

VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 1.0 KNOWLEDGE OF ALGEBRA, PATTERNS, AND FUNCTIONS – Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>A. Patterns and Functions</p> <p>1. Identify, describe, extend, and create numeric patterns and functions</p> <p>a) Represent and analyze numeric patterns using skip counting <b>Assessment limit:</b> Use 2, 5, 10, or 100 starting with any whole number (0 – 1000)</p> <p>b) Represent and analyze numeric patterns using skip counting <b>Assessment limit:</b> Use 3 or 4 starting with 0, 1, 2, 3, or 4 (0 – 30)</p> <p>c) Represent and analyze numeric patterns using skip counting backward <b>Assessment limit:</b> Use 10 or 100 starting with any whole number (0 – 1000)</p> <p>d) Complete a function table using a given addition or subtraction rule</p> <p>2. Identify, describe, extend, and create non-numeric growing or repeating patterns</p> <p>a) Represent and analyze growing patterns using symbols, shapes, designs, or pictures <b>Assessment limit:</b> Start at the beginning, show at least 3 levels but no more than 5 levels, and ask for the next level</p> <p>b) Represent and analyze repeating patterns using symbols, shapes, designs, or pictures <b>Assessment limit:</b> Use no more than 4 objects in the core of the pattern</p>	<p>A. Patterns and Functions</p> <p>1. Identify, describe, extend, and create numeric patterns and functions</p> <p>a) Represent and analyze numeric patterns using skip counting <b>Assessment limit:</b> Use patterns of 3,4,6,7,8, or 9 starting with any whole number (0 – 100)</p> <p>b) Create a one-operation (+ or -) function table to solve a real world problem</p> <p>c) Complete a function table using a one-operation (+, -, x, ÷ with no remainders) rule <b>Assessment limit:</b> Use whole numbers (0 – 50)</p> <p>d) Describe the relationship that generates a one-operation rule</p> <p>2. Identify, describe, extend, analyze, and create a non-numeric growing or repeating pattern</p> <p>a) Generate a rule for the next level of the growing pattern <b>Assessment limit:</b> Use at least 3 levels but no more than 5 levels</p> <p>b) Generate a rule for a repeating pattern <b>Assessment limit:</b> Use no more than 4 objects in the core of the pattern</p> <p>c) Create a non-numeric growing or repeating pattern</p>	<p>A. Patterns and Functions</p> <p>1. Identify, describe, extend, and create numeric patterns and functions</p> <p>a) Interpret and write a rule for a one-operation (+, -, x, ÷ with no remainders) function table <b>Assessment limit:</b> Use whole numbers or decimals with no more than 2 decimal places (0 – 1000)</p> <p>b) Create a one-operation (x, ÷ with no remainders) function table to solve a real world problem</p> <p>c) Complete a one-operation function table <b>Assessment limit:</b> Use whole numbers with +, -, x, ÷ (with no remainders) or use decimals with no more than two decimal places with +, - (0 – 200)</p> <p>d) Apply a given two operation rule for a pattern <b>Assessment limit:</b> Use two operations (+, -, x) and whole numbers (0 – 100)</p>	<p>A. Patterns and Functions</p> <p>1. Identify, describe, extend, and create numeric patterns and functions</p> <p>a) Identify and describe sequences represented by a physical model or in a function table</p> <p>b) Interpret and write a rule for a one-operation (+, -, x, ÷) function table <b>Assessment limit:</b> Use whole numbers or decimals with no more than two decimal places (0 – 10,000)</p> <p>c) Complete a function table with a given two-operation rule <b>Assessment limit:</b> Use the operations of (+, -, x), numbers no more than 10 in the rule, and whole numbers (0 – 50)</p>	<p>A. Patterns and Functions</p> <p>1. Identify, describe, extend, and create linear patterns and functions</p> <p>a) Complete a function table with a given two-operation rule <b>Assessment limit:</b> Use the operations (+, -, x), numbers no more than 20 in the rule and whole numbers (0 – 500)</p> <p>b) Identify and extend a geometric sequence</p> <p>c) Describe how a change in one variable in a linear function affects the other variable in a table of values</p>	<p>A. Patterns and Functions</p> <p>1. Identify, describe, extend, and create patterns, functions and sequences</p> <p>a) Determine the recursive relationship of arithmetic sequences represented in words, in a table or in a graph <b>Assessment limit:</b> Provide the <math>n^{\text{th}}</math> term no more than 10 terms beyond the last given term using common differences no more than 10 with integers (-100 to 5000)</p> <p>b) Determine the recursive relationship of geometric sequences represented in words, in a table, or in a graph <b>Assessment limit:</b> Provide the <math>n^{\text{th}}</math> term no more than 5 terms beyond the last given term using the recursive relationship of geometric sequences with whole numbers and a common ratio of no more than 5:1 (0 – 10,000)</p> <p>c) Determine whether relationships are linear or nonlinear when represented in words, in a table, symbolically, or in a graph <b>Assessment limit:</b> Use a graph to determine if a relationship is linear or nonlinear</p> <p>d) Determine whether relationships are linear or nonlinear when represented symbolically</p>

PROCESSES OF

- Problem Solving
- Reasoning
- Communication
- Connections

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MATHEMATICS

VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 1.0 KNOWLEDGE OF ALGEBRA, PATTERNS, AND FUNCTIONS – Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>B. Expressions, Equations, and Inequalities</p> <p>1. Write and identify expressions</p> <p>a) Represent numeric quantities using operational symbols (+, -, x, )</p> <p><b>Assessment limit:</b> Use operational symbols (+ or -) and whole numbers (0 – 50)</p> <p>2. Identify, write, solve, and apply equations and inequalities</p> <p>a) Represent relationships using appropriate relational symbols (&lt;, &gt;, or =) and operational symbols (+, -, x, ) on either side</p> <p><b>Assessment limit:</b> Use operational symbols (+ or -) and whole numbers (0 – 1000)</p> <p>b) Find the missing number (unknown) in a number sentence (equation) using operational symbols (+, -, x, )</p> <p><b>Assessment limit:</b> Use one operational symbol (+ or -) and whole numbers (0 – 100)</p> <p>c) Find the missing number(s) (unknown) on one or both sides of a number sentence (equation)</p>	<p>B. Expressions, Equations, and Inequalities</p> <p>1. Write and identify expressions</p> <p>a) Represent numeric quantities using operational symbols (+, -, x, ÷ with no remainders)</p> <p><b>Assessment limit:</b> Use whole numbers (0 – 100)</p> <p>b) Determine equivalent expressions</p> <p><b>Assessment limit:</b> Use whole numbers (0 – 100)</p> <p>2. Identify, write, solve, and apply equations and inequalities</p> <p>a) Represent relationships using relational symbols (&gt;, &lt;, =) and operational symbols (+, -, , ) on either side</p> <p><b>Assessment limit:</b> Use operational symbols (+, -, , ) and whole numbers (0 – 200)</p> <p>b) Find the unknown in an equation with one operation</p> <p><b>Assessment limit:</b> Use multiplication ( ) and whole numbers (0 – 81)</p>	<p>B. Expressions, Equations, and Inequalities</p> <p>1. Write and identify expressions</p> <p>a) Represent unknown quantities with one unknown and one operation (+, -, x, ÷ with no remainders)</p> <p><b>Assessment limit:</b> Use whole numbers (0 – 100) or money (\$0 - \$100)</p> <p>b) Determine the value of algebraic expressions with one unknown and one operation</p> <p><b>Assessment limit:</b> Use +, - with whole numbers (0 – 1000) or , (with no remainders) with whole numbers (0 – 100) and the number for the unknown is no more than 9</p> <p>c) Use parenthesis to evaluate a numeric expression</p> <p>2. Identify, write, solve, and apply equations and inequalities</p> <p>a) Represent relationships using the appropriate relational symbols (&gt;, &lt;, =) and one operational symbol (+, -, , with no remainders) on either side</p> <p><b>Assessment limit:</b> Use whole numbers (0 – 400)</p> <p>b) Find the unknown in an equation using one operation (+, -, , with no remainders)</p> <p><b>Assessment limit:</b> Use whole numbers (0 – 2000)</p>	<p>B. Expressions, Equations, and Inequalities</p> <p>1. Write and evaluate expressions</p> <p>a) Write an algebraic expression to represent unknown quantities</p> <p><b>Assessment limit:</b> Use one unknown and one operation (+, -) with whole numbers, fractions with denominators as factors of 24, or decimals with no more than two decimal places (0 – 200)</p> <p>b) Evaluate an algebraic expression</p> <p><b>Assessment limit:</b> Use one unknown and one operation (+, -) with whole numbers (0 – 200), fractions with denominators as factors of 24 (0 – 50), or decimals with no more than two decimal places (0 – 50)</p> <p>c) Evaluate numeric expressions using the order of operations</p> <p><b>Assessment limit:</b> Use no more than 4 operations (+, -, x, ÷ with no remainders) with or without 1 set of parentheses or a division bar and whole numbers (0 – 100)</p> <p>d) Represent algebraic expressions using physical models, manipulatives, and drawings</p> <p>2. Identify, write, solve, and apply equations and inequalities</p> <p>a) Identify and write equations and inequalities to represent relationships</p> <p><b>Assessment limit:</b> Use a variable, the appropriate relational symbols (&gt;, &lt;, =), and one operational symbol (+, -, , ) on either side and use fractions with denominators as factors of 24 (0-50) or decimals with no more than two decimal places (0 – 200)</p> <p>b) Determine the unknown in a linear equation</p> <p><b>Assessment limit:</b> Use one operation (+, -, , with no remainders) and positive whole number coefficients using decimals with no more than two decimal places (0 – 100)</p> <p>c) Solve for the unknown in a one-step inequality</p> <p>d) Identify or graph solutions of a one-step inequality on a number line</p>	<p>B. Expressions, Equations, and Inequalities</p> <p>1. Write and evaluate expressions</p> <p>a) Write an algebraic expression to represent unknown quantities</p> <p><b>Assessment limit:</b> Use one unknown and one or two operations (+, -, x, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 – 500)</p> <p>b) Evaluate algebraic expressions</p> <p><b>Assessment limit:</b> Use one unknown and no more than two operations (+, -, x, ÷ with no remainders) with whole numbers (0 – 200), fractions with denominators as factors of 100 (0 – 100), or decimals with no more than three decimal places (0 – 100)</p> <p>c) Evaluate numeric expressions using the order of operations</p> <p><b>Assessment limit:</b> Use no more than 4 operations (+, -, x, ÷ with no remainders) with or without up to 2 sets of parentheses, brackets, or a division bar, with whole numbers (0 – 200), fractions with denominators as factors of 100 (0 – 100), or decimals with no more than three decimal places (0 – 100)</p> <p>d) Simplify algebraic expressions represented as physical models by combining like terms</p> <p>2. Identify, write, solve, and apply equations and inequalities</p> <p>a) Write equations and inequalities to represent relationships</p> <p><b>Assessment limit:</b> Use a variable, the appropriate relational symbols (&gt;, ≥, &lt;, ≤, =), and one or two operational symbols (+, -, , ) on either side and use whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 – 500)</p> <p>b) Determine the unknown in a linear equation</p> <p><b>Assessment limit:</b> Use one or two operations (+, -, ) and the unknown only once with whole numbers (0 – 500), fractions with denominators as factors of 100 (0 – 50), or decimals with no more than three decimal places (0 – 100)</p> <p>c) Solve for the unknown in an inequality</p>	<p>B. Expressions, Equations, and Inequalities</p> <p>1. Write, simplify, and evaluate expressions</p> <p>a) Write an algebraic expression to represent unknown quantities</p> <p><b>Assessment limit:</b> Use one unknown and no more than 3 operations and rational numbers (-1000 to 1000)</p> <p>b) Evaluate an algebraic expression</p> <p><b>Assessment limit:</b> Use one or two unknowns and up to three operations and rational numbers (-100 to 100)</p> <p>c) Evaluate numeric expressions using the order of operations</p> <p><b>Assessment limit:</b> Use no more than 5 operations including exponents of no more than 3 and 2 sets of parentheses, brackets, a division bar, or absolute value with rational numbers (-100 to 100)</p> <p>d) Simplify algebraic expressions by combining like terms</p> <p><b>Assessment limit:</b> Use no more than 3 variables with integers (-50 to 50), or proper fractions with denominators as factors of 20 (-20 to 20)</p> <p>e) Describe a real-world situation represented by an algebraic expression</p> <p>2. Identify, write, solve, and apply equations and inequalities</p> <p>a) Write equations or inequalities to represent relationships</p> <p><b>Assessment limit:</b> Use a variable, the appropriate relational symbols (&gt;, ≥, &lt;, ≤, =), and no more than 3 operational symbols (+, -, , ) on either side and rational numbers (-1000 to 1000)</p> <p>b) Solve for the unknown in a linear equation</p> <p><b>Assessment limit:</b> Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and rational numbers (-2000 to 2000)</p> <p>c) Solve for the unknown in an inequality</p>

**PROCESSES OF**  
*Problem Solving*  
*Reasoning*  
*Communication*

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**MATHEMATICS**

VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 1.0 KNOWLEDGE OF ALGEBRA, PATTERNS, AND FUNCTIONS – Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
			<p>e) Apply given formulas to a problem solving situation</p>	<p><b>Assessment limit:</b> Use an inequality with one variable with a positive whole number coefficient and one operation (+, -, , with no remainders) using whole numbers or decimals with no more than 2 decimal places (0 – 500)</p> <p>d) Identify or graph solutions of inequalities on a number line <b>Assessment limit:</b> Use whole numbers (0 – 50)</p> <p>e) Apply given formulas to a problem solving situation <b>Assessment limit:</b> Use formulas having no more than three variables and up to two operations, with whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 – 100)</p>	<p><b>Assessment limit:</b> Use a one- or two-operation inequality with one variable on one side no more than 3 times whose result after combining coefficients is a positive whole number coefficient with integers (-100 to 100)</p> <p>d) Identify or graph solutions of inequalities on a number line <b>Assessment limit:</b> Use one variable once with a positive whole number coefficient and integers (-100 to 100)</p> <p>e) Identify equivalent equations <b>Assessment limit:</b> Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and integers (-2000 to 2000)</p> <p>f) Apply given formulas to a problem-solving situation <b>Assessment limit:</b> Use no more than four variables and up to three operations with rational numbers (-500 to 500)</p> <p>g) Write equations and inequalities that describe real-world problems</p>

**PROCESSES OF**  
*Problem Solving*  
*Reasoning*  
*Communication*  
*Connections*  
**MATHEMATICS**

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**STANDARD 1.0 KNOWLEDGE OF ALGEBRA, PATTERNS, AND FUNCTIONS – Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line</p> <p>a) Represent whole numbers on a number line <b>Assessment limit:</b> Use whole numbers (0 - 500)</p> <p>b) Represent proper fractions on a number line <b>Assessment limit:</b> Use fractions that have denominators of 2, 3, or 4</p>	<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line and in a coordinate grid</p> <p>a) Represent mixed numbers and proper fractions on a number line <b>Assessment limit:</b> Use proper fractions with a denominators of 6, 8, or 10</p> <p>b) Identify positions in a coordinate plane <b>Assessment limit:</b> Use the first quadrant and ordered pairs of whole numbers (0 - 20)</p> <p>c) Represent decimals on a number line</p>	<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line and in a coordinate grid</p> <p>a) Represent decimals and mixed numbers on a number line <b>Assessment limit:</b> Use decimals with no more than two decimal places (0 – 100) or mixed numbers with denominators of 2, 3, 4, 5, 6, 8, or 10 (0 - 10)</p> <p>b) Create a graph in a coordinate plane <b>Assessment limit:</b> Use the first quadrant and ordered pairs of whole numbers (0 – 50)</p>	<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line and in a coordinate plane</p> <p>a) Represent rational numbers on a number line <b>Assessment limit:</b> Use integers (-20 to 20)</p> <p>b) Graph ordered pairs in a coordinate plane. <b>Assessment limit:</b> Use no more than 3 ordered pairs of integers (-20 to 20) or no more than 3 ordered pairs of fractions/mixed numbers with denominators of 2 (-10 to 10)</p> <p>c) Graph linear data from a function table</p> <p>2. Analyze linear relationships</p> <p>a) Identify and describe the change represented in a graph <b>Assessment limit:</b> Identify increase, decrease, or no change</p> <p>b) Translate the graph of a linear relationship onto a table of values that illustrates the type of change</p>	<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line and in a coordinate plane</p> <p>a) Represent rational numbers on a number line <b>Assessment limit:</b> Use rational numbers (-100 to 100)</p> <p>b) Graph ordered pairs in a coordinate plane <b>Assessment limit:</b> Use no more than 4 ordered pairs of rational numbers (-20 to 20)</p> <p>c) Graph linear equations with one operation in a coordinate plane</p> <p>2. Analyze linear relationships</p> <p>a) Identify and describe the change represented in a table of values <b>Assessment limit:</b> Identify increase, decrease, or no change</p> <p>b) Describe the rate of change of a linear relationship by a table of values and a graph</p>	<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line and in a coordinate plane</p> <p>a) Graph linear equations in a coordinate plane <b>Assessment limit:</b> Use two unknowns having integer coefficients (-9 to 9) and integer constants (-20 to 20)</p> <p>2. Analyze linear relationships</p> <p>a) Determine the slope of a graph in a linear relationship <b>Assessment limit:</b> Use an equation with integer coefficients (-9 to 9) and integer constants (-20 to 20) and a given graph of the relationship</p> <p>b) Determine the slope of a linear relationship represented numerically or algebraically</p>

**PROCESSES OF**

- Problem Solving*
- Reasoning*
- Communication*
- Connections*

**MATHEMATICS**

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VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 2.0 KNOWLEDGE OF GEOMETRY – Students will apply the properties of one-, two-, or three-dimensional geometric figures to describe, reason, or solve problems about shape, size, position, or motion of objects.

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>A. Plane Geometric Figures</p> <p>1. Analyze the properties of plane geometric figures</p> <p>a) Identify and describe points, lines, line segments, rays, and angles</p> <p>b) Identify or describe polygons <b>Assessment limit:</b> Use triangles, quadrilaterals, pentagons, hexagons, or octagons and the number of sides or vertices</p> <p>c) Identify or describe quadrilaterals <b>Assessment limit:</b> Use squares, rectangles, rhombi, parallelograms, and trapezoids and the length of sides</p> <p>d) Identify triangles, rectangles, or squares as part of a composite figure <b>Assessment limit:</b> Use a combination of 2 of the stated polygons</p> <p>2. Analyze geometric relationships</p> <p>a) Identify right angles</p>	<p>A. Plane Geometric Figures</p> <p>1. Analyze the properties of plane geometric figures</p> <p>a) Identify properties of angles using manipulatives and pictures</p> <p>b) Identify, compare, classify and describe angles in relationship to another angle <b>Assessment limit:</b> Use acute, right, or obtuse angles</p> <p>c) Identify parallel and intersecting line segments</p>	<p>A. Plane Geometric Figures</p> <p>1. Analyze the properties of plane geometric figures</p> <p>a) Identify and describe relationships of lines and line segments in geometric figures or pictures <b>Assessment limit:</b> Use parallel or perpendicular lines and line segments</p> <p>b) Identify polygons within a composite figure <b>Assessment limit:</b> Use polygons with no more than 8 sides as part of a composite figure comprised of triangles or quadrilaterals</p> <p>c) Identify and describe the radius and diameter of a circle</p> <p>2. Analyze geometric relationships</p> <p>a) Compare and classify quadrilaterals by length of sides and types of angles (Include the angle symbol <math>\angle</math>) <b>Assessment limit:</b> Use squares, rectangles, rhombi, parallelograms, and trapezoids</p> <p>b) Compare triangles by sides</p>	<p>A. Plane Geometric Figures</p> <p>1. Analyze the properties of plane geometric figures</p> <p>a) Identify, describe, and label points, lines, rays, line segments, vertices, angles, and planes using correct symbolic notation</p> <p>b) Identify and describe line segments <b>Assessment limit:</b> Use diagonal line segments of a polygon</p> <p>c) Identify and describe the parts of a circle <b>Assessment limit:</b> Use radius, diameter, or circumference</p> <p>2. Analyze geometric relationships</p> <p>a) Compare and classify triangles by sides <b>Assessment limit:</b> Use scalene, equilateral, or isosceles</p> <p>b) Compare and classify triangles by angle measure <b>Assessment limit:</b> Use equiangular, obtuse, acute, or right</p> <p>c) Determine a third angle measure of a triangle given two angle measures <b>Assessment limit:</b> Use the concept of the sum of angles in any triangle is <math>180^\circ</math> without using a diagram</p> <p>d) Identify and compare the relationship between parts of a circle <b>Assessment limit:</b> Use radius, diameter or circumference (<math>\pi = 3.14</math>)</p>	<p>A. Plane Geometric Figures</p> <p>1. Analyze the properties of plane geometric figures</p> <p>a) Identify and describe angles formed by intersecting lines, line segments, and rays <b>Assessment limit:</b> Use vertical, adjacent, complementary, or supplementary angles (Include the angle symbol <math>\angle</math>)</p> <p>b) Identify angles formed when two parallel lines are cut by a transversal</p> <p>c) Identify the parts of right triangles</p> <p>2. Analyze geometric relationships</p> <p>a) Determine a missing angle measurement using the sum of the interior angles of polygons. <b>Assessment limit:</b> Use angle measures in a quadrilateral</p> <p>b) Determine the measurements of angles formed by intersecting lines, line segments, and rays. <b>Assessment limit:</b> Use vertical, adjacent, complementary, or supplementary angles</p> <p>c) Describe the relationship between the legs and hypotenuse of right triangles</p>	<p>A. Properties of Plane Geometric Figures</p> <p>1. Analyze the properties of plane geometric figures</p> <p>a) Identify and describe geometric relationships between angles formed when parallel lines are cut by a transversal. <b>Assessment limit:</b> Use alternate interior, alternate exterior, or corresponding angles</p> <p>b) Identify and describe the relationship among the parts of a right triangle <b>Assessment limit:</b> Use the hypotenuse or the legs of right triangles</p> <p>2. Analyze geometric relationships</p> <p>a) Determine the measurements of angles formed by parallel lines cut by a transversal <b>Assessment limit:</b> Use alternate interior, alternate exterior, and corresponding angles</p> <p>b) Apply right angle concepts to solve real-world problems <b>Assessment limit:</b> Use the Pythagorean Theorem</p> <p>c) Determine whether three given side lengths form a right triangle</p>
<p>B. Solid Geometric Figures</p> <p>1. Analyze the properties of solid geometric figures</p> <p>a) Identify and describe cubes, rectangular prisms, and triangular prisms <b>Assessment limit:</b> Use cubes and the number of edges, faces, vertices, or shape of each face</p>	<p>B. Solid geometric figures</p> <p>1. Analyze the properties of solid geometric figures</p> <p>a) Identify cones, cylinders, prisms, and pyramids <b>Assessment limit:</b> Use cones or cylinders</p> <p>b) Describe solid geometric figures by the number of edges, faces, or vertices <b>Assessment limit:</b> Use triangular pyramids, rectangular pyramids, triangular prisms, or rectangular prisms</p>	<p>B. Solid geometric figures</p> <p>1. Analyze the properties of solid geometric figures</p> <p>a) Identify and classify pyramids and prisms by the number of edges, faces, or vertices <b>Assessment limit:</b> Use triangular pyramids, rectangular pyramids, triangular prisms, or rectangular prisms</p> <p>b) Identify and classify pyramids and prisms by the base <b>Assessment limit:</b> Use triangular prisms and pyramids or rectangular prisms and pyramids</p>			

**PROCESSES OF**  
*Problem Solving*  
*Reasoning*  
*Communication*  
*Connections*

**MATHEMATICS**

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**STANDARD 2.0 KNOWLEDGE OF GEOMETRY – Students will apply the properties of one-, two-, or three-dimensional geometric figures to describe, reason, or solve problems about shape, size, position, or motion of objects.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
	<p>2. Analyze the relationship between plane geometric figures and surfaces of solid geometric figures</p> <p>a) Compare a plane figure to surfaces of solid geometric figure</p> <p><b>Assessment limit:</b> Analyze or identify the number or arrangement of squares needed to make a cube and triangles/rectangles needed to make a triangular pyramid or rectangular pyramid</p>	<p>2. Analyze the relationship between plane geometric figures and faces of a solid geometric figures</p> <p>a) Compare a plane figure to faces of solid geometric figure</p> <p><b>Assessment limit:</b> Analyze and identify the number or arrangement of rectangles needed to make a rectangular prism, number of triangles/rectangles needed to make a triangular prism, and the number of circles/rectangles needed to make a cylinder.</p>			
<p>C. Representation of Geometric Figures</p> <p>1. Represent plane geometric figures</p> <p>a) Sketch triangles, quadrilaterals, pentagons, hexagons, octagons, and circles</p>	<p>C. Representation of Geometric Figures</p> <p>1. Represent plane geometric figures</p> <p>a) Sketch acute, right, obtuse angles, and parallel and intersecting line segments</p>	<p>C. Representation of Geometric Figures</p> <p>1. Represent plane geometric figures</p> <p>a) Identify, describe, and draw angles, parallel line segments, and perpendicular line segments</p> <p><b>Assessment limit:</b> Provide their dimensions as whole numbers (0 – 20) or angle measurements (0 – 179 )</p>	<p>C. Representation of Geometric Figures</p> <p>1. Represent plane geometric figures</p> <p>a) Draw geometric figures using a variety of tools</p> <p><b>Assessment limit:</b> Draw triangles given the measures of 2 sides and one angle or 2 angles and 1 side using whole numbers (0-20) and angle measures (0 -179 )</p> <p>b) Identify, describe, or draw a polygon</p> <p><b>Assessment limit:</b> Use the first quadrant given no more than six coordinates</p> <p>c) Identify or describe angle relationships</p> <p><b>Assessment limit:</b> Use perpendicular bisectors or angle bisectors</p>	<p>C. Representation of Geometric Figures</p> <p>1. Represent plane geometric figures</p> <p>a) Construct geometric figures using a variety of construction tools</p> <p><b>Assessment limit:</b> Construct a circle using a given line segment as the radius in whole number inches or centimeters</p> <p>b) Construct geometric figures using a variety of construction tools.</p> <p><b>Assessment limit:</b> Construct a line segment congruent to a given line segment</p> <p>c) Construct geometric figures using a variety of construction tools</p> <p><b>Assessment limit:</b> Construct a perpendicular bisector to a given line segment or a bisector of a given angle</p>	<p>C. Representation of Geometric Figures</p> <p>1. Represent plane geometric figures</p> <p>a) Draw quadrilaterals</p> <p><b>Assessment limit:</b> Provide given whole number dimensions in inches or centimeters or angle measurements</p> <p>b) Construct perpendicular line segments</p> <p><b>Assessment limit:</b> Provide a given point on a given line segment</p> <p>c) Construct triangles</p> <p><b>Assessment limit:</b> Construct a triangle congruent to a given triangle</p>
<p>D. Congruence</p> <p>1. Analyze congruent figures</p> <p>a) Identify and describe geometric figures as congruent</p> <p><b>Assessment limit:</b> Use the same shape and same size</p>	<p>D. Congruence</p> <p>1. Analyze geometric figures</p> <p>a) Identify and describe geometric figures as congruent</p> <p><b>Assessment limit:</b> Identify the result in a transformation as being congruent to the original figure</p>	<p>D. Congruence and Similarity</p> <p>1. Analyze similar figures</p> <p>a) Identify or describe geometric figures as similar</p> <p><b>Assessment limit:</b> Use same shape and different size</p>	<p>D. Congruence and Similarity</p> <p>1. Analyze congruent figures</p> <p>a) Identify and describe congruent polygons and their corresponding parts</p>	<p>D. Congruence and Similarity</p> <p>1. Apply the properties of congruent polygons</p> <p>a) Determine the congruent parts of polygons</p> <p><b>Assessment limit:</b> Use the length of corresponding sides or the measure of corresponding angles and whole numbers (0 – 1000)</p> <p>b) Identify and describe similar polygons and their corresponding parts</p>	<p>D. Congruence and Similarity</p> <p>1. Apply the properties of similar polygons</p> <p>a) Determine similar parts of polygons</p> <p><b>Assessment limit:</b> Use the length of corresponding sides or the measure of corresponding angles and rational numbers with no more than 2 decimal places (0 – 1000)</p>
<p>E. Transformations</p> <p>1. Analyze a transformation</p> <p>a) Identify and describe the results of a slide, flip, and turn</p> <p><b>Assessment limit:</b> Use horizontal slide, flip over a vertical line, or turn of 90<sup>o</sup> clockwise around a given point of a geometric figure or picture</p> <p>2. Analyze geometric figures and pictures</p> <p>a) Identify and describe symmetry</p> <p><b>Assessment limit:</b> Use no more than 4 lines of symmetry</p>	<p>E. Transformations</p> <p>1. Analyze a transformation</p> <p>a) Identify and describe the results of translations, reflections, and rotations</p> <p><b>Assessment limit:</b> Use a horizontal line translation, reflection over a vertical line, or rotation of 90<sup>o</sup> clockwise around a given point of a geometric figure or picture</p>	<p>E. Transformations</p> <p>1. Analyze a transformation</p> <p>a) Identify and describe the results of translations, reflections, and rotations of geometric figures</p> <p><b>Assessment limit:</b> Use translation along a vertical line, reflection over a horizontal line, or rotation 90<sup>o</sup> or 180<sup>o</sup> around a given point</p>	<p>E. Transformations</p> <p>1. Analyze a transformation on a coordinate plane</p> <p>a) Plot the result of one transformation (translation, reflection, rotation) on a coordinate plane</p>	<p>E. Transformations</p> <p>1. Analyze a transformation on a coordinate plane</p> <p>a) Identify, describe, and plot the results of one transformation on a coordinate plane</p> <p><b>Assessment limit:</b> Identify or plot the result of one translation (horizontal or vertical), reflection (horizontal or vertical), or rotation about a given point (90 or 180 )</p> <p>b) Identify and describe transformations that result in rotational and reflectional symmetry</p>	<p>E. Transformations</p> <p>1. Analyze a transformation on a coordinate plane</p> <p>a) Identify, describe, and plot the results of multiple transformations on a coordinate plane</p> <p><b>Assessment limit:</b> Identify or plot the result of two transformations on one figure using translations (horizontal or vertical), reflections (horizontal or vertical), or rotations about a given point (90 or 180 )</p>

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**VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8**

**STANDARD 3.0 KNOWLEDGE OF MEASUREMENT – Students will identify attributes, units, or systems of measurements or apply a variety of techniques, formulas, tools or technology for determining measurements.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>A. Measurement Units</p> <p>1. Read customary and metric measurement units</p> <p>a) Estimate and determine length <b>Assessment limit:</b> Use the nearest centimeter or ½ inch</p> <p>b) Tell time in days, hours, minutes, and seconds <b>Assessment limit:</b> Use the nearest minute using an analog clock</p> <p>c) Estimate and read temperature <b>Assessment limit:</b> Use the nearest degree (°F or °C)</p> <p>d) Estimate and determine weight of objects <b>Assessment limit:</b> Use the nearest pound or ounce</p>	<p>A. Measurement Units</p> <p>1. Read customary and metric measurement units</p> <p>a) Estimate and determine length and height <b>Assessment limit:</b> Use the nearest millimeter or ¼ inch</p> <p>b) Estimate and determine weight or mass</p> <p>c) Estimate and determine capacity</p>	<p>A. Measurement Units</p> <p>1. Read customary and metric measurement units</p> <p>a) Estimate and determine weight or mass <b>Assessment limit:</b> Use the nearest ounce for weight and the nearest gram for mass</p> <p>b) Estimate and determine capacity <b>Assessment limit:</b> Use the nearest ounce</p>			
<p>B. Measurement Tools</p> <p>1. Measure in customary and metric units</p> <p>a) Measure length of objects and pictures of objects using a ruler, a tape measure, a yardstick, or a meter stick <b>Assessment limit:</b> Use a ruler and the nearest centimeter or ½ inch</p> <p>b) Measure capacity of containers to the nearest cup, pint, quart, gallon, milliliter, and liter using graduated containers</p> <p>c) Measure weight of objects to the nearest ounce and pound and the mass of an object to the nearest gram and kilogram</p>	<p>B. Measurement Tools</p> <p>1. Measure in customary and metric units</p> <p>a) Select and use appropriate tools and units <b>Assessment limit:</b> Use the nearest millimeter or ¼ inch with a ruler</p> <p>2. Compare right angles to a corner</p>	<p>B. Measurement Tools</p> <p>1. Measure in customary and metric units</p> <p>a) Select and use appropriate tools and units <b>Assessment limit:</b> Measure length to 1/8 inch with a ruler</p> <p>2. Measure angles</p> <p>a) Measure a single angle and angles in regular polygons <b>Assessment limit:</b> Measure an angle between 0 and 180 to the nearest degree</p>	<p>B. Measurement Tools</p> <p>1. Measure in customary and metric units</p> <p>a) Select and use appropriate tools and units <b>Assessment limit:</b> Measure length to the nearest 1/16 inch with a ruler</p> <p>2. Measure angles in polygons</p>		

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**VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8**

**STANDARD 3.0 KNOWLEDGE OF MEASUREMENT – Students will identify attributes, units, or systems of measurements or apply a variety of techniques, formulas, tools or technology for determining measurements.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>C. Applications in Measurement</p> <p>1. Apply measurement concepts</p> <p>a) Estimate and determine the perimeter of geometric figures and pictures on a grid <b>Assessment limit:</b> Use counting and whole numbers (0 – 50)</p> <p>b) Estimate and determine the area of geometric figures and pictures on a grid <b>Assessment limit:</b> Use counting of whole units and whole numbers (0 – 50)</p> <p>2. Calculate equivalent measurements</p> <p>a) Determine equivalent units of length <b>Assessment limit:</b> Use 12 inches = 1 foot and 3 feet = 1 yard and whole numbers (0 – 30)</p>	<p>C. Applications in Measurement</p> <p>1. Apply measurement concepts</p> <p>a) Determine perimeter <b>Assessment limit:</b> Use polygons with no more than 6 sides given the length of the sides in whole numbers (0 – 100)</p> <p>b) Determine area <b>Assessment limit:</b> Use rectangles with the length of the sides in whole numbers (0 – 100)</p> <p>c) Determine start time, elapsed time and end time <b>Assessment limit:</b> Use hour and half hour intervals</p> <p>2. Calculate equivalent measurements</p> <p>a) Determine equivalent units of length <b>Assessment limit:</b> Use 36 inches = 1 yard and whole numbers (0-100)</p> <p>b) Determine equivalent units of time</p> <p>c) Determine equivalent units of capacity and weight within the same system</p>	<p>C. Applications in Measurement</p> <p>1. Estimate and apply measurement formulas</p> <p>a) Determine perimeter <b>Assessment limit:</b> Use polygons with no more than 8 sides and whole numbers (0 –500)</p> <p>b) Determine area <b>Assessment limit:</b> Use rectangles and whole numbers (0 – 200)</p> <p>c) Find the area and perimeter of any closed figure on a grid <b>Assessment limit:</b> Use whole and partial units (0-50)</p> <p>d) Estimate and determine volume by counting</p> <p>2. Calculate equivalent measurements</p> <p>a) Determine start, elapsed, and end time <b>Assessment limit:</b> Use the nearest minute</p> <p>b) Determine equivalent units of measurement <b>Assessment limit:</b> Use seconds, minutes, and hours or pints, quarts, and gallons</p>	<p>C. Applications in Measurement</p> <p>1. Estimate and apply measurement formulas</p> <p>a) Estimate and determine the area of a polygon <b>Assessment limit:</b> Use triangles and whole number dimensions (0 – 200)</p> <p>b) Estimate and determine the volume of a rectangular prism <b>Assessment limit:</b> Use rectangular prisms and whole number dimensions (0 – 1000)</p> <p>c) Estimate and determine the area of a composite figure <b>Assessment limit:</b> Use composite figures with no more than four polygons (triangles or rectangles) and whole number dimensions (0 – 500)</p> <p>d) Determine missing dimension of a quadrilateral given the perimeter length <b>Assessment limit:</b> Find length in a quadrilateral given the perimeter with whole number dimensions (0 – 200)</p> <p>e) Determine the missing dimension of rectangles <b>Assessment limit:</b> Find length in a square or rectangle given the area and whole number dimensions (0 – 200)</p>	<p>C. Applications in Measurement</p> <p>1. Estimate and apply measurement formulas</p> <p>a) Estimate and determine the area of quadrilaterals <b>Assessment limit:</b> Use parallelograms or trapezoids and whole number dimensions (0 – 1000)</p> <p>b) Determine the surface area of geometric solids <b>Assessment limit:</b> Use rectangular prisms with whole number dimensions (0 – 1000)</p> <p>c) Estimate pi using physical models</p> <p>d) Estimate and determine the volume of a triangular prism</p> <p>2. Analyze measurement relationships</p> <p>a) Determine a missing dimension for a figure using a scale. <b>Assessment limit:</b> Use a polygon with no more than 8 sides using whole numbers (0 – 1000)</p> <p>b) Determine the distance between 2 points using a drawing and a scale <b>Assessment limit:</b> Use a scale of 1 cm = ?, ¼ inch = ?, or ½ inch = ?, and whole numbers (0 – 1000)</p>	<p>C. Applications in Measurement</p> <p>1. Estimate and apply measurement formulas</p> <p>a) Estimate and determine the circumference or area of a circle <b>Assessment limit:</b> Include circles using rational numbers with no more than 2 decimal places (0 – 10,000)</p> <p>b) Estimate and determine area of a composite figure <b>Assessment limit:</b> Include composite figures with no more than 6 polygons (triangles, rectangles, or circles) by measuring, partitioning, or using formulas with whole number dimensions (0 - 10,000)</p> <p>c) Estimate and determine the volume of a cylinder <b>Assessment limit:</b> Use cylinders, the given the formula, and whole number dimensions (0 – 10,000)</p> <p>d) Determine the volume of cones, pyramids, and spheres</p> <p>e) Determine the surface area of cylinders, prisms, and pyramids</p> <p>2. Analyze measurement relationships</p> <p>a) Use proportional reasoning to solve measurement problems <b>Assessment limit:</b> Use proportions, scale drawings with scales as whole numbers, or rates using whole numbers or decimals (0 – 1000)</p>

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VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 4.0 KNOWLEDGE OF STATISTICS – Students will collect, organize, display, analyze, or interpret data to make decisions or predictions

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>A. Data Displays</p> <p>1. Collect, organize, and display data</p> <p>a) Collect data by conducting surveys</p> <p>b) Organize and display data to make tables using a variety of categories and sets of data</p> <p><b>Assessment limit:</b> Use no more than 4 categories from one set of data and whole numbers (0 – 1000)</p> <p>c) Organize and display data to make pictographs using a variety of scales</p> <p><b>Assessment limit:</b> Use scales of 2:1, 4:1, or 10:1 and whole numbers (0 – 100)</p> <p>d) Organize and display data to make single bar graphs using a variety of categories and intervals</p> <p><b>Assessment limit:</b> Use no more than 4 categories of data with intervals of 1, 2, 5, or 10 and whole numbers (0 – 100)</p> <p>e) Organize and display data to make line plots using a variety of intervals</p>	<p>A. Data Displays</p> <p>1. Collect, organize, and display data</p> <p>a) Collect data by conducting surveys to answer a question</p> <p>b) Organize and display data in line plots and frequency tables using a variety of categories and sets of data</p> <p><b>Assessment limit:</b> Use line plots with no more than 20 pieces of unorganized data and a range of no more than 10 and whole numbers (0 – 100)</p>	<p>A. Data Displays</p> <p>1. Collect, organize, and display data</p> <p>a) Collect data by conducting surveys to answer a question</p> <p>b) Organize and display data in stem-and-leaf plots</p> <p><b>Assessment limit:</b> Use no more than 20 data points and whole numbers (0 – 100)</p> <p>c) Organize and display data in line plots</p> <p><b>Assessment limit:</b> Use no more than 20 pieces of data with a range of no more than 20 and whole numbers (0 – 200)</p> <p>d) Organize and display data in double bar graphs</p> <p><b>Assessment limit:</b> Use no more than 4 categories and intervals of 1, 2, 5, or 10 and whole numbers (0 – 100)</p> <p>e) Organize and display data in line graphs</p> <p><b>Assessment limit:</b> Use y-axis with intervals of 1, 2, 4, 5, or 10 and x-axis with no more than 10 time intervals and whole numbers (0 – 100)</p> <p>f) Determine the appropriate type of graph to effectively display data</p>	<p>A. Data Displays</p> <p>1. Organize and display data</p> <p>a) Organize and display data to make frequency tables</p> <p><b>Assessment limit:</b> Use no more than 5 categories or ranges of numbers and total frequencies of no more than 25</p> <p>b) Organize and display data to make stem-and-leaf plots</p> <p><b>Assessment limit:</b> Use no more than 20 data points and whole numbers (0 – 999)</p> <p>c) Organize and display data using a back-to-back stem-and-leaf plot</p>	<p>A. Data Displays</p> <p>1. Organize and display data</p> <p>a) Organize and display data using back-to-back stem-and-leaf plots</p> <p><b>Assessment limit:</b> Use no more than 20 data points using whole numbers (0 – 99)</p> <p>b) Organize and display data to make circle graphs</p>	<p>A. Data Displays</p> <p>1. Organize and display data</p> <p>a) Organize and display data to make circle graphs</p> <p><b>Assessment limit:</b> Use no more than 5 categories with data in whole number percents</p> <p>b) Organize and display data to make box-and-whisker plots</p> <p><b>Assessment limit:</b> Use no more than 12 pieces of data and whole numbers (0 – 1000)</p> <p>c) Organize and display data to make a scatter plot</p> <p><b>Assessment limit:</b> Use no more than 10 points and whole numbers (0 – 1000)</p>

PROCESSES OF

- Problem Solving*
- Reasoning*
- Communication*
- Connections*

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VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 4.0 KNOWLEDGE OF STATISTICS – Students will collect, organize, display, analyze, or interpret data to make decisions or predictions.

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
<p>B. Data Analysis</p> <p>1. Analyze data</p> <p>a) Interpret data contained in tables using a variety of categories and intervals <b>Assessment limit:</b> Use no more than 4 categories from one set of data and whole numbers (0 – 1000)</p> <p>b) Interpret data contained in pictographs using a variety of categories and intervals <b>Assessment limit:</b> Use scales of 2:1, 4:1, or 10:1 and whole numbers (0 – 100)</p> <p>c) Interpret data contained in single bar graphs using a variety of categories and intervals <b>Assessment limit:</b> Use no more than 4 categories of data, intervals of 1, 2, 5, or 10 and whole numbers (0 – 100)</p> <p>d) Interpret data contained in line plots using a variety of intervals</p>	<p>B. Data Analysis</p> <p>1. Analyze data</p> <p>a) Interpret line plots <b>Assessment limit:</b> Use no more than 20 pieces of data with a range no more than 10 and whole numbers (0 – 100)</p> <p>b) Interpret line graphs <b>Assessment limit:</b> Use the x-axis representing no more than 6 time intervals, the y-axis consisting of no more than 10 intervals with scales as factors of 100 using whole numbers (0 – 100)</p> <p>2. Describe a set of data</p> <p>a) Determine median, mode, and range <b>Assessment limit:</b> Use no more than 8 pieces of data and whole numbers (0 – 100)</p> <p>b) Model the mean of a set of data</p>	<p>B. Data Analysis</p> <p>1. Analyze data</p> <p>a) Interpret and compare data in stem &amp; leaf plot <b>Assessment limit:</b> Use no more than 20 data points and whole numbers (0 – 100)</p> <p>b) Interpret and compare data in line plots <b>Assessment limit:</b> Use no more than 20 pieces of data with a range of no more than 20 and whole numbers (0 – 100)</p> <p>c) Interpret and compare data in double bar graphs <b>Assessment limit:</b> Use no more than 4 categories and intervals of 1, 2, 5, or 10 and whole numbers (0 – 1000)</p> <p>d) Interpret and compare data in double line graphs <b>Assessment limit:</b> Use y-axis with intervals of 1, 2, 5, or 10 and x-axis with no more than 10 time intervals and whole numbers (0 – 100)</p> <p>e) Read circle graphs <b>Assessment limit:</b> Use no more than 4 categories and data in whole numbers or percents which are multiples of 5 and whole numbers (0 – 100)</p> <p>2. Describe a set of data (mean, median, mode)</p> <p>a) Determine the mean of a given data set or data display <b>Assessment limit:</b> Use no more than 8 pieces of data and whole numbers without remainders (0 – 1000)</p> <p>b) Apply the range and measures of central tendency to solve a problem or answer a question</p>	<p>B. Data Analysis</p> <p>1. Analyze data</p> <p>a) Interpret frequency tables <b>Assessment limit:</b> Use no more than 5 categories or ranges of numbers and frequencies of no more than 25</p> <p>b) Read and analyze circle graphs <b>Assessment limit:</b> Use no more than 5 categories using data in whole numbers or percents (0 – 1000)</p> <p>c) Interpret data from a stem-and-leaf plot</p> <p>2. Describe a set of data</p> <p>a) Apply measures of central tendency (mean, median, mode)</p>	<p>B. Data Analysis</p> <p>1. Analyze data</p> <p>a) Recognize and analyze faulty interpretation or representation of data <b>Assessment limit:</b> Use the choice of graphical display or the scale as leading to faulty interpretation or representation of data</p> <p>b) Determine the best choice of a data display <b>Assessment limit:</b> Use a given data set</p> <p>c) Analyze misleading data representation</p> <p>2. Describe a set of data</p> <p>a) Analyze measures of central tendency to determine or apply mean, median, mode <b>Assessment limit:</b> Use no more than 15 pieces of data for the mean or median; or 15 to 30 pieces of data for the mode, using whole numbers or decimals with no more than 2 decimal places (0 – 100)</p>	<p>B. Data Analysis</p> <p>1. Analyze data</p> <p>a) Interpret tables <b>Assessment limit:</b> Use no more than 5 categories having no more than 2 quantities per category and whole numbers or decimals with no more than 2 decimal places (0 – 100)</p> <p>b) Interpret box-and-whisker plots <b>Assessment limit:</b> Use minimum, first (lower) quartile, median (middle quartile), third (upper) quartile, or maximum and whole numbers (0 – 100)</p> <p>c) Interpret scatter plots <b>Assessment limit:</b> Use no more than 10 points using whole numbers or decimals with no more than 2 decimal places (0 – 100)</p> <p>d) Interpret circle graphs <b>Assessment limit:</b> Use no more than 8 categories (0 – 1000)</p> <p>e) Analyze multiple box-and-whisker plots using the same scale</p>

PROCESSES OF

- Problem Solving
- Reasoning
- Communication
- Connections

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MATHEMATICS

VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

**STANDARD 5.0 KNOWLEDGE OF PROBABILITY – Students will use experimental methods or theoretical reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>A. Sample Space</p> <p>1. Identify possible outcomes</p> <p>a) Identify possible outcomes that make up the sample space for a given real life situation</p> <p>b) Identify possible outcomes that make up the sample space for a given experiment such as: flipping a coin, spinning a spinner, and rolling a number cube</p>		<p>A. Sample Space</p> <p>1. Identify possible outcomes</p> <p>a) Determine possible outcomes of independent events</p> <p><b>Assessment limit:</b> Use two independent events with no more than 4 outcomes each and an organized list or tree diagram</p>		<p>A. Sample Space</p> <p>1. Identify a sample space</p> <p>a) Determine the number of outcomes</p> <p><b>Assessment limit:</b> Use no more than 3 independent events with a sample space of no more than 6 outcomes in each event.</p>	<p>A. Sample Space</p> <p>1. Identify a sample space</p> <p>a) Describe the difference between independent and dependent events</p> <p>b) Determine the number of outcomes</p> <p><b>Assessment limit:</b> Use no more than 5 dependent events with no more than 10 outcomes in the first event</p>
<p>B. Theoretical Probability</p> <p>1. Identify the probability of one simple event</p> <p>a) Describe the probability of an event using words</p> <p><b>Assessment limit:</b> Use probability terms of more (or most) likely, less (or least) likely, or equally likely</p>	<p>B. Theoretical Probability</p> <p>1. Determine the probability of one simple event comprised of equally likely outcomes</p> <p>a) Express the probability as a fraction</p> <p><b>Assessment limit:</b> Use a sample space of no more than 6 outcomes</p>	<p>B. Theoretical Probability</p> <p>1. Determine the probability of one simple event comprised of equally likely outcomes</p> <p>a) Make predictions and express the probability as a fraction</p> <p><b>Assessment limit:</b> Use a sample space of no more than 20 outcomes</p>	<p>B. Theoretical Probability</p> <p>1. Determine the probability of one simple event comprised of equally likely outcomes</p> <p>a) Express the probability of an event as a fraction.</p> <p>b) Express the probability of an event as a decimal</p> <p><b>Assessment limit:</b> Use a sample space of 10, 20, 25, or 50 outcomes</p> <p>c) Express the probability of an event as a percent</p>	<p>B. Theoretical Probability</p> <p>1. Determine the probability of an event comprised of no more than 2 independent events</p> <p>a) Express the probability of an event as a fraction, a decimal, or a percent</p> <p><b>Assessment limit:</b> Use a sample space of no more than 35 outcomes and decimals with no more than 2 decimal places</p>	<p>B. Theoretical Probability</p> <p>1. Determine the probability of an event comprised of no more than 2 independent events</p> <p>a) Express the probability of an event as a fraction, a decimal, or a percent</p> <p><b>Assessment limit:</b> Use a sample space of 36 to 60 outcomes</p> <p>2. Determine the probability of a second event that is dependent on a first event of equally likely outcomes</p> <p>a) Express the probability as a fraction, a decimal, or a percent</p> <p><b>Assessment limit:</b> Use a sample space of no more than 60 outcomes</p>
			<p>C. Experimental Probability</p> <p>1. Analyze the results of a probability experiment</p> <p>a) Make predictions and express the experimental probability as a fraction, a decimal, or a percent</p> <p><b>Assessment limit:</b> Use no more than 30 results in the sample space</p> <p>2. Conduct a probability experiment</p> <p>3. Compare outcomes of theoretical probability with the results of experimental probability</p> <p>4. Describe the difference between theoretical and experimental probability</p>	<p>C. Experimental Probability</p> <p>1. Analyze the results of a survey or simulation</p> <p>a) Make predictions and express the probability of the results as a fraction, a decimal with no more than 2 decimal places, or a percent</p> <p><b>Assessment limit:</b> Use 25 or 50 results</p> <p>2. Conduct a probability experiment</p> <p>3. Compare outcomes of theoretical probability with the results of experimental probability</p> <p>4. Describe the difference between theoretical and experimental probability</p>	<p>C. Experimental Probability</p> <p>1. Analyze the results of a survey or simulation</p> <p>a) Make predictions and express the probability of the results as a fraction, a decimal with no more than 2 decimal places, or a percent</p> <p><b>Assessment limit:</b> Use 20 to 500 results</p> <p>2. Conduct a probability experiment</p> <p>3. Compare outcomes of theoretical probability with the results of experimental probability</p> <p>4. Describe the difference between theoretical and experimental probability</p>

**PROCESSES OF**

*Problem Solving  
Reasoning  
Communication  
Connections*

**MATHEMATICS**

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VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

**STANDARD 6.0 KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC – Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of whole numbers and place value</p> <p>a) Read, write, and represent whole numbers using symbols, words, and models <b>Assessment limit:</b> Use whole numbers (0 - 10,000)</p> <p>b) Express whole numbers in expanded form <b>Assessment limit:</b> Use whole numbers (0 - 10,000)</p> <p>c) Identify the place value of a digit in a whole number <b>Assessment limit:</b> Use whole numbers (0 - 9,999)</p> <p>d) Compare, order, and describe whole numbers with or without using relational symbols (&lt;, &gt;, =) <b>Assessment limit:</b> Use no more than four whole numbers (0 - 10,000)</p> <p>2. Apply knowledge of fractions</p> <p>a) Read, write, and represent fractions as parts of a single region using symbols, words, and models <b>Assessment limit:</b> Use fractions with denominators of 2, 3, or 4</p> <p>b) Read, write, and represent fractions as parts of a set using symbols, words, and models <b>Assessment limit:</b> Use fractions with denominators of 2, 3, or 4, and use sets of 2, 3, 4 items, respectively</p>	<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of whole numbers and place value</p> <p>a) Read, write, and represent whole numbers using symbols, words, and models <b>Assessment limit:</b> Use whole numbers (0 - 1,000,000)</p> <p>b) Express whole numbers in expanded form <b>Assessment limit:</b> Use whole numbers (0 - 1,000,000)</p> <p>c) Identify the place value of a digit in a number <b>Assessment limit:</b> Use whole numbers (0 - 1,000,000)</p> <p>d) Compare, order, and describe whole numbers <b>Assessment limit:</b> Use no more than 4 whole numbers with or without using the symbols (&lt;, &gt;, =) and whole numbers (0 - 1,000,000)</p> <p>2. Apply knowledge of fractions and decimals</p> <p>a) Read, write, and represent proper fractions of a single region using symbols, words, and models <b>Assessment limit:</b> Use denominators 6, 8, and 10</p> <p>b) Read, write, and represent proper fractions of a set which has the same number of items as the denominator using symbols, words, and models <b>Assessment limit:</b> Use denominators of 6, 8, and 10 with sets of 6, 8, and 10, respectively</p> <p>c) Find equivalent fractions</p> <p>d) Read, write, and represent mixed numbers using symbols, words, and models</p> <p>e) Read, write, and represent decimals using symbols, words and models <b>Assessment limit:</b> Use no more than 2 decimal places and numbers (0 - 100)</p> <p>f) Express decimals in expanded form <b>Assessment limit:</b> Use no more than 2 decimal places and numbers (0 - 100)</p> <p>g) Compare and order fractions and mixed numbers with or without using the symbols (&lt;, &gt;, or =) <b>Assessment limit:</b> Use like denominators and no more than 3 numbers (0 - 20)</p> <p>h) Compare, order, and describe decimals with or without using the symbols (&lt;, &gt;, or =) <b>Assessment limit:</b> Use no more than 3 decimals with no more than 2 decimals places and numbers (0 - 100)</p>	<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of fractions, decimals, and place value</p> <p>a) Read, write, and represent fractions or mixed numbers using symbols, models, and words <b>Assessment limit:</b> Use denominators that are factors of 24 and numbers (0 - 200)</p> <p>b) Read, write, and represent decimals using symbols, words, or models <b>Assessment limit:</b> Use no more than 3 decimal places (0 - 100)</p> <p>c) Identify and determine equivalent forms of proper fractions <b>Assessment limit:</b> Use denominators that are factors of 100, decimals, or percents (0 - 200)</p> <p>d) Compare and order fractions with or without using the symbols (&lt;, &gt;, or =) <b>Assessment limit:</b> Use no more than 4 fractions or mixed numbers with denominators that are factors of 100 and numbers (0 - 100)</p> <p>e) Compare, order, and describe decimals with or without using the symbols (&lt;, &gt;, or =) <b>Assessment limit:</b> Use no more than 4 decimals with no more than 3 decimal places and numbers (0 - 100)</p>	<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of rational numbers and place value</p> <p>a) Read, write, and represent whole numbers <b>Assessment limit:</b> Use exponential form with powers of 10 (0 - 100,000)</p> <p>b) Read, write, and represent integers <b>Assessment limit:</b> Use integers (-100 to 100)</p> <p>c) Identify and determine equivalent forms of fractions as decimals, as percents, and as ratios <b>Assessment limit:</b> Use proper fractions with denominators as factors of 100, decimals, percents, or ratios (0 - 1000)</p> <p>d) Compare and order fractions, decimals alone or mixed together, with and without relational symbols (&lt;, &gt;, =) <b>Assessment limit:</b> Include no more than 4 fractions with denominators with factors of 100 or decimals with up to 2 decimal places (0 - 100)</p> <p>e) Compare and order integers</p>	<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of rational numbers and place value</p> <p>a) Read, write, and represent whole numbers <b>Assessment limit:</b> Use exponential notation with bases no more than 12 and exponents no more than 3 in standard form (0 - 1000)</p> <p>b) Express decimals using expanded form <b>Assessment limit:</b> Use decimals with no more than 4 decimal places (0 - 100)</p> <p>c) Determine equivalent forms of rational numbers expressed as fractions, decimal, percents, and ratios <b>Assessment limit:</b> Use positive rational numbers (0 - 100)</p> <p>d) Compare, order, and describe rational numbers with or without relational symbols (&lt;, &gt;, =) <b>Assessment limit:</b> Use no more than 4 fractions with denominators that are factors of 300 that are less than 101 (0-100), decimals with no more than 4 decimal places (0-100), percents (0-100) or integers (-100 to 100)</p> <p>e) Express whole numbers and decimals in scientific notation</p>	<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of rational numbers and place value</p> <p>a) Read, write, and represent rational numbers <b>Assessment limit:</b> Use exponential notation or scientific notation (-10,000 to 1,000,000,000)</p> <p>b) Compare, order, and describe rational numbers with and without relational symbols (&lt;, &gt;, =) <b>Assessment limit:</b> Use no more than 4 integers (-100 to 100) or positive rational numbers (0-100) using equivalent forms or absolute value</p>

**PROCESSES OF**  
*Problem Solving*

*Reasoning*  
*Communication*

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**MATHEMATICS**

**VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8**

**STANDARD 6.0 KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC – Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>3. Apply knowledge of money</p> <p>a) Represent money amounts in different ways <b>Assessment limit:</b> Use money amounts (\$0 - \$100)</p> <p>b) Determine the value of a given set of mixed currency <b>Assessment limit:</b> Use coins and bills (\$0 - \$100)</p> <p>c) Compare the value of two sets of mixed currency</p>	<p>3. Apply knowledge of money</p> <p>a) Compare the value of sets of mixed currency <b>Assessment limit:</b> Use 2 sets of mixed currency and money (\$0 - \$100)</p> <p>b) Determine the change from \$100</p>				
<p>B. Number Theory</p> <p>1. Apply number relationships to:</p> <p>a) Identify and describe whole numbers as even or odd <b>Assessment limit:</b> Use whole numbers (0 – 100)</p>	<p>B. Number Theory</p> <p>1. Apply number relationships</p> <p>a) Identify and use divisibility rules <b>Assessment limit:</b> Use the rules for 2, 5, or 10 with whole numbers (0 – 1000)</p> <p>b) Identify factors <b>Assessment limit:</b> Use whole numbers (0 – 24)</p> <p>c) Identify multiples <b>Assessment limit:</b> Use the first 5 multiples of any single digit whole number</p>	<p>B. Number Theory</p> <p>1. Apply number relationships</p> <p>a) Identify or describe numbers as prime or composite <b>Assessment limit:</b> Use whole numbers (0 – 100)</p> <p>b) Identify and use rules of divisibility <b>Assessment limit:</b> Use rules for 2, 3, 5, 9, or 10 and whole numbers (0 - 10,000)</p> <p>c) Identify the greatest common factor <b>Assessment limit:</b> Use 2 numbers whose GCF is no more than 10 and whole numbers (0 – 100)</p> <p>d) Identify a common multiple and the least common multiple <b>Assessment limit:</b> Use no more than 4 single digit whole numbers</p>	<p>B. Number Theory</p> <p>1. Apply number relationships</p> <p>a) Determine prime factorizations for whole numbers and express them using exponential form</p>		

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**VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8**

**STANDARD 6.0 KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC – Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology.**

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Add numbers using a variety of strategies <b>Assessment limit:</b> Use no more than 3 addends, with no more than 3 digits in each addend and whole numbers (0 – 1000)</p> <p>b) Subtract numbers using a variety of strategies <b>Assessment limit:</b> Use no more than 3 digits in the minuend or subtrahend and whole numbers (0 – 999)</p> <p>c) Solve addition and subtraction word problems</p> <p>d) Add and subtract money amounts</p> <p>e) Identify and apply the concept of inverse operations to addition and subtraction</p> <p>f) Represent multiplication and division basic facts using number sentences, pictures, and drawings <b>Assessment limit:</b> Use basic facts of no more than <math>9 \times 9 = 81</math></p> <p>g) Identify and use properties of multiplication <b>Assessment limit:</b> Use the properties of commutative, identity, or zero and whole numbers (0 – 20)</p> <p>h) Multiply a one-digit factor by a two-digit factor using models, pictures, and drawings</p> <p>i) Divide a two-digit dividend by a one-digit divisor using models, pictures, and drawings</p> <p>j) Identify and apply the concept of inverse operations to multiplication and division</p> <p>k) Write a word problem based on multiplication or division number sentences</p>	<p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Add whole numbers <b>Assessment limit:</b> Use up to 3 addends with no more than 4 digits in each addend and whole numbers (0 - 10,000)</p> <p>b) Subtract whole numbers <b>Assessment limit:</b> Use a minuend and subtrahend with no more than 4 digits in each and whole numbers (0 - 9999)</p> <p>c) Multiply whole numbers <b>Assessment limit:</b> Use a one 1-digit factor by up to a 3-digit factor using whole numbers (0 – 1000)</p> <p>d) Divide whole numbers <b>Assessment limit:</b> Use up to a 3-digit dividend by a 1-digit divisor and whole numbers with no remainders (0 - 999)</p> <p>e) Add and subtract proper fractions and mixed numbers <b>Assessment limit:</b> Use 2 proper fractions with a single digit like denominators, 2 mixed numbers with single digit like denominators, or a whole number and a proper fraction with a single digit denominator and numbers (0 – 20)</p> <p>f) Add 2 decimals <b>Assessment limit:</b> Use the same number of decimal places but no more than 2 decimal places and no more than 4 digits including monetary notation and numbers (0 – 100)</p> <p>g) Subtract decimals <b>Assessment limit:</b> Use the same number of decimal places but no more than 2 decimal places and no more than 4 digits including monetary notation and numbers (0 – 100)</p>	<p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Multiply whole numbers <b>Assessment limit:</b> Use a 3-digit factor by another factor with no more than 2-digits and whole numbers (0 - 10,000)</p> <p>b) Divide whole numbers <b>Assessment limit:</b> Use a dividend with no more than a 4-digits by a 2-digit divisor and whole numbers (0 - 9,999)</p> <p>c) Interpret quotients and remainders mathematically and in the context of a problem <b>Assessment limit:</b> Use dividend with no more than a 3-digits by a 1 or 2 digit divisor and whole numbers (0 – 999)</p> <p>d) Add and subtract proper fractions and mixed numbers with answers in simplest form <b>Assessment limit:</b> Use denominators as factors of 24 and numbers (0 – 20)</p> <p>e) Add decimals including money <b>Assessment limit:</b> Use no more than 4 addends and no more than 3 decimal places in each addend and numbers (0 – 1000)</p> <p>f) Subtract decimals including money <b>Assessment limit:</b> Use a minuend and subtrahend with no more than 3 decimal places and numbers (0 – 1000)</p> <p>g) Multiply decimals <b>Assessment limit:</b> Use a decimal in monetary notation by a single digit whole number and numbers (0 – 100)</p> <p>h) Divide decimals by whole numbers</p>	<p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Add and subtract fractions and mixed numbers and express answers in simplest form <b>Assessment limit:</b> Use proper fractions and denominators as factors of 60 (0 – 20)</p> <p>b) Multiply fractions and mixed numbers and express in simplest form <b>Assessment limit:</b> Use denominators as factors of 24 not including 24 (0 – 20)</p> <p>c) Multiply decimals <b>Assessment limit:</b> Use a decimal with no more than 3 digits multiplied by a 2-digit decimal (0 – 1000)</p> <p>d) Divide decimals <b>Assessment limit:</b> Use a decimal with no more than 5 digits divided by a whole number with no more than 2 digits without annexing zeros (0 – 1000)</p> <p>e) Determine a percent of a whole number <b>Assessment limit:</b> Use 10%, 20%, 25% or 50% of a whole number (0 – 1000)</p> <p>f) Simplify numeric expressions using the properties of addition and multiplication <b>Assessment limit:</b> Use the distributive property to simplify numeric expressions with whole numbers (0 – 1000)</p>	<p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Add, subtract, multiply, and divide integers <b>Assessment limit:</b> Use one operation (-100 to 100)</p> <p>b) Add, subtract, and multiply positive fractions and mixed numbers <b>Assessment limit:</b> Use no more than 2 operations and positive fractions or mixed numbers with denominators as factors of 300 less than 101 (0 – 2000)</p> <p>c) Divide fractions and mixed numbers</p> <p>d) Calculate powers of integers and square roots of perfect square whole numbers <b>Assessment limit:</b> Use exponents of no more than 3 for integers (-10 to 20) or square roots of perfect square whole numbers (0 – 100)</p> <p>e) Use the laws of exponents to simplify expressions <b>Assessment limit:</b> Use the rules of exponents (power times power or power divided by power) with the same whole number base (0 – 100) and exponents (0 – 10)</p> <p>f) Identify and use the properties of addition and multiplication to simplify expressions <b>Assessment limit:</b> Use the commutative property of addition or multiplication, associative property of addition or multiplication, or the identity property for one or zero with whole numbers (0 – 100)</p> <p>g) Determine percent of a number</p>	<p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Add, subtract, multiply and divide integers <b>Assessment limit:</b> Use one operation (-1000 to 1000)</p> <p>b) Calculate powers of integers and square roots of perfect square whole numbers <b>Assessment limit:</b> Use powers with bases no more than 12 and exponents no more than 3, or square roots of perfect squares no more than 144</p> <p>c) Identify and use the laws of exponents to simplify expressions <b>Assessment limit:</b> Use the rules of power times power or power divided by power with the same integer as a base (-20 to 20) and exponents (0-10)</p> <p>d) Use properties of addition and multiplication to simplify expressions <b>Assessment limit:</b> Use the commutative property of addition or multiplication, associative property of addition or multiplication, additive inverse property, the distributive property, or the identity property for one or zero with integers (-100 to 100)</p>

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VOLUNTARY STATE CURRICULUM – MATHEMATICS GRADES 3 – 8

STANDARD 6.0 KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC – Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology.

GRADE 3	GRADE 4	GRADE 5	GRADE 6	GRADE 7	GRADE 8
<p>2. Estimation</p> <p>a) Determine the reasonableness of sums and differences</p>	<p>2. Estimation</p> <p>a) Determine the approximate sum and difference of 2 numbers <b>Assessment limit:</b> Use no more than 2 decimal places in each and numbers (0 – 100)</p> <p>b) Determine the approximate product or quotient of 2 numbers <b>Assessment limit:</b> Use a 1-digit factor with the other factor having no more than 2-digits or a 1-digit divisor and no more than a 2-digit dividend and whole numbers (0 – 1000)</p>	<p>2. Estimation</p> <p>a) Determine the approximate sum and difference of decimals <b>Assessment limit:</b> Use no more than 3 addends with no more than 3 decimal places in each addend or the difference of a minuend and subtrahend with no more than 3 decimal places and numbers (0 – 1000)</p> <p>b) Determine approximate product and quotient of whole numbers <b>Assessment limit:</b> Use a 1-digit factor with the other factor having no more than 3 digits or a dividend having no more than 3 digits and a 1-digit divisor and whole numbers (0 – 5000)</p> <p>c) Determine the approximate product of decimals <b>Assessment limit:</b> Use a decimal in monetary notation and a single digit whole number (0 – 100)</p>	<p>2. Estimation</p> <p>a) Determine the approximate products and quotients of decimals <b>Assessment limit:</b> Use a decimal with no more than a 3 digits multiplied by a 2-digit whole number, or the quotient of a decimal with no more than 4 digits in the dividend divided by a 2-digit whole number (0 – 1000)</p> <p>3. Analyze ratios, proportions, and percents</p> <p>a) Represent ratios in a variety of forms</p> <p>b) Use ratios and unit rates to solve problems</p>	<p>2. Estimation</p> <p>a) Determine approximate sums, differences, products, and quotients <b>Assessment limit:</b> Use no more than 3 positive rational numbers (0 – 1000)</p> <p>3. Analyze ratios, proportions, or percents</p> <p>a) Determine equivalent ratios <b>Assessment limit:</b> Use denominators as factors of 300 but less than 101 and whole numbers (0-100)</p> <p>b) Determine and use rates, unit rates, and percents as ratios in the context of a problem <b>Assessment limit:</b> Use whole numbers (0-1000)</p> <p>c) Determine rate of increase and decrease, discounts, simple interest, commission, sales tax</p> <p>d) Determine percent of a number</p>	<p>2. Estimation</p> <p>a) Estimate the square roots of whole numbers <b>Assessment limit:</b> Use whole numbers (0 – 100)</p> <p>3. Analyze ratios, proportions, and percents</p> <p>a) Determine unit rates <b>Assessment limit:</b> Use positive rational numbers (0 – 100)</p> <p>b) Determine or use percents, rates of increase and decrease, discount, commission, sales tax, and simple interest in the context of a problem <b>Assessment limit:</b> Use positive rational numbers (0 - 10,000)</p> <p>c) Solve problems using proportional reasoning <b>Assessment limit:</b> Use positive rational numbers (0 – 1000)</p>

**PROCESSES OF**  
*Problem Solving  
Reasoning  
Communication  
Connections*  
**MATHEMATICS**

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**STANDARD 7.0 PROCESSES OF MATHEMATICS – Students demonstrate the processes of mathematics by making connections and applying reasoning to solve and to communicate their findings.**

<p>A. Problem solving</p> <ol style="list-style-type: none"> <li>1. Apply a variety of concepts, processes, and skills to solve problems             <ol style="list-style-type: none"> <li>a. Identify the question in the problem</li> <li>b. Decide if enough information is present to solve the problem</li> <li>c. Make a plan to solve a problem</li> <li>d. Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation</li> <li>e. Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation</li> <li>f. Identify alternative ways to solve a problem</li> <li>g. Show that a problem might have multiple solutions or no solution</li> <li>h. Extend the solution of a problem to a new problem situation</li> </ol> </li> </ol>
<p>B. Reasoning</p> <ol style="list-style-type: none"> <li>1. Justify ideas or solutions with mathematical concepts or proofs             <ol style="list-style-type: none"> <li>a. Use inductive or deductive reasoning</li> <li>b. Make or test generalizations</li> <li>c. Support or refute mathematical statements or solutions</li> <li>d. Use methods of proof, i.e., direct, indirect, paragraph, or contradiction</li> </ol> </li> </ol>
<p>C. Communication</p> <ol style="list-style-type: none"> <li>1. Present mathematical ideas using words, symbols, visual displays, or technology             <ol style="list-style-type: none"> <li>a. Use multiple representations to express concepts or solutions</li> <li>b. Express mathematical ideas orally</li> <li>c. Explain mathematical ideas in written form</li> <li>d. Express solutions using concrete materials</li> <li>e. Express solutions using pictorial, tabular, graphical, or algebraic methods</li> <li>f. Explain solutions in written form</li> <li>g. Ask questions about mathematical ideas or problems</li> <li>h. Give or use feedback to revise mathematical thinking</li> </ol> </li> </ol>
<p>D. Connections</p> <ol style="list-style-type: none"> <li>1. Relate or apply mathematics within the discipline, to other disciplines, and to life             <ol style="list-style-type: none"> <li>a. Identify mathematical concepts in relationship to other mathematical concepts</li> <li>b. Identify mathematical concepts in relationship to other disciplines</li> <li>c. Identify mathematical concepts in relationship to life</li> <li>d. Use the relationship among mathematical concepts to learn other mathematical concepts</li> </ol> </li> </ol>

**PROCESSES OF**  
*Problem Solving*  
*Reasoning*  
*Communication*  
*Connections*  
**MATHEMATICS**

Note: Highlighted assessment limits will be tested in the no calculator section of MSA.  
 In the assessment limit, (0-10) or (-10 to 10) means all numbers in the problem or the answer will fall within the range of 0 to 10 (including endpoints) or -10 to 10 (including endpoints), respectively.  
 All content standards are tested in MSA but not all objectives. Objectives that have an assessment limit are tested on MSA. Objectives without an assessment limit are not tested on MSA.