penny / nickel / dime / quarter / dollar bill

Grade 1	**Mathematics**
Standard 5	Data Analysis and Probability
M.S.1.5	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, 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.

Performance Descriptors (M.PD.1.5)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Students at the distinguished level in first grade mathematics collect, sort, organize, and analyze data using bar graphs and pictographs. They convey their findings in oral and written form. They create simple probability experiments and make predictions based on their results. They present their findings and justify their solutions.	Students at the above mastery level in first grade mathematics collect, sort, organize, and analyze data using bar graphs and pictographs. They create simple probability experiments and record data in charts. They make predictions based on the results and present their findings.	Students at the mastery level in first grade mathematics collect, sort, organize, and draw conclusions about data using bar graphs and pictographs. They conduct simple probability experiments, record data in a chart and use data to predict which of the events is more likely/less likely to occur.	Students at the partial mastery level in first grade mathematics collect, sort, and organize data using bar graphs and pictographs. They conduct simple probability experiments and record data in a chart.	Students at the novice level in first grade mathematics collect data. They read pictographs. They conduct simple probability experiments.

Objectives	Students will
M.O.1.5.1	collect, sort, organize, and draw conclusions about data using a bar graph and a pictograph.
M.O.1.5.2	conduct simple experiments, record data on a tally chart or table and use the data to predict which of the events is more likely or less likely to occur if the experiment is repeated.