## 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.

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

B. Expressions, Equations, and Inequalities

1. Write and identify expressions
   a) Represent numeric quantities using operational symbols (+, -, x, ÷ with no remainders)
   • Assessment limit: Use whole numbers (0 – 100)
   b) Determine equivalent expressions
   • Assessment limit: Use whole numbers (0 – 100)

2. Identify, write, solve, and apply equations and inequalities
   a) Represent relationships using appropriate relational symbols (+, -, x, ÷) on one side and whole numbers (0 – 100)
   • Assessment limit: Use one operational symbol (+, -, x, ÷) and whole numbers (0 – 100)
   c) Find the unknown number(s) in a single number sentence (equation) using operational symbols (+, -, x, ÷)

GRADE 4

B. Expressions, Equations, and Inequalities

1. Write and identify expressions
   a) Represent unknown quantities with one operational symbol (+, -, x, ÷ with no remainders)
   • Assessment limit: Use whole numbers (0 – 100) or money ($50 - $500)
   b) Determine the value of algebraic expressions with one unknown and one operation
   • Assessment limit: Use whole numbers (0 – 200)

2. Identify, write, solve, and apply equations and inequalities
   a) Represent relationships using the appropriate relational symbols (+, -, x, ÷) and one operational symbol (+, -, x, ÷) on either side and use whole numbers (0 – 200)
   • Assessment limit: Use one operational symbol (+, -, x, ÷) and whole numbers (0 – 200)
   b) Find the unknown in an equation using one operation (+, -, x, ÷) on either side and use whole numbers (0 – 200)
   • Assessment limit: Use one unknown no more than 9
   c) Use parenthesis to evaluate a numeric expression
   • Assessment limit: Use one unknown (0 – 100)
   d) Represent algebraic expressions using physical models, manipulatives, and drawings
   • Assessment limit: Use whole numbers (0 – 200)
   e) Describe a real-world situation represented as physical models by combining like terms
   • Assessment limit: Use whole numbers (0 – 200)
   f) Simplify algebraic expressions represented as physical models by combining like terms
   • Assessment limit: Use whole numbers (0 – 200)

GRADE 5

B. Expressions, Equations, and Inequalities

1. Write and evaluate expressions
   a) Write an algebraic expression to represent unknown quantities
   • Assessment limit: Use one unknown and one operation (+, -, x, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100 or with decimals with no more than three decimal places (0 – 200)
   b) Evaluate an algebraic expression
   • Assessment limit: Use one unknown and one operation (+, -, x, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100, or with decimals with no more than three decimal places (0 – 500)

2. Identify, write, solve, and apply equations and inequalities
   a) Write equations or inequalities to represent relationships
   • Assessment limit: Use one variable, the appropriate relational symbols (>, <, =) and one operational symbol (+, -, x, ÷) on either side and use whole numbers (0 – 200), fractions with denominators as factors of 100 (0 – 100), or with decimals with no more than three decimal places (0 – 500)
   b) Simplify algebraic expressions by combining like terms
   • Assessment limit: 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)
   c) Describe a real-world situation represented by an algebraic expression
   • Assessment limit: Use no more than 3 variables with integers (0-400) or proper fractions with denominators as factors of 200-200 (0-200)
   d) Solve for the unknown in a linear equation
   • Assessment limit: Use one or two operations (+, -, x, ÷) and the unknown only once with whole numbers (0 – 500), fractions with denominators as factors of 100 (0 – 500), or decimals with no more than three decimal places (0 – 100)
   e) Solve for the unknown in an inequality
   • Assessment limit: Use one or two operations (+, -, x, ÷) and the unknown only once with whole numbers (0 – 500), fractions with denominators as factors of 100 (0 – 500), or decimals with no more than three decimal places (0 – 100)

GRADE 6

B. Expressions, Equations, and Inequalities

1. Write and evaluate expressions
   a) Write an algebraic expression to represent unknown quantities
   • Assessment limit: Use one unknown and one or two operations (+, -, x, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100, or with decimals with no more than three decimal places (0 – 1000) and rational numbers (-1000 to 1000)
   b) Evaluate an algebraic expression
   • Assessment limit: Use one or two unknowns and up to three operations and rational numbers (-1000 to 1000)

2. Identify, write, solve, and apply equations and inequalities
   a) Write equations or inequalities to represent relationships
   • Assessment limit: Use one variable, the appropriate relational symbols (>, <, =) and no more than 3 operations and rational numbers (0 - 500)

GRADE 7

B. Expressions, Equations, and Inequalities

1. Write and evaluate expressions
   a) Write an algebraic expression to represent unknown quantities
   • Assessment limit: Use one unknown and one or two operations (+, -, x, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100, or with decimals with no more than three decimal places (0 – 1000) and rational numbers (-1000 to 1000)

2. Identify, write, solve, and apply equations and inequalities
   a) Write equations or inequalities to represent relationships
   • Assessment limit: Use one variable, the appropriate relational symbols (>, <, =) and no more than 3 operations and rational numbers (0 - 500)
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<td>e) Apply given formulas to a problem solving situation</td>
<td>• Assessment limit: Use an inequality with one variable with a positive whole number coefficient and one operation ((\leq, \geq, =) with no remainders) using whole numbers or decimals with no more than 2 decimal places (0 – 50).</td>
<td>d) Identify or graph solutions of inequalities on a number line</td>
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<td>f) Apply given formulas to a problem solving situation</td>
<td>• Assessment limit: 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)</td>
<td>f) Write equations and inequalities that describe real-world problems</td>
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<td>• Assessment limit: Use no more than four variables and up to three operations with rational numbers (500 to 500)</td>
<td>g) Write equations and inequalities that describe real-world problems</td>
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**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.
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<td><strong>Assessment limit:</strong> Use no more than 3 ordered pairs of rational numbers with denominators of 2 (-10 to 10)</td>
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<tr>
<td>a) Represent mixed numbers and improper fractions on a number line</td>
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<tr>
<td><strong>Assessment limit:</strong> Use mixed numbers with denominators of 2, 3, 4, 5, 6, 8, 10, or 10</td>
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<tr>
<td>b) Identify positions in a coordinate plane</td>
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<tr>
<td><strong>Assessment limit:</strong> Use the first quadrant and ordered pairs of rational numbers (0 - 50)</td>
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<td><strong>C. Numeric and Graphic Representations of Relationships</strong></td>
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<tr>
<td><strong>Assessment limit:</strong> Use fractions that have denominators of 2, 3, or 4</td>
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<tr>
<td><strong>Assessment limit:</strong> Use the first quadrant and ordered pairs of whole numbers (0 - 20)</td>
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</tbody>
</table>

**Problem Solving**

- **Reasoning**
- **Communication**
- **Connections**

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.
### Standard 2.0: Knowledge of Geometry

#### Grade 7

**A. Plane Geometric Figures**

1. Analyze the properties of plane geometric figures
   a) Identify properties of angles using manipulatives and pictures
   b) Identify, compare, classify, and describe angles in relationship to another angle
   c) Identify and describe polygons
   d) Identify and describe intersecting line segments

**Assessment limit:** Use triangles, quadrilaterals, pentagons, hexagons, or octagons and the number of sides or vertices

2. Analyze geometric relationships
   a) Identify right angles

**Assessment limit:** Use a combination of 2 of the stated polygons

**B. Solid Geometric Figures**

1. Analyze the properties of solid geometric figures
   a) Identify and describe cubes, rectangular prisms, and triangular prisms

**Assessment limit:** Use cubes and the number of edges, faces, or vertices of each face

---

### Grade 8

**A. Plane Geometric Figures**

1. Analyze the properties of plane geometric figures
   a) Identify and describe angles formed by intersecting lines, line segments, and rays
   b) Identify and describe right angles
   c) Determine whether three given side lengths form a right triangle
   d) Identify and describe quadrilaterals
   e) Identify and describe angles formed when parallel lines are cut by a transversal

**Assessment limit:** Use alternate interior, alternate exterior, or corresponding angles

2. Analyze geometric relationships
   a) Determine the measurements of angles formed by intersecting lines, line segments, and rays
   b) Apply right angle concepts to solve real-world problems
   c) Describe the relationship between parts of a circle

**Assessment limit:** Use radius, diameter, or circumference

**B. Solid Geometric Figures**

1. Analyze the properties of solid geometric figures
   a) Identify and describe prisms and pyramids by the number of edges, faces, or vertices
   b) Identify and describe prisms and pyramids by the base

**Assessment limit:** Use triangular prisms and pyramids or rectangular prisms and pyramids

---

**Processes of Problem Solving**

**Mathematics Connections**

In Grade 7, the assessment limit is used in the no-calculator section of MSA.

In Grade 8, 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.
2. Analyze the relationship between plane geometric figures and surfaces of solid geometric figures
   a) Compare a plane figure to surfaces of solid geometric figures
   • Assessment limit: Analyze or identify the number or arrangement of squares needed to make a cube and triangular/rectangular needed to make a triangular pyramid or rectangular pyramid.

2. Analyze the relationship between plane geometric figures and faces of a solid geometric figure
   a) Compare a plane figure to faces of a solid geometric figure
   • Assessment limit: 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.

C. Representation of Geometric Figures

1. Represent plane geometric figures
   a) Sketch triangles, quadrilaterals, pentagons, hexagons, octagons, and circles
   • Assessment limit: Identify, describe, or draw angles, parallel and intersecting line segments
   • Assessment limit: Provide their dimensions as whole numbers (0 – 20) or angle measurements (0° – 179°)
   • Assessment limit: Use the first quadrant given no more than six coordinates
   • Assessment limit: Identify or describe angle relationships
   • Assessment limit: Use perpendicular bisectors or angle bisectors

C. Representation of Geometric Figures

1. Represent plane geometric figures
   a) Identify, describe, and draw angles, parallel line segments, and perpendicular line segments
   • Assessment limit: Provide their dimensions as whole numbers (0 – 20) or angle measures (0° – 179°)
   • Assessment limit: Use the first quadrant given no more than six coordinates
   • Assessment limit: Identify or describe angle relationships
   • Assessment limit: Use perpendicular bisectors or angle bisectors

D. Congruence

1. Analyze congruent figures
   a) Identify and describe geometric figures as congruent
   • Assessment limit: Use the same shape and same size

D. Congruence

1. Analyze geometric figures
   a) Identify and describe geometric figures as congruent
   • Assessment limit: Identify the result in a transformation as being congruent to the original figure

D. Congruence and Similarity

1. Analyze similar figures
   a) Identify or describe geometric figures as similar
   • Assessment limit: Use same shape and different size

D. Congruence and Similarity

1. Analyze congruent figures
   a) Identify and describe congruent polygons and their corresponding parts
   • Assessment limit: Use the length of corresponding sides or the measure of corresponding angles and whole numbers (0 – 1000)
   • Identify and describe similar polygons and their corresponding parts

E. Transformations

1. Analyze a transformation
   a) Identify and describe the results of a slide, flip, and turn
   • Assessment limit: Use horizontal slide, flip over a vertical line, or turn of 90° clockwise around a given point of a geometric figure or picture

E. Transformations

1. Analyze a transformation
   a) Identify and describe the results of translations, reflections, and rotations
   • Assessment limit: Use horizontal line translation, reflection over a vertical line, or rotation of 90° clockwise around a given point of a geometric figure or picture

E. Transformations

1. Analyze a transformation
   a) Identify and describe the results of translations, reflections, and rotations of geometric figures
   • Assessment limit: Use translation along a vertical line, reflection over a horizontal line, or rotation of 90° or 180° around a given point

E. Transformations

1. Analyze a transformation on a coordinate plane
   a) Identify, describe, and plot the results of one transformation (translation, reflection, rotation) on a coordinate plane

E. Transformations

1. Analyze a transformation on a coordinate plane
   a) Identify, describe, and plot the results of multiple transformations on a coordinate plane
   • Assessment limit: Identify or plot the result of two transformations on one figure using translations (horizontal or vertical), reflection (horizontal or vertical), or rotation about a given point (90° or 180°)
   • Identify and describe transformations that result in rotational and reflectional symmetry

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**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.

<table>
<thead>
<tr>
<th>A. Measurement Units</th>
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<th>B. Measurement Tools</th>
<th>B. Measurement Tools</th>
<th>B. Measurement Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Read customary and metric measurement units</td>
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<td>1. Read customary and metric measurement units</td>
<td>1. Measure in customary and metric units</td>
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<tr>
<td>a) Estimate and determine length</td>
<td>a) Estimate and determine length and height</td>
<td>a) Estimate and determine weight or mass</td>
<td>a) Select and use appropriate tools and units</td>
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<tr>
<td>• Assessment limit: Use the nearest centimeter or ½ inch</td>
<td>• Assessment limit: Use the nearest millimeter or ¼ inch</td>
<td>• Assessment limit: Use the nearest gram for weight and the nearest millimeter for mass</td>
<td>• Assessment limit: Measure length to 1/8 inch with a ruler</td>
<td>• Assessment limit: Measure length to the nearest 1/16 inch with a ruler</td>
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<tr>
<td>b) Tell time in days, hours, minutes, and seconds</td>
<td>b) Estimate and determine weight or mass</td>
<td>b) Measure angles</td>
<td>b) Measure a single angle and angles in regular polygons</td>
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<tr>
<td>• Assessment limit: Use the nearest minute using an analog clock</td>
<td>c) Estimate and determine capacity</td>
<td>• Assessment limit: Measure an angle between 0 and 180 to the nearest degree</td>
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<td>• Assessment limit: Use the nearest degree (ºF or ºC)</td>
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<td>d) Estimate and determine weight of objects</td>
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<td>• Assessment limit: Use the nearest pound or ounce</td>
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C. Applications in Measurement

1. Apply measurement concepts
   a) Estimate and determine the perimeter of geometric figures and pictures on a grid
   • Assessment limit: Use counting and whole numbers (0 – 50)
   b) Estimate and determine the area of geometric figures and pictures on a grid
   • Assessment limit: Use counting of whole units and whole numbers (0 – 50)

2. Calculate equivalent measurements
   a) Determine equivalent units of length
   • Assessment limit: Use 12 inches = 1 foot and 3 feet = 1 yard and whole numbers (0 – 30)
   b) Determine equivalent units of time
   c) Determine equivalent units of capacity and weight within the same system

2. Calculate equivalent measurements
   a) Determine equivalent units of length
   • Assessment limit: Use 36 inches = 1 yard and whole numbers (0-100)
   b) Determine equivalent units of time
   c) Determine equivalent units of capacity and weight within the same system

2. Calculate equivalent measurements
   a) Determine start, elapsed, and end time
   • Assessment limit: Use the nearest minute
   b) Determine equivalent units of measurement
   • Assessment limit: Use seconds, minutes, and hours or pints, quarts, and gallons

C. Applications in Measurement

1. Estimate and apply measurement formulas
   a) Determine perimeter
   • Assessment limit: Use polygons with no more than 6 sides given the length of the sides in whole numbers (0 – 100)
   b) Determine area
   • Assessment limit: Use rectangles with the length of the sides in whole numbers (0 – 100)
   c) Determine start time, elapsed time and end time
   • Assessment limit: Use hour and half hour intervals

1. Estimate and apply measurement formulas
   a) Determine perimeter
   • Assessment limit: Use polygons with no more than 8 sides and whole numbers (0 – 500)
   b) Determine area
   • Assessment limit: Use rectangles and whole numbers (0 – 200)
   c) Find the area and perimeter of any closed figure on a grid
   • Assessment limit: Use whole and partial units (0-50)
   d) Estimate and determine volume by counting

1. Estimate and apply measurement formulas
   a) Determine and determine the area of a polygon
   • Assessment limit: Use triangles and whole number dimensions (0 – 200)
   b) Estimate and determine the volume of a rectangular prism
   • Assessment limit: Use rectangular prisms and whole number dimensions (0 – 100)
   c) Estimate and determine the area of a composite figure
   • Assessment limit: Use composite figures with no more than four polygons (triangles or rectangles) and whole number dimensions (0 – 500)
   d) Determine missing dimension of a quadrilateral given the perimeter length
   • Assessment limit: Find length in a quadrilateral given the perimeter with whole number dimensions (0 – 200)
   e) Determine the missing dimension of rectangles
   • Assessment limit: Find length in a square or rectangular given the area and whole number dimensions (0 – 200)

2. Analyze measurement relationships
   a) Determine a missing dimension for a figure using a scale.
   • Assessment limit: Use a scale of 1 cm = ?, ¼ inch = ?, or ½ inch = ?, and whole numbers (0 – 1000)
   b) Determine the distance between 2 points using a drawing and a scale
   • Assessment limit: Use a scale of 1 cm = ?, ¼ inch = ?, or ½ inch = ?, and whole numbers (0 – 1000)

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   b) Determine the distance between 2 points using a drawing and a scale
   • Assessment limit: Use a scale of 1 cm = ?, ¼ inch = ?, or ½ inch = ?, and whole numbers (0 – 1000)

Problem Solving
Reasoning
Communication
Connections
### Standard 4.0: Knowledge of Statistics – Students will collect, organize, display, analyze, or interpret data to make decisions or predictions

<table>
<thead>
<tr>
<th>Grade</th>
<th>Data Displays</th>
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</table>
| **Grade 3** | 1. Collect, organize, and display data  
  a) Collect data by conducting surveys  
  b) Organize and display data to make frequency tables using a variety of intervals  
  **Assessment limit:** Use no more than 4 categories from one set of data and whole numbers (0 – 100)  
  c) Organize and display data in line plots using a variety of scales  
  **Assessment limit:** Use line plots with no more than 20 pieces of unorganized data and a range of no more than 100 and whole numbers (0 – 100)  
  d) Organize and display data to make single bar graphs using a variety of intervals  
  **Assessment limit:** Use no more than 4 categories of data with intervals of 1, 2, 3, or 10 and whole numbers (0 – 100)  
  e) Organize and display data to make line plots using a variety of intervals |
| **Grade 4** | 1. Collect, organize, and display data  
  a) Collect data by conducting surveys to answer a question  
  b) Organize and display data in line plots and frequency tables using a variety of categories and sets of data  
  **Assessment limit:** Use no more than 4 categories from one set of data and whole numbers (0 – 100)  
  c) Organize and display data to make pictographs using a variety of scales  
  **Assessment limit:** Use scales of 2:1, 4:1, or 10:1 and whole numbers (0 – 100)  
  d) Organize and display data to make single bar graphs using a variety of categories and intervals  
  **Assessment limit:** Use no more than 4 categories of data with intervals of 1, 2, 3, or 10 and whole numbers (0 – 100)  
  e) Organize and display data to make line plots using a variety of intervals |
| **Grade 5** | 1. Collect, organize, and display data  
  a) Collect data by conducting surveys to answer a question  
  b) Organize and display data in stem-and-leaf plots  
  **Assessment limit:** Use no more than 20 data points and whole numbers (0 – 100)  
  c) Organize and display data in line plots  
  **Assessment limit:** Use no more than 20 data points and whole numbers (0 – 100)  
  d) Organize and display data in double bar graphs  
  **Assessment limit:** Use no more than 4 categories of data with intervals of 1, 2, 3, or 10 and whole numbers (0 – 100)  
  e) Organize and display data in line graphs  
  **Assessment limit:** Use y-axis with intervals of 1, 2, 3, or 10 and x-axis with no more than 10 time intervals and whole numbers (0 – 100)  
  f) Organize and display data using back-to-back stem-and-leaf plots |
| **Grade 6** | 1. Organize and display data  
  a) Organize and display data to make frequency tables  
  **Assessment limit:** Use no more than 5 categories or ranges of numbers and total frequencies of no more than 25  
  b) Organize and display data to make stem-and-leaf plots  
  **Assessment limit:** Use no more than 20 data points and whole numbers (0 – 99)  
  c) Organize and display data using back-to-back stem-and-leaf plots  
  **Assessment limit:** Use no more than 20 data points and whole numbers (0 – 999)  
  d) Organize and display data using a back-to-back stem-and-leaf plot |
| **Grade 7** | 1. Organize and display data  
  a) Organize and display data using back-to-back stem-and-leaf plots  
  **Assessment limit:** Use no more than 5 categories with data in whole number intervals (0 – 100)  
  b) Organize and display data to make circle graphs  
  **Assessment limit:** Use no more than 5 categories with data in whole number intervals (0 – 100)  
  c) Organize and display data to make circle graphs  
  **Assessment limit:** Use no more than 5 categories with data in whole number intervals (0 – 100)  
  d) Organize and display data using back-to-back stem-and-leaf plots  
  **Assessment limit:** Use no more than 20 data points and whole numbers (0 – 100)  
  e) Organize and display data to make box-and-whisker plots  
  **Assessment limit:** Use no more than 12 pieces of data and whole numbers (0 – 100)  
  f) Organize and display data to make box-and-whisker plots  
  **Assessment limit:** Use no more than 12 pieces of data and whole numbers (0 – 100)  
  g) Organize and display data to make a circle graph  
  **Assessment limit:** Use no more than 5 categories with data in whole number intervals (0 – 100)  
  h) Organize and display data to make a circle graph  
  **Assessment limit:** Use no more than 5 categories with data in whole number intervals (0 – 100)  
  i) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  j) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  k) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  l) Organize and display data to make a scatter plot  
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  m) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  n) Organize and display data to make a scatter plot  
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  p) Organize and display data to make a scatter plot  
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  q) Organize and display data to make a scatter plot  
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  r) Organize and display data to make a scatter plot  
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  s) Organize and display data to make a scatter plot  
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  t) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  u) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  v) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  w) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  x) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  y) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  
  z) Organize and display data to make a scatter plot  
  **Assessment limit:** Use no more than 10 points and whole numbers (0 – 1000)  |
<table>
<thead>
<tr>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
<th>Grade 8</th>
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</thead>
<tbody>
<tr>
<td><strong>B. Data Analysis</strong></td>
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</tr>
<tr>
<td>a) Interpret data contained in tables using a variety of categories and intervals</td>
<td>a) Interpret line plots</td>
<td>a) Interpret frequency tables</td>
<td>a) Interpret tables</td>
<td>a) Interpret data</td>
<td>a) Interpret data</td>
</tr>
<tr>
<td><strong>Assessment limit:</strong> Use no more than 4 categories from one set of data and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use the s-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)</td>
<td><strong>Assessment limit:</strong> Use no more than 5 categories or ranges of numbers and frequencies of no more than 25</td>
<td><strong>Assessment limit:</strong> Use no more than 5 categories using data in whole numbers or percents (0 – 1000)</td>
<td><strong>Assessment limit:</strong> 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)</td>
<td><strong>Assessment limit:</strong> 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)</td>
</tr>
<tr>
<td>b) Interpret data contained in pictographs using a variety of categories and intervals</td>
<td>b) Interpret line plots</td>
<td>b) Read and analyze circle graphs</td>
<td>b) Interpret data contained in line plots</td>
<td>b) Read and analyze circle graphs</td>
<td>b) Interpret and compare data in double line graphs</td>
</tr>
<tr>
<td><strong>Assessment limit:</strong> Use scales of 2:1, 4:1, or 10:1 and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use no more than 20 pieces of data with a range no more than 20 and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use no more than 20 categories or intervals of 1, 2, 5, or 10 and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use no more than 20 pieces of data with a range of no more than 20 and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use no more than 20 pieces of data with a range of no more than 20 and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use no more than 20 pieces of data with a range of no more than 20 and whole numbers (0 – 100)</td>
</tr>
<tr>
<td>c) Interpret data contained in single bar graphs using a variety of categories and intervals</td>
<td>c) Interpret and compare data in line plots</td>
<td>c) Interpret data contained in stem-and-leaf plot</td>
<td>c) Interpret and compare data in double line graphs</td>
<td>c) Interpret and compare data in line plots</td>
<td>c) Interpret and compare data in double line graphs</td>
</tr>
<tr>
<td><strong>Assessment limit:</strong> Use no more than 4 categories of data, intervals of 1, 2, 5, or 10 and whole numbers (0 – 100)</td>
<td><strong>Assessment limit:</strong> Use the s-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)</td>
<td><strong>Assessment limit:</strong> Use no more than 5 categories using data in whole numbers or percents (0 – 1000)</td>
<td><strong>Assessment limit:</strong> Use the choice of graphical display or the scale as leading to faulty interpretation or representation of data</td>
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<td><strong>Assessment limit:</strong> Use the choice of graphical display or the scale as leading to faulty interpretation or representation of data</td>
</tr>
<tr>
<td>d) Interpret data contained in line plots using a variety of intervals</td>
<td>d) Interpret and compare data in data display</td>
<td>d) Determine the best choice of a data display</td>
<td>d) Interpret and compare data in double line graphs</td>
<td>d) Determine the best choice of a data display</td>
<td>d) Interpret and compare data in double line graphs</td>
</tr>
<tr>
<td>2. Describe a set of data</td>
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</tr>
<tr>
<td>a) Determine median, mode, and range</td>
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<td>a) Determine the mean of a given data set or data display</td>
<td>a) Determine the mean of a given data set or data display</td>
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<td>a) Determine the mean of a given data set or data display</td>
</tr>
<tr>
<td><strong>Assessment limit:</strong> Use no more than 8 pieces of data and whole numbers (0 – 100)</td>
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</tr>
<tr>
<td>b) Model the mean of a set of data</td>
<td>b) Model the mean of a set of data</td>
<td>b) Determine the mean of a given data set or data display</td>
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<td>a) Determine the mean of a given data set or data display</td>
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<td>a) Determine the mean of a given data set or data display</td>
</tr>
<tr>
<td><strong>Assessment limit:</strong> Use no more than 8 pieces of data and whole numbers without remainders (0 – 1000)</td>
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<td><strong>Assessment limit:</strong> Use no more than 8 pieces of data and whole numbers without remainders (0 – 1000)</td>
</tr>
<tr>
<td>b) Apply the range and measures of central tendency to solve a problem or answer a question</td>
<td>b) Apply the range and measures of central tendency to solve a problem or answer a question</td>
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</tr>
</tbody>
</table>

**Processes of Mathematics**

**Problem Solving**

**Reasoning**

**Communication**

**Connections**

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.
### STANDARD 5.0 KNOWLEDGE OF PROBABILITY

**Grades 3 – 8**

**A. Sample Space**

1. Identify possible outcomes
   a) Identify possible outcomes that make up the sample space for a given real life situation
   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

**B. Theoretical Probability**

1. Determine the probability of an event comprised of equally likely outcomes
   a) Describe the probability of an event using words
   Assessment limit: Use probability terms of more (or most) likely, less (or least) likely, or equally likely

   B. Theoretical Probability

1. Determine the probability of one simple event comprised of equally likely outcomes
   a) Determine possible outcomes of independent events
   Assessment limit: Use two independent events with no more than 4 outcomes each and an organized list or tree diagram

2. Determine the probability of a second event that is dependent on a first event of equally likely outcomes
   a) Express the probability as a fraction
   Assessment limit: Use a sample space of no more than 6 outcomes
   b) Express the probability as a fraction, a decimal, or a percent
   Assessment limit: Use a sample space of 10, 20, 25, or 50 outcomes
   c) Express the probability of an event as a percent

**C. Experimental Probability**

1. Analyze the results of a probability experiment
   a) Make predictions and express the experimental probability as a fraction, a decimal, or a percent
   Assessment limit: Use no more than 30 results in the sample space

2. Conduct a probability experiment

3. Compare outcomes of theoretical probability with the results of experimental probability

4. Describe the difference between theoretical and experimental probability

**Assessment Limit:**

- Use no more than 3 independent events with a sample space of no more than 6 outcomes in each event.

**Problem Solving, Reasoning, Communication, Connections**

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Date: 6.04
A. Knowledge of Number and Place Value

1. Apply knowledge of whole numbers and place value
   a) Read, write, and represent whole numbers using symbols, words, and models
      • Assessment limit: Use whole numbers (0 - 10,000)
   b) Express whole numbers in expanded form
      • Assessment limit: Use whole numbers (0 - 10,000)
   c) Identify the place value of a digit in a whole number
      • Assessment limit: Use whole numbers (0 - 9,999)
   d) Compare, order, and describe whole numbers with or without using relational symbols (<, >, =)
      • Assessment limit: Use no more than four whole numbers (0 - 10,000)

2. Apply knowledge of fractions
   a) Read, write, and represent fractions as parts of a single region using symbols, words, and models
      • Assessment limit: Use fractions with denominators of 2, 3, and 4
   b) Read, write, and represent fractions as parts of a set using symbols, words, and models
      • Assessment limit: Use fractions with denominators of 2, 3, and 4, and use sets of 2, 3, 4 items, respectively

A. Knowledge of Number and Place Value

1. Apply knowledge of fractions, decimals, and place value
   a) Read, write, and represent fractions or mixed numbers using symbols, words, and models
      • Assessment limit: Use denominators that are factors of 24 and numbers (0 – 200)
   b) Read, write, and represent decimals using symbols, words, or models
      • Assessment limit: Use no more than 3 decimal places (0 – 100)
   c) Identify and determine equivalent forms of fractions as decimals, as percents, and as ratios
      • Assessment limit: Include no more than 4 fractions with denominators as factors of 100, decimals, percents, or ratios (0 – 100)
   d) Compare and order fractions with or without using the symbols (<, >, =)
      • Assessment limit: Use no more than 4 fractions or mixed numbers with denominators that are factors of 100 and decimals with up to 2 decimal places (0 – 100)
   e) Compare, order, and describe decimals with or without using the symbols (<, >, =)
      • Assessment limit: Use no more than 4 decimals with no more than 3 decimal places and numbers (0 – 100)
   f) Express fractions and mixed numbers in scientific notation
      • Assessment limit: 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 1000)
   g) Express whole numbers and decimals in scientific notation
### 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

1. **Apply number relationships to:**
   - Identify and describe whole numbers as even or odd
   - **Assessment limit:** Use whole numbers (0 – 100)

2. **Apply knowledge of money**
   - Represent money amounts in different ways
     - **Assessment limit:** Use money amounts ($0 - $100)
   - Determine the value of a given set of mixed currency
     - **Assessment limit:** Use coins and bills (50 - $100)
   - Compare the value of two sets of mixed currency

#### Grade 4

1. **Apply number relationships to:**
   - Identify and describe whole numbers as even or odd
   - **Assessment limit:** Use whole numbers (0 – 100)

2. **Apply knowledge of money**
   - Represent money amounts in different ways
     - **Assessment limit:** Use money amounts ($0 - $100)
   - Determine the value of a given set of mixed currency
     - **Assessment limit:** Use coins and bills (50 - $100)
   - Compare the value of two sets of mixed currency

#### Grade 5

1. **Apply number relationships to:**
   - Identify and describe whole numbers as even or odd
   - **Assessment limit:** Use whole numbers (0 – 100)

2. **Apply knowledge of money**
   - Represent money amounts in different ways
     - **Assessment limit:** Use money amounts ($0 - $100)
   - Determine the value of a given set of mixed currency
     - **Assessment limit:** Use coins and bills (50 - $100)
   - Compare the value of two sets of mixed currency

#### Grade 6

1. **Apply number relationships to:**
   - Identify and describe whole numbers as even or odd
   - **Assessment limit:** Use whole numbers (0 – 100)

2. **Apply knowledge of money**
   - Represent money amounts in different ways
     - **Assessment limit:** Use money amounts ($0 - $100)
   - Determine the value of a given set of mixed currency
     - **Assessment limit:** Use coins and bills (50 - $100)
   - Compare the value of two sets of mixed currency

#### Grade 7

1. **Apply number relationships to:**
   - Identify and describe whole numbers as even or odd
   - **Assessment limit:** Use whole numbers (0 – 100)

2. **Apply knowledge of money**
   - Represent money amounts in different ways
     - **Assessment limit:** Use money amounts ($0 - $100)
   - Determine the value of a given set of mixed currency
     - **Assessment limit:** Use coins and bills (50 - $100)
   - Compare the value of two sets of mixed currency

#### Grade 8

1. **Apply number relationships to:**
   - Identify and describe whole numbers as even or odd
   - **Assessment limit:** Use whole numbers (0 – 100)

2. **Apply knowledge of money**
   - Represent money amounts in different ways
     - **Assessment limit:** Use money amounts ($0 - $100)
   - Determine the value of a given set of mixed currency
     - **Assessment limit:** Use coins and bills (50 - $100)
   - Compare the value of two sets of mixed currency

Note: Highlighted assessment limits will be tested in the no calculator section of MSA.

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## C. Number Computation

### Grade 3

1. Analyze number relations and compute
   a) Add whole numbers
      - **Assessment limit:** Use up to 3 addends, with no more than 3 digits in each addend and whole numbers (0 – 1000)
   b) Subtract whole numbers
      - **Assessment limit:** Use a minuend and subtrahend with no more than 4 digits in each and whole numbers (0 – 999)
   c) Multiply whole numbers
      - **Assessment limit:** Use a one 3-digit factor by up to a 3-digit factor using whole numbers (0 – 1000)
   d) Divide whole numbers
      - **Assessment limit:** Use up to a 3-digit dividend by a 1-digit divisor and whole numbers (0 – 100)
   e) Add and subtract proper fractions and mixed numbers
      - **Assessment limit:** Use improper fractions with a single digit like denominator, or a whole number and a proper fraction with a single digit like denominator, or a whole number and a proper fraction, or a whole number and a proper fraction with a single digit like denominator and numbers (0 – 20)
   f) Divide a two-digit dividend by a one-digit divisor using models, pictures, and drawings
   g) Identify and apply the concept of inverse operations to multiplication and division
   h) Write a word problem based on multiplication or division number sentences

### Grade 4

1. Analyze number relations and compute
   a) Add whole numbers
      - **Assessment limit:** Use up to 3 addends, with no more than 3 digits in each addend and whole numbers (0 – 1000)
   b) Subtract whole numbers
      - **Assessment limit:** Use a minuend and subtrahend with no more than 4 digits in each and whole numbers (0 – 999)
   c) Multiply whole numbers
      - **Assessment limit:** Use a one 3-digit factor by up to a 3-digit factor using whole numbers (0 – 1000)
   d) Divide whole numbers
      - **Assessment limit:** Use up to a 3-digit dividend by a 1-digit divisor and whole numbers (0 – 100)
   e) Add and subtract proper fractions and mixed numbers
      - **Assessment limit:** Use improper fractions with a single digit like denominator, or a whole number and a proper fraction with a single digit like denominator, or a whole number and a proper fraction, or a whole number and a proper fraction with a single digit like denominator and numbers (0 – 20)
   f) Divide a two-digit dividend by a one-digit divisor using models, pictures, and drawings
   g) Identify and apply the concept of inverse operations to multiplication and division
   h) Write a word problem based on multiplication or division number sentences

### Grade 5

1. Analyze number relations and compute
   a) Add whole numbers
      - **Assessment limit:** Use up to 3 addends, with no more than 3 digits in each addend and whole numbers (0 – 1000)
   b) Subtract whole numbers
      - **Assessment limit:** Use a minuend and subtrahend with no more than 4 digits in each and whole numbers (0 – 999)
   c) Multiply whole numbers
      - **Assessment limit:** Use a one 3-digit factor by up to a 3-digit factor using whole numbers (0 – 1000)
   d) Divide whole numbers
      - **Assessment limit:** Use up to a 3-digit dividend by a 1-digit divisor and whole numbers (0 – 100)
   e) Add and subtract proper fractions and mixed numbers
      - **Assessment limit:** Use improper fractions with a single digit like denominator, or a whole number and a proper fraction with a single digit like denominator, or a whole number and a proper fraction, or a whole number and a proper fraction with a single digit like denominator and numbers (0 – 20)
   f) Divide a two-digit dividend by a one-digit divisor using models, pictures, and drawings
   g) Identify and apply the concept of inverse operations to multiplication and division
   h) Write a word problem based on multiplication or division number sentences
   i) Divide a two-digit dividend by a one-digit divisor using models, pictures, and drawings
   j) Identify and apply the concept of inverse operations to multiplication and division
   k) Write a word problem based on multiplication or division number sentences

### Grade 6

1. Analyze number relations and compute
   a) Add, subtract, multiply, and divide integers
      - **Assessment limit:** Use one operation (1000 to 1000)
   b) Add, subtract, and multiply positive fractions or mixed numbers
      - **Assessment limit:** Use one operation
   c) Multiply decimals
      - **Assessment limit:** Use one operation
   d) Divide decimals
      - **Assessment limit:** Use one operation
   e) Solve addition and subtraction word problems
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   f) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   g) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   h) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   i) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   j) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)

### Grade 7

1. Analyze number relations and compute
   a) Add, subtract, multiply, and divide integers
      - **Assessment limit:** Use one operation (1000 to 1000)
   b) Add, subtract, and multiply positive fractions or mixed numbers
      - **Assessment limit:** Use one operation
   c) Multiply decimals
      - **Assessment limit:** Use one operation
   d) Divide decimals
      - **Assessment limit:** Use one operation
   e) Solve addition and subtraction word problems
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   f) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   g) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   h) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   i) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   j) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)

### Grade 8

1. Analyze number relations and compute
   a) Add, subtract, multiply, and divide integers
      - **Assessment limit:** Use one operation (1000 to 1000)
   b) Add, subtract, and multiply positive fractions or mixed numbers
      - **Assessment limit:** Use one operation
   c) Multiply decimals
      - **Assessment limit:** Use one operation
   d) Divide decimals
      - **Assessment limit:** Use one operation
   e) Solve addition and subtraction word problems
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   f) Subtract decimals including money
      - **Assessment limit:** Use up to a 3-digit addend, with no more than 3 digits in each addend and whole numbers (0 – 999)
   g) Subtract decimals including money
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Date: 6.04
## 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
1. **Estimation**
   - a) Determine the reasonableness of sums and differences
      - **Assessment limit:** Use no more than 2 decimal places in each and numbers (0 – 100)

2. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)
      - **Assessment limit:** 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)

3. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

### GRADE 4
2. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

3. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

### GRADE 5
2. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

3. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

### GRADE 6
2. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

3. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

### GRADE 7
2. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

3. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

### GRADE 8
2. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)

3. **Estimation**
   - a) Determine the approximate sum and difference of decimals
      - **Assessment limit:** 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 – 100)
**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.

<table>
<thead>
<tr>
<th>A. Problem solving</th>
<th>B. Reasoning</th>
<th>C. Communication</th>
<th>D. Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply a variety of concepts, processes, and skills to solve problems</td>
<td>1. Justify ideas or solutions with mathematical concepts or proofs</td>
<td>1. Present mathematical ideas using words, symbols, visual displays, or technology</td>
<td>1. Relate or apply mathematics within the discipline, to other disciplines, and to life</td>
</tr>
<tr>
<td>a. Identify the question in the problem</td>
<td>a. Use inductive or deductive reasoning</td>
<td>a. Use multiple representations to express concepts or solutions</td>
<td>a. Identify mathematical concepts in relationship to other mathematical concepts</td>
</tr>
<tr>
<td>b. Decide if enough information is present to solve the problem</td>
<td>b. Make or test generalizations</td>
<td>b. Express mathematical ideas orally</td>
<td>b. Identify mathematical concepts in relationship to other disciplines</td>
</tr>
<tr>
<td>c. Make a plan to solve a problem</td>
<td>c. Support or refute mathematical statements or solutions</td>
<td>c. Explain mathematically ideas in written form</td>
<td>c. Identify mathematical concepts in relationship to life</td>
</tr>
<tr>
<td>d. Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation</td>
<td>d. Use methods of proof, i.e., direct, indirect, paragraph, or contradiction</td>
<td>d. Express solutions using concrete materials</td>
<td>d. Use the relationship among mathematical concepts to learn other mathematical concepts</td>
</tr>
<tr>
<td>e. Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation</td>
<td></td>
<td>e. Express solutions using pictorial, tabular, graphical, or algebraic methods</td>
<td></td>
</tr>
<tr>
<td>f. Identify alternative ways to solve a problem</td>
<td></td>
<td>f. Explain solutions in written form</td>
<td></td>
</tr>
<tr>
<td>g. Show that a problem might have multiple solutions or no solution</td>
<td></td>
<td>g. Ask questions about mathematical ideas or problems</td>
<td></td>
</tr>
<tr>
<td>h. Extend the solution of a problem to a new problem situation</td>
<td></td>
<td>h. Give or use feedback to revise mathematical thinking</td>
<td></td>
</tr>
</tbody>
</table>

**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.

Date 6.04