21st CENTURY

3rd 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.

Third Grade

Grade 3	**Mathematics**
Standard 1	Number and Operations
M.S.3.1	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.3.1)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Third grade students at the distinguished level in mathematics read, write, order, and compare whole numbers and decimals using symbolic representations. They identify place value of each digit utilizing standard and expanded form to 1,000,000.They use symbolic representations to compare fractions as parts of a whole and part of a set, to compare and order fractions, and to add and subtract fractions with like denominators. They justify procedures used to perform basic computation with addition, subtraction, multiplication and division. They create and analyze grade-appropriate real-world problems justifying the solution and processes in clear, concise manner.	Third grade students at the above mastery level in mathematics read, write, order, and compare whole numbers and decimals using manipulatives and number lines. They identify place value of each digit utilizing standard and expanded form to 100,000. They use pictorials and symbolic representations to compare fractions as parts of a whole and part of a set, to compare and order fractions and to add and subtract fractions with like denominators. They explain procedures used to perform basic computation with addition, subtraction, multiplication and division. They create grade-appropriate real-world problems justifying the reasoning and procedures.	Third grade students at the mastery level in mathematics read, write, order and compare whole numbers and decimals using manipulatives. They identify place value of each digit utilizing standard and expanded form to 10,000.They use concrete models to represent fractions as part of a whole and part of a set, to compare and order fractions, and to add and subtract fractions. They perform basic computation with addition, subtraction, multiplication of multi-digit numbers and division of a multi-digit number by a single digit number. They create grade-appropriate real-world problems, justifying the reasoning and procedures selected.	Third grade students at the partial mastery level in mathematics identify whole numbers and decimals. They identify place value of each digit utilizing standard and expanded form to 1,000. They identify fractions as part of a whole and parts of set, and add and subtract fractions with like denominators less than 10. They perform basic computation with 2-digit addition, subtraction and multiplication and division of a 2-digit number by a 1-digit number. They solve grade-appropriate real-world problems.	Third grade students at the novice level in mathematics recognize whole numbers and decimals. They identify place value of each digit utilizing standard form to 1,000. They recognize fractions as parts of a whole and parts of a set. They recognize basic operations as they relate to whole numbers. They identify the operation necessary to solve grade-appropriate real-world problems.

Objectives	Students will
M.O.3.1.1	read, write, order, and compare numbers to 10,000 using a variety of strategies (e.g., symbols, manipulatives, number line).
M.O.3.1.2	read, write, order, and compare decimals to hundredths, with manipulatives.
M.O.3.1.3	identify place value of each digit utilizing standard and expanded form to 10,000.
M.O.3.1.4	apply estimation skills (rounding, benchmarks, compatible numbers) to evaluate reasonableness of an answer.
M.O.3.1.5	demonstrate an understanding of fractions as part of a whole/one and as part of a set/group using models and pictorial representations.
M.O.3.1.6	create concrete models and pictorial representations to • compare and order fractions with like and unlike denominators, • add and subtract fractions with like denominators, and verify results.
M.O.3.1.7	use concrete models to demonstrate an understanding of equivalent fractions, proper and improper fractions, and mixed numbers.
M.O.3.1.8	add and subtract 2- and 3-digit whole numbers and money with and without regrouping.
M.O.3.1.9	demonstrate and model multiplication (repeated addition, arrays) and division (repeated subtraction, partitioning).
M.O.3.1.10	use and explain the operations of multiplication and division including the properties (e.g., identity element of multiplication, commutative property, property of zero, associative property, inverse operations).
M.O.3.1.11	recall basic multiplication facts and the corresponding division facts.
M.O.3.1.12	model the distributive property in multiplication of 2- and 3-digit numbers by a 1-digit number.
M.O.3.1.13	use models to demonstrate division of 2- and 3-digit numbers by a 1-digit number.
M.O.3.1.14	create grade-appropriate real-world problems involving any of the four operations using multiple strategies, explain the reasoning used, and justify the procedures selected when presenting solutions.

Grade 3	**Mathematics**
Standard 2	Algebra
M.S.3.2	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.3.2)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Third grade students at the distinguished level in mathematics analyze and extend geometric and numeric patterns, defending their mathematical reasoning in a clear and succinct manner. They use symbol and letter variables to represent an unknown quantity and determine the value of the variable and justify results.	Third grade students at the above mastery level in mathematics analyze and, extend geometric and numeric patterns, justifying their reasoning. They determine the rule which uses two operations when given the input/output. They solve equations and expressions with variables justifying their reasoning. They use symbol and letter variables to represent an unknown quantity and determine the value of the variable and verify the results.	Third grade students at the mastery level in mathematics analyze and extend geometric and numeric patterns. They create an input/output model using addition, subtraction, multiplication and division. They analyze patterns and write rules to represent the pattern. They write equivalent numerical expressions and justify equivalency. They use symbol and letter variables to represent an unknown quantity and determine the value of the variable.	Third grade students at the partial mastery level in mathematics interpret and complete geometric and numeric patterns. They use simple input/output models with rules for addition, subtraction and multiplication. They identify equivalent numerical expressions and recognize that a variable represents an unknown quantity. They use symbol and letter variables to represent an unknown quantity.	Third grade students at the novice level in mathematics reproduce geometric and numeric patterns. They identify input/out models with rules for addition and subtraction. They recognize numerical expressions and variables. They recognize that variables represent an unknown quantity.

Objectives	Students will
M.O.3.2.1	analyze and extend geometric and numeric patterns.
M.O.3.2.2	create an input/output model using addition, subtraction, multiplication or division.
M.O.3.2.3	analyze a given pattern and write the rule.
M.O.3.2.4	write equivalent numerical expressions and justify equivalency.
M.O.3.2.5	use symbol and letter variables to represent an unknown quantity and determine the value of the variable.

Grade 3	**Mathematics**
Standard 3	Geometry
M.S.3.3	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.3.3)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Third grade students at the distinguished level in mathematics identify, create, and analyze new polygons by transforming, combining and decomposing polygons. They communicate their understanding of polygons in a clear and concise manner. They construct and identify a solid figure from a plane drawing and communicate their understanding. They create a two-dimensional design with one line of symmetry. They model, describe, draw and analyze lines, rays and angles; they communicate their mathematical understanding in a clear and concise manner. They name the location of a point on a first-quadrant grid and compare its location to another point.	Third grade students at the above mastery level in mathematics identify, create, and analyze new polygons by transforming, combining and decomposing polygons. They construct, identify and analyze solid figures from a plane drawing. They identify, describe and draw lines of symmetry in two-dimensional shapes. They model, describe, draw and analyze lines, rays, and angles. They draw and describe examples of transformations. They name the location of a point on a first-quadrant grid using ordered pairs and describe how to determine ordered pairs.	Third grade students at the mastery level in mathematics identify and create new polygons by transforming, combining and decomposing polygons. They classify geometric solids according to attributes. They construct and identify a solid figure from a plane drawing. They identify, describe and draw lines of symmetry in two-dimensional shapes. They model, describe, and draw lines, rays and angles. They draw an example of transformations. They name the location of a point on a first-quadrant grid using ordered pairs.	Third grade students at the partial mastery level in mathematics create new polygons by transforming and combining polygons. They describe geometric solids. They construct and identify a solid figure from a plane drawing. They identify and draw lines of symmetry in two-dimensional shapes. They identify and draw lines, rays, and angles. They identify the type of transformation. They identify points on the first-quadrant grid.	Third grade students at the novice level in mathematics recognize polygons. They recognize geometric solids. They construct and identify a solid figure from a plane drawing. They identify lines of symmetry in two-dimensional shapes. They identify lines, rays and angles. They recognize transformations. They recognize a point on the first-quadrant grid.

Objectives	Students will
M.O.3.3.1	identify and create new polygons by transforming, combining and decomposing polygons.
M.O.3.3.2	identify, describe, and classify the following geometric solids according to the number of faces, edges, and vertices: • cube • rectangular solid • cylinder • cone • pyramid
M.O.3.3.3	construct and identify a solid figure from a plane drawing.
M.O.3.3.4	identify, describe and draw lines of symmetry in two-dimensional shapes.
M.O.3.3.5	model, describe, and draw • lines • rays • angles including right, obtuse, and acute angles.
M.O.3.3.6	draw an example of a flip, slide and turn (reflection, translation, and rotation) given a model.
M.O.3.3.7	name the location of a point on a first-quadrant grid, represent using ordered pairs.

Grade 3	**Mathematics**			
Standard 4	Measurement			
M.S.3.4	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.3.4)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Third grade students at the distinguished level in mathematics estimate, measure, compare and order common measurements of objects and communicate their understanding of measurement in a clear and concise manner. They communicate their understanding of perimeter and area in a clear and concise manner. They create real-world problems using time, including elapsed time, and money. They identify, count, organize and solve real-world problems related to money up to $100 and communicate their understanding of money in a concise manner.	Third grade students at the above mastery level in mathematics estimate, measure, compare and order common measurements of objects and communicate their understanding of measurement. They describe how to find the perimeter and area of familiar shapes. They describe how to use an analog clock to tell time in five minute intervals and how to compute elapsed time to the quarter-hour using a clock. They identify, count, organize and solve real-world problems related to money up to $100.	Third grade students at the mastery level in mathematics estimate, measure, compare and order common measurements of objects. They estimate and find the perimeter and area of familiar geometric shapes. They read time to five minute intervals and compute elapsed time to the quarter-hour using a clock. They identify, count and organize coins and bills to display a variety of price values to $100 and make change.	Third grade students at the partial mastery level in mathematics measure and compare common measurements of objects. They use concrete models to determine the perimeter and area of a given rectangle. They read time to the quarter of an hour and compute elapsed time to the half-hour using a clock. They use concrete models to count money to $100 and make change to $10.	Third grade students at the novice level in mathematics measure common objects. They use a concrete model to find the perimeter of a given rectangle. They read time on a digital clock compute elapsed time to the hour using a clock. They use concrete models to count money to $10 and make change to $1.

Objectives	Students will
M.O.3.4.1	estimate, measure, compare, and order common measurements of objects: • length using customary and metric (to the nearest 1/2 inch) • temperature in Celsius and Fahrenheit • mass/weight
M.O.3.4.2	estimate and find the perimeter and area of familiar geometric shapes, using manipulatives, grids, or appropriate measuring tools.
M.O.3.4.3	determine the formula the area of a rectangle and explain reasoning through modeling.
M.O.3.4.4	read time to 5-minute intervals using analog and digital clocks, compute elapsed time to the quarter-hour using a clock.
M.O.3.4.5	identify, count and organize coins and bills to display a variety of price values from real-life examples with a total value of $100 or less and model making change using manipulatives.

Grade 3	**Mathematics**
Standard 5	Data Analysis and Probability
M.S.3.5	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.3.5)				
Distinguished	Above Mastery	Mastery	Partial Mastery	Novice
Third grade students at the distinguished level in mathematics collect, organize, and analyze grade-appropriate real-world data. They communicate their findings in oral and written form. They compare and construct multiple representations of data. They make predictions based on the results of probability experiments and justify their predictions in a succinct manner. They develop grade-appropriate questions to analyze real-world data.	Third grade students at the above mastery level in mathematics collect, organize, and analyze grade-appropriate real-world data. They identify, construct, and interpret appropriate displays for data. They make predictions based on the results of probability experiments. They evaluate grade-appropriate questions used to analyze real-world data.	Third grade students at the mastery level in mathematics collect and organize grade-appropriate real-world data. They identify and construct appropriate displays for the data. They develop and conduct experiments using concrete objects to determine the likeliness of events and list all outcomes. They analyze real-world data with appropriate grade-appropriate questions.	Third grade students at the partial mastery level in mathematics organize a given set of data. They use given data from a probability experiment to show likeliness of outcomes. They answer questions using a given graph.	Third grade students at the novice level in mathematics use a given form to make a graph of given data. They list outcomes of a probability experiment. They identify important information on a given graph.

Objectives	Students will
M.O.3.5.1	collect and organize grade-appropriate real-world data from observation, surveys, and experiments, and identify and construct appropriate ways to display data.
M.O.3.5.2	develop and conduct grade-appropriate experiments using concrete objects (e.g. counters, number cubes, spinners) to determine the likeliness of events and list all outcomes.
M.O.3.5.3	analyze real-world data represented on a graph using grade-appropriate questions.