

Correlation of TechCONNECT to  
Ohio Academic Content Standards  
Indicators by Grade Level  
**Mathematics, 6–8**

**Grade Six**

**Number, Number Sense and Operations Standard**

*Number and Number  
Systems*

1. Decompose and recompose whole numbers using factors and exponents (e.g.,  $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$ ), and explain why “squared” means “second power” and “cubed” means “third power.”

**TechCONNECT Activities:**  
AC080, AC110, AC113, AC114

2. Find and use the prime factorization of composite numbers. For example:
  - a. Use the prime factorization to recognize the greatest common factor (GCF).
  - b. Use the prime factorization to recognize the least common multiple (LCM).
  - c. Apply the prime factorization to solve problems and explain solutions.

**TechCONNECT Activities:**

3. Explain why a number is referred to as being “rational,” and recognize that the expression  $\frac{a}{b}$  can mean  $a$  parts of size  $\frac{1}{b}$  each,  $a$  divided by  $b$ , or the ratio of  $a$  to  $b$ .

**TechCONNECT Activities:**  
AC110, AC114, AC117

4. Describe what it means to find a specific percent of a number, using real-life examples.

**TechCONNECT Activities:**  
AC043, AC045, AC082, AC100,  
AC101, AC102, AC110, AC111,  
AC113, AC114, AC116, AC117,  
AC123

5. Use models and pictures to relate concepts of ratio, proportion and percent, including percents less than 1 and greater than 100.

**TechCONNECT Activities:**  
AC037, AC043, AC045, AC100,  
AC110, AC113, AC114, AC116,  
AC117, AC119, AC123

*Meaning of Operations*

6. Use the order of operations, including the use of exponents, decimals and rational numbers, to simplify numerical expressions.
7. Use simple expressions involving integers to represent and solve problems; e.g., if a running back loses 15 yards on the first carry but gains 8 yards on the second carry, what is the net gain/loss?
8. Represent multiplication and division situations involving fractions and decimals with models and visual representations; e.g., show with pattern blocks what it means to take  $2\frac{2}{3} \div \frac{1}{6}$ .
9. Give examples of how ratios are used to represent comparisons; e.g., part-to-part, part-to-whole, whole-to-part.
10. Recognize that a quotient may be larger than the dividend when the divisor is a fraction; e.g.,  $6 \div \frac{1}{2} = 12$ .

**TechCONNECT Activities:**  
AC033, AC041, AC043, AC049,  
AC110, AC113, AC114, AC116,  
AC122, AC123

**TechCONNECT Activities:**  
AC033, AC041, AC043, AC101,  
AC110, AC113

**TechCONNECT Activities:**  
AC110, AC113, AC114, AC116,  
AC117, AC123

**TechCONNECT Activities:**  
AC110, AC113, AC114

**TechCONNECT Activities:**  
AC110, AC113, AC116, AC117

*Computation and Estimation*

11. Perform fraction and decimal computations and justify their solutions; e.g., using manipulatives, diagrams, mathematical reasoning.
12. Develop and analyze algorithms for computing with fractions and decimals, and demonstrate fluency in their use.
13. Estimate reasonable solutions to problem situations involving fractions and decimals; e.g.,  $\frac{7}{8} + \frac{12}{13} \approx 2$  and  $4.23 \times 5.8 \approx 25$ .
14. Use proportional reasoning, ratios and percents to represent problem situations and determine the reasonableness of solutions.
15. Determine the percent of a number and solve related problems; e.g., find the percent markdown if the original price was \$140, and the sale price is \$100.

**TechCONNECT Activities:**  
AC110, AC113, AC114, AC116,  
AC117, AC123

**TechCONNECT Activities:**  
AC110, AC113, AC114, AC116,  
AC117, AC123

**TechCONNECT Activities:**  
AC110, AC113, AC114, AC116,  
AC117, AC123

**TechCONNECT Activities:**  
AC037, AC043, AC045, AC100,  
AC110, AC113, AC114, AC116,  
AC117, AC119, AC123

**TechCONNECT Activities:**  
AC043, AC045, AC100, AC101,  
AC110, AC113, AC114, AC116,  
AC117, AC123

## Measurement Standard

### *Measurement Units*

1. Understand and describe the difference between surface area and volume.

**TechCONNECT Activities:**  
AC034, AC038, AC112, AC114

### *Use Measurement Techniques and Tools*

2. Use strategies to develop formulas for finding circumference and area of circles, and to determine the area of sectors; e.g.,  $\frac{1}{2}$  circle,  $\frac{2}{3}$  circle,  $\frac{1}{3}$  circle,  $\frac{1}{4}$  circle.

**TechCONNECT Activities:**  
AC034, AC112, AC114

3. Estimate perimeter or circumference and area for circles, triangles and quadrilaterals, and surface area and volume for prisms and cylinders by:
  - a. estimating lengths using string or links, areas using tiles or grid, and volumes using cubes;
  - b. measuring attributes (diameter, side lengths, or heights) and using established formulas for circles, triangles, rectangles, parallelograms and rectangular prisms.

**TechCONNECT Activities:**  
AC034, AC038, AC112, AC114, AC119

4. Determine which measure (perimeter, area, surface area, volume) matches the context for a problem situation; e.g., perimeter is the context for fencing a garden, surface area is the context for painting a room.

**TechCONNECT Activities:**  
AC034, AC038, AC112, AC114, AC119

5. Understand the difference between perimeter and area, and demonstrate that two shapes may have the same perimeter, but different areas or may have the same area, but different perimeters.

**TechCONNECT Activities:**  
AC034, AC112, AC114

6. Describe what happens to the perimeter and area of a two-dimensional shape when the measurements of the shape are changed; e.g. length of sides are doubled.

**TechCONNECT Activities:**  
AC034, AC112, AC114, AC119

## Geometry and Spatial Sense Standard

<i>Characteristics and Properties</i>	1. Classify and describe two-dimensional and three-dimensional geometric figures and objects by using their properties; e.g., interior angle measures, perpendicular/parallel sides, congruent angles/sides.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC119
	2. Use standard language to define geometric vocabulary: vertex, face, altitude, diagonal, isosceles, equilateral, acute, obtuse and other vocabulary as appropriate.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117
	3. Use multiple classification criteria to classify triangles; e.g., right scalene triangle.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117
	4. Identify and define relationships between planes; i.e., parallel, perpendicular and intersecting.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117
<i>Spatial Relationships</i>	5. Predict and describe sizes, positions and orientations of two-dimensional shapes after transformations such as reflections, rotations, translations and dilations.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC124
<i>Transformations and Symmetry</i>	6. Draw similar figures that model proportional relationships; e.g., model similar figures with a 1 to 2 relationship by sketching two of the same figure, one with corresponding sides twice the length of the other.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC119, AC124
<i>Visualization and Geometric Models</i>	7. Build three-dimensional objects with cubes, and sketch the two-dimensional representations of each side; i.e., projection sets.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117

## Patterns, Functions and Algebra Standard

<i>Use Patterns, Relations and Functions</i>	1. Represent and analyze patterns, rules and functions, using physical materials, tables and graphs.	<b>TechCONNECT Activities:</b> AC038, AC039, AC041, AC042, AC043, AC045, AC049, AC059, AC087, AC100, AC101, AC102, AC112, AC113, AC114, AC116, AC117, AC123, AC155
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|                                      | 2. Use words and symbols to describe numerical and geometric patterns, rules and functions.  | <b>TechCONNECT Activities:</b><br>AC038, AC041, AC042, AC043, AC049, AC078, AC112, AC114, AC117   |
| <i>Use Algebraic Representations</i> | 3. Recognize and generate equivalent forms of algebraic expressions, and explain how the commutative, associative and distributive properties can be used to generate equivalent forms; e.g., perimeter as $2(l + w)$ or $2l + 2w$ . | <b>TechCONNECT Activities:</b><br>AC038, AC080, AC114, AC117  |
|                                      | 4. Solve simple linear equations and inequalities using physical models, paper and pencil, tables and graphs.  | <b>TechCONNECT Activities:</b><br>AC038, AC043, AC049, AC059, AC087, AC113, AC114, AC116, AC117, AC122, AC123, AC155  |
|                                      | 5. Produce and interpret graphs that represent the relationship between two variables.   | <b>TechCONNECT Activities:</b><br>AC038, AC039, AC042, AC043, AC049, AC059, AC087, AC100, AC101, AC102, AC110, AC111, AC113, AC114, AC116, AC117, AC122, AC123, AC155 |
|                                      | 6. Evaluate simple expressions by replacing variables with given values, and use formulas in problem-solving situations.   | <b>TechCONNECT Activities:</b><br>AC033, AC038, AC039, AC041, AC042, AC049, AC065, AC071, AC082, AC101, AC102, AC110, AC111, AC112, AC114, AC117, AC122               |
| <i>Analyze Change</i>                | 7. Identify and describe situations with constant or varying rates of change, and compare them.  | <b>TechCONNECT Activities:</b><br>AC038, AC042, AC049, AC102, AC110, AC111, AC114, AC117, AC122   |
|                                      | 8. Use technology to analyze change; e.g., use computer applications or graphing calculators to display and interpret rate of change.  | <b>TechCONNECT Activities:</b><br>AC038, AC042, AC043, AC049, AC087, AC110, AC111, AC114, AC117, AC122  |

## Data Analysis and Probability Standard

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| <i>Data Collection</i> | 1. Read, construct and interpret line graphs, circle graphs and histograms. | <b>TechCONNECT Activities:</b><br>AC009, AC016, AC039, AC042, AC043, AC049, AC059, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155 |
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	2. Select, create and use graphical representations that are appropriate for the type of data collected.	<b>TechCONNECT Activities:</b> AC009, AC016, AC039, AC041, AC042, AC043, AC049, AC059, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
	3. Compare representations of the same data in different types of graphs, such as a bar graph and circle graph.	<b>TechCONNECT Activities:</b> AC009, AC016, AC039, AC042, AC043, AC049, AC059, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
<i>Statistical Methods</i>	4. Understand the different information provided by measures of center (mean, mode and median) and measures of spread (range).	<b>TechCONNECT Activities:</b> AC009, AC016, AC033, AC037, AC041, AC042, AC043, AC082, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC119, AC123
	5. Describe the frequency distribution of a set of data, as shown in a histogram or frequency table, by general appearance or shape; e.g., number of modes, middle of data, level of symmetry, outliers.	<b>TechCONNECT Activities:</b> AC009, AC016, AC033, AC037, AC042, AC043, AC113, AC114, AC116, AC117, AC123, AC124
	6. Make logical inferences from statistical data.	<b>TechCONNECT Activities:</b> AC009, AC016, AC037, AC041, AC042, AC043, AC082, AC100, AC102, AC113, AC114, AC116, AC117, AC123
<i>Probability</i>	7. Design an experiment to test a theoretical probability and explain how the results may vary.	<b>TechCONNECT Activities:</b> AC039, AC041, AC042, AC043, AC113, AC116, AC117

## Grade Seven

### Number, Number Sense and Operations Standard

<i>Number and Number Systems</i>	1. Demonstrate an understanding of place value using powers of 10 and write large numbers in scientific notation.	<b>TechCONNECT Activities:</b> AC113
	2. Explain the meaning of exponents that are negative or 0.	<b>TechCONNECT Activities:</b> AC113, AC114

	3. Describe differences between rational and irrational numbers; e.g., use technology to show that some numbers (rational) can be expressed as terminating or repeating decimals and others (irrational) as non-terminating and non-repeating decimals.	<b>TechCONNECT Activities:</b> AC110, AC113, AC114, AC116, AC123
<i>Meaning of Operations</i>	4. Use order of operations and properties to simplify numerical expressions involving integers, fractions and decimals.	<b>TechCONNECT Activities:</b> AC033, AC041, AC049, AC110, AC113, AC114, AC116, AC117, AC123
	5. Explain the meaning and effect of adding, subtracting, multiplying and dividing integers; e.g., how adding two integers can result in a lesser value.	<b>TechCONNECT Activities:</b> AC113
<i>Computation and Estimation</i>	6. Simplify numerical expressions involving integers and use integers to solve real-life problems.	<b>TechCONNECT Activities:</b> AC033, AC041, AC082, AC087, AC095, AC100, AC101, AC102, AC110, AC111, AC112, AC113, AC116, AC117, AC123
	7. Solve problems using the appropriate form of a rational number (fraction, decimal or percent).	<b>TechCONNECT Activities:</b> AC033, AC041, AC043, AC045, AC087, AC100, AC101, AC110, AC113, AC114, AC116, AC117, AC123
	8. Develop and analyze algorithms for computing with percents and integers, and demonstrate fluency in their use.	<b>TechCONNECT Activities:</b> AC110, AC113, AC114, AC116, AC117, AC123
	9. Represent and solve problem situations that can be modeled by and solved using concepts of absolute value, exponents and square roots (for perfect squares).	<b>TechCONNECT Activities:</b> AC113, AC114

## Measurement Standard

<i>Measurement Units</i>	1. Select appropriate units for measuring derived measurements; e.g., miles per hour, revolutions per minute.	<b>TechCONNECT Activities:</b> AC065, AC114, AC119
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	2. Convert units of area and volume within the same measurement system using proportional reasoning and a reference table when appropriate; e.g., square feet to square yards, cubic meters to cubic centimeters.	<b>TechCONNECT Activities:</b> AC112, AC114, AC119
<i>Use Measurement Techniques and Tools</i>	3. Estimate a measurement to a greater degree of precision than the tool provides.	<b>TechCONNECT Activities:</b> AC112, AC114, AC119
	4. Solve problems involving proportional relationships and scale factors; e.g., scale models that require unit conversions within the same measurement system.	<b>TechCONNECT Activities:</b> AC112, AC114, AC119
	5. Analyze problem situations involving measurement concepts, select appropriate strategies, and use an organized approach to solve narrative and increasingly complex problems.	<b>TechCONNECT Activities:</b> AC065, AC095, AC101, AC112, AC114, AC119
	6. Use strategies to develop formulas for finding area of trapezoids and volume of cylinders and prisms.	<b>TechCONNECT Activities:</b> AC078, AC112, AC114
	7. Develop strategies to find the area of composite shapes using the areas of triangles, parallelograms, circles and sectors.	<b>TechCONNECT Activities:</b> AC078, AC112, AC114
	8. Understand the difference between surface area and volume and demonstrate that two objects may have the same surface area, but different volumes or may have the same volume, but different surface areas.	<b>TechCONNECT Activities:</b> AC034, AC038, AC112, AC114
	9. Describe what happens to the surface area and volume of a three- dimensional object when the measurements of the object are changed; e.g., length of sides are doubled.	<b>TechCONNECT Activities:</b> AC034, AC078, AC112, AC114, AC119

## Geometry and Spatial Sense Standard

<i>Characteristics and Properties</i>	1. Use proportional reasoning to describe and express relationships between parts and attributes of similar and congruent figures.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC119
	2. Determine sufficient (not necessarily minimal) properties that define a specific two-dimensional figure or three-dimensional object. For example: a. Determine when one set of figures is a subset of another; e.g., all squares are rectangles. b. Develop a set of properties that eliminates all but the desired figure; e.g., only squares are quadrilaterals with all sides congruent and all angles congruent.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117
	3. Use and demonstrate understanding of the properties of triangles. For example: a. Use Pythagorean Theorem to solve problems involving right triangles. b. Use triangle angle sum relationships to solve problems.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117
	4. Determine necessary conditions for congruence of triangles.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117
	5. Apply properties of congruent or similar triangles to solve problems involving missing lengths and angle measures.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC119
<i>Spatial Relationships</i>	6. Determine and use scale factors for similar figures to solve problems using proportional reasoning.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC119
<i>Transformations and Symmetry</i>	7. Identify the line and rotation symmetries of two-dimensional figures to solve problems.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117, AC124
	8. Perform translations, reflections, rotations and dilations of two-dimensional figures using a variety of methods (paper folding, tracing, graph paper).	<b>TechCONNECT Activities:</b> AC043, AC078, AC112, AC113, AC114, AC117, AC124

- Visualization and Geometric Models*
9. Draw representations of three-dimensional geometric objects from different views.

**TechCONNECT Activities:**  
AC078, AC112, AC113, AC114,  
AC117

## Patterns, Functions and Algebra Standard

- Use Patterns, Relations and Functions*
1. Represent and analyze patterns, rules and functions with words, tables, graphs and simple variable expressions.

**TechCONNECT Activities:**  
AC038, AC039, AC041, AC042,  
AC043, AC045, AC049, AC059,  
AC078, AC087, AC100, AC101,  
AC102, AC111, AC112, AC113,  
AC114, AC116, AC117, AC123,  
AC155

2. Generalize patterns by describing in words how to find the next term.

**TechCONNECT Activities:**  
AC038, AC039, AC041, AC042,  
AC078, AC114, AC117

3. Recognize and explain when numerical patterns are linear or nonlinear progressions; e.g., 1, 3, 5, 7... is linear and 1, 3, 4, 8, 16... is nonlinear.

**TechCONNECT Activities:**  
AC038, AC039, AC041, AC042,  
AC114, AC117, AC122

*Use Algebraic Representations*

4. Create visual representations of equation-solving processes that model the use of inverse operations.

**TechCONNECT Activities:**  
AC038, AC114, AC117, AC120

5. Represent linear equations by plotting points in the coordinate plane.

**TechCONNECT Activities:**  
AC038, AC039, AC042, AC080,  
AC114, AC117, AC122

6. Represent inequalities on a number line or a coordinate plane.

**TechCONNECT Activities:**  
AC038, AC080, AC114, AC117

7. Justify that two forms of an algebraic expression are equivalent, and recognize when an expression is simplified; e.g.,  $4m = m + m + m + m$  or  $a \cdot 5 + 4 = 5a + 4$ .

**TechCONNECT Activities:**  
AC038, AC080, AC114, AC117

8. Use formulas in problem-solving situations.

**TechCONNECT Activities:**  
AC038, AC041, AC042, AC049,  
AC065, AC071, AC082, AC100,  
AC101, AC110, AC111, AC112,  
AC114, AC117

9. Recognize a variety of uses for variables; e.g., placeholder for an unknown quantity in an equation, generalization for a pattern, formula.

**TechCONNECT Activities:**  
AC038, AC041, AC042, AC049,  
AC065, AC071, AC082, AC110,  
AC111, AC112, AC114, AC117,  
AC120

- Analyze Change*
10. Analyze linear and simple nonlinear relationships to explain how a change in one variable results in the change of another.  
**TechCONNECT Activities:**  
AC038, AC039, AC042, AC049, AC110, AC111, AC112, AC114, AC117, AC122
  11. Use graphing calculators or computers to analyze change; e.g., distance-time relationships.  
**TechCONNECT Activities:**  
AC038, AC042, AC043, AC049, AC110, AC111, AC112, AC114, AC117, AC122

## Data Analysis and Probability Standard

- Data Collection*
1. Read, create and interpret box-and-whisker plots, stem-and-leaf plots, and other types of graphs, when appropriate.  
**TechCONNECT Activities:**  
AC009, AC016, AC039, AC042, AC043, AC049, AC059, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
  2. Analyze how decisions about graphing affect the graphical representation; e.g., scale, size of classes in a histogram, number of categories in a circle graph.  
**TechCONNECT Activities:**  
AC009, AC016, AC039, AC042, AC043, AC049, AC059, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
- Statistical Methods*
3. Analyze a set of data by using and comparing combinations of measures of center (mean, mode, median) and measures of spread (range, quartile, interquartile range), and describe how the inclusion or exclusion of outliers affects those measures.  
**TechCONNECT Activities:**  
AC009, AC016, AC033, AC037, AC041, AC042, AC043, AC045, AC082, AC100, AC102, AC113, AC114, AC116, AC117, AC119, AC123
  4. Construct opposing arguments based on analysis of the same data, using different graphical representations.  
**TechCONNECT Activities:**  
AC009, AC016, AC037, AC039, AC041, AC042, AC043, AC049, AC059, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123
  5. Compare data from two or more samples to determine how sample selection can influence results.  
**TechCONNECT Activities:**  
AC009, AC016, AC037, AC041, AC042, AC043, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123
  6. Identify misuses of statistical data in articles, advertisements, and other media.  
**TechCONNECT Activities:**  
AC009, AC016, AC041, AC042, AC043, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123

- Probability*
7. Compute probabilities of compound events; e.g., multiple coin tosses or multiple rolls of number cubes, using such methods as organized lists, tree diagrams and area models.  
**TechCONNECT Activities:**  
AC039, AC041, AC042, AC043, AC113, AC116, AC117
  8. Make predictions based on theoretical probabilities, design and conduct an experiment to test the predictions, compare actual results to predicted results, and explain differences.  
**TechCONNECT Activities:**  
AC039, AC041, AC042, AC043, AC113, AC116, AC117

## Grade Eight

### Number, Number Sense and Operations Standard

- Number and Number Systems*
1. Use scientific notation to express large numbers and small numbers between 0 and 1.  
**TechCONNECT Activities:**  
AC113
  2. Recognize that natural numbers, whole numbers, integers, rational numbers and irrational numbers are subsets of the real number system.  
**TechCONNECT Activities:**  
AC110, AC113
- Meaning of Operations*
3. Apply order of operations to simplify expressions and perform computations involving integer exponents and radicals.  
**TechCONNECT Activities:**  
AC033, AC041, AC049, AC113, AC114
  4. Explain and use the inverse and identity properties and use inverse relationships (addition/subtraction, multiplication/division, squaring/square roots) in problem solving situations.  
**TechCONNECT Activities:**  
AC113, AC114, AC117
- Computation and Estimation*
5. Determine when an estimate is sufficient and when an exact answer is needed in problem situations, and evaluate estimates in relation to actual answers; e.g., very close, less than, greater than.  
**TechCONNECT Activities:**  
AC041, AC110, AC113
  6. Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.  
**TechCONNECT Activities:**  
AC041, AC043, AC045, AC100, AC101, AC110, AC113, AC114, AC116, AC117, AC119, AC123

7. Find the square root of perfect squares, and approximate the square root of non-perfect squares as consecutive integers between which the root lies; e.g.,  $\sqrt{130}$  is between 11 and 12.
8. Add, subtract, multiply, divide and compare numbers written in scientific notation.

**TechCONNECT Activities:**  
AC113

**TechCONNECT Activities:**  
AC113

## Measurement Standard

### *Measurement Units*

1. Compare and order the relative size of common U.S. customary units and metric units; e.g., mile and kilometer, gallon and liter, pound and kilogram.
2. Use proportional relationships and formulas to convert units from one measurement system to another; e.g., degrees Fahrenheit to degrees Celsius.

**TechCONNECT Activities:**  
AC034, AC038, AC065, AC114,  
AC119

**TechCONNECT Activities:**  
AC034, AC065, AC114, AC119

### *Use Measurement Techniques and Tools*

3. Use appropriate levels of precision when calculating with measurements.
4. Derive formulas for surface area and volume and justify them using geometric models and common materials. For example, find:
  - a. the surface area of a cylinder as a function of its height and radius;
  - b. that the volume of a pyramid (or cone) is one-third of the volume of a prism (or cylinder) with the same base area and height.
5. Determine surface area for pyramids by analyzing their parts.
6. Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.

**TechCONNECT Activities:**  
AC034, AC065, AC114, AC119

**TechCONNECT Activities:**  
AC034, AC038, AC078, AC112,  
AC114, AC117

**TechCONNECT Activities:**  
AC034, AC078, AC112, AC114,  
AC117

**TechCONNECT Activities:**  
AC034, AC043, AC049, AC059,  
AC065, AC071, AC082, AC087,  
AC100, AC101, AC102, AC111,  
AC112, AC113, AC114, AC116,  
AC117, AC119, AC123, AC155

7. Apply proportional reasoning to solve problems involving indirect measurements or rates.  
**TechCONNECT Activities:**  
AC034, AC065, AC114, AC117, AC119
8. Find the sum of the interior and exterior angles of regular convex polygons with and without measuring the angles with a protractor.  
**TechCONNECT Activities:**  
AC078, AC112, AC114, AC117
9. Demonstrate understanding of the concepts of perimeter, circumference and area by using established formulas for triangles, quadrilaterals, and circles to determine the surface area and volume of prisms, pyramids, cylinders, spheres and cones. (Note: Only volume should be calculated for spheres and cones.)  
**TechCONNECT Activities:**  
AC034, AC038, AC078, AC112, AC114, AC117
10. Use conventional formulas to find the surface area and volume of prisms, pyramids and cylinders and the volume of spheres and cones to a specified level of precision.  
**TechCONNECT Activities:**  
AC034, AC038, AC078, AC112, AC114, AC117

## Geometry and Spatial Sense Standard

### *Characteristics and Properties*

1. Make and test conjectures about characteristics and properties (e.g., sides, angles, symmetry) of two-dimensional figures and three-dimensional objects.  
**TechCONNECT Activities:**  
AC078, AC112, AC113, AC114, AC117, AC124
2. Recognize the angles formed and the relationship between the angles when two lines intersect and when parallel lines are cut by a transversal.  
**TechCONNECT Activities:**  
AC078, AC112, AC113, AC114, AC117, AC124
3. Use proportions in several forms to solve problems involving similar figures (part-to-part, part-to-whole, corresponding sides between figures).  
**TechCONNECT Activities:**  
AC034, AC078, AC112, AC113, AC114, AC117, AC119, AC124

### *Spatial Relationships*

4. Represent and analyze shapes using coordinate geometry; e.g., given three vertices and the type of quadrilateral, find the coordinates of the fourth vertex.  
**TechCONNECT Activities:**  
AC078, AC080, AC112, AC113, AC114, AC117

<i>Transformations and Symmetry</i>	5. Draw the results of translations, reflections, rotations and dilations of objects in the coordinate plane, and determine properties that remain fixed; e.g., lengths of sides remain the same under translations.	<b>TechCONNECT Activities:</b> AC078, AC080, AC112, AC113, AC114, AC117, AC124
<i>Visualization and Geometric Models</i>	6. Draw nets for a variety of prisms, pyramids, cylinders and cones.	<b>TechCONNECT Activities:</b> AC078, AC112, AC113, AC114, AC117

### Patterns, Functions and Algebra Standard

<i>Use Patterns, Relations and Functions</i>	1. Relate the various representations of a relationship; i.e., relate a table to graph, description and symbolic form.	<b>TechCONNECT Activities:</b> AC038, AC039, AC041, AC042, AC043, AC049, AC059, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
	2. Generalize patterns and sequences by describing how to find the $n$ th term.	<b>TechCONNECT Activities:</b> AC038, AC041, AC042, AC114, AC117
	3. Identify functions as linear or nonlinear based on information given in a table, graph or equation.	<b>TechCONNECT Activities:</b> AC038, AC039, AC041, AC042, AC043, AC049, AC059, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC120, AC122, AC123, AC155
<i>Use Algebraic Representations</i>	4. Extend the uses of variables to include covariants where $y$ depends on $x$ .	<b>TechCONNECT Activities:</b> AC038, AC039, AC111, AC114, AC117
	5. Use physical models to add and subtract monomials and polynomials, and to multiply a polynomial by a monomial.	<b>TechCONNECT Activities:</b> AC038, AC114, AC117
	6. Describe the relationship between the graph of a line and its equation, including being able to explain the meaning of slope as a constant rate of change and $y$ -intercept in real-world problems.	<b>TechCONNECT Activities:</b> AC038, AC039, AC042, AC043, AC049, AC080, AC082, AC087, AC095, AC100, AC101, AC102, AC111, AC114, AC116, AC117, AC123

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|---|--|
| 7. Use symbolic algebra (equations and inequalities), graphs and tables to represent situations and solve problems.   | <b>TechCONNECT Activities:</b><br>AC038, AC039, AC042, AC043, AC049, AC059, AC080, AC082, AC087, AC100, AC101, AC102, AC110, AC111, AC113, AC114, AC116, AC117, AC123, AC155 |
| 8. Write, simplify and evaluate algebraic expressions (including formulas) to generalize situations and solve problems.   | <b>TechCONNECT Activities:</b><br>AC038, AC041, AC042, AC065, AC071, AC080, AC082, AC110, AC111, AC114, AC117  |
| 9. Solve linear equations and inequalities graphically, symbolically and using technology.  | <b>TechCONNECT Activities:</b><br>AC038, AC039, AC042, AC043, AC080, AC110, AC111, AC114, AC116, AC117, AC122  |
| 10. Solve 2 by 2 systems of linear equations graphically and by simple substitution.  | <b>TechCONNECT Activities:</b><br>AC038, AC039, AC042, AC043, AC080, AC114, AC116, AC117, AC122  |
| 11. Interpret the meaning of the solution of a 2 by 2 system of equations; i.e., point, line, no solution.  | <b>TechCONNECT Activities:</b><br>AC038, AC080, AC114, AC117   |
| 12. Solve simple quadratic equations graphically; e.g., $y = x^2 - 16$ .  | <b>TechCONNECT Activities:</b><br>AC038, AC113, AC114, AC117   |
| 13. Compute and interpret slope, midpoint and distance given a set of ordered pairs.  | <b>TechCONNECT Activities:</b><br>AC038, AC080, AC114, AC117   |
| <i>Analyze Change</i>   |  |
| 14. Differentiate and explain types of changes in mathematical relationships, such as linear vs. nonlinear, continuous vs. noncontinuous, direct variation vs. inverse variation.                               | <b>TechCONNECT Activities:</b><br>AC038, AC042, AC049, AC110, AC114, AC117, AC122  |
| 15. Describe and compare how changes in an equation affects the related graphs; e.g., for a linear equation changing the coefficient of $x$ affects the slope and changing the constant affects the intercepts. | <b>TechCONNECT Activities:</b><br>AC038, AC039, AC042, AC043, AC049, AC059, AC080, AC087, AC100, AC101, AC102, AC110, AC113, AC114, AC117, AC122, AC123                      |
| 16. Use graphing calculators or computers to analyze change; e.g., interest compounded over time as a nonlinear growth pattern.   | <b>TechCONNECT Activities:</b><br>AC038, AC039, AC042, AC043, AC049, AC110, AC114, AC117, AC122  |

## Data Analysis and Probability Standard

<i>Data Collection</i>	1. Use, create and interpret scatterplots and other types of graphs as appropriate.	<b>TechCONNECT Activities:</b> AC009, AC016, AC039, AC042, AC043, AC049, AC059, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
	2. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatterplot for relationship between two variants.	<b>TechCONNECT Activities:</b> AC009, AC016, AC039, AC042, AC043, AC049, AC059, AC082, AC087, AC100, AC101, AC102, AC113, AC114, AC116, AC117, AC123, AC155
	3. Differentiate between discrete and continuous data and appropriate ways to represent each.	<b>TechCONNECT Activities:</b> AC009, AC016, AC039, AC042, AC043, AC116
<i>Statistical Methods</i>	4. Compare two sets of data using measures of center (mean, mode, median) and measures of spread (range, quartiles, interquartile range, percentiles).	<b>TechCONNECT Activities:</b> AC009, AC016, AC033, AC037, AC041, AC042, AC043, AC045, AC082, AC100, AC102, AC113, AC114, AC116, AC117, AC119, AC123
	5. Explain the mean's sensitivity to extremes and its use in comparison with the median and mode.	<b>TechCONNECT Activities:</b> AC009, AC016, AC033, AC037, AC042, AC043, AC082, AC113, AC114, AC116, AC117, AC123
	6. Make conjectures about possible relationship in a scatterplot and approximate line of best fit.	<b>TechCONNECT Activities:</b> AC009, AC016, AC037, AC039, AC042, AC043, AC082, AC113, AC114, AC116, AC117, AC123
	7. Identify different ways of selecting samples, such as survey response, random sample, representative sample and convenience sample.	<b>TechCONNECT Activities:</b> AC009, AC016, AC033, AC037, AC041, AC042, AC043, AC082, AC114, AC116, AC117, AC123
	8. Describe how the relative size of a sample compared to the target population affects the validity of predictions.	<b>TechCONNECT Activities:</b> AC009, AC016, AC033, AC037, AC041, AC042, AC043, AC082, AC114, AC116, AC117, AC123

9. Construct convincing arguments based on analysis of data and interpretation of graphs.

**TechCONNECT Activities:**  
AC009, AC016, AC033, AC037,  
AC039, AC041, AC042, AC043,  
AC049, AC059, AC082, AC087,  
AC100, AC101, AC102, AC113,  
AC114, AC114, AC116, AC117,  
AC123, AC155

*Probability*

10. Calculate the number of possible outcomes for a situation, recognizing and accounting for when items may occur more than once or when order is important.

**TechCONNECT Activities:**  
AC039, AC041, AC042, AC043,  
AC049, AC113, AC116, AC117

11. Demonstrate an understanding that the probability of either of two disjoint events occurring can be found by adding the probabilities for each and that the probability of one independent event following another can be found by multiplying the probabilities.

**TechCONNECT Activities:**  
AC039, AC041, AC042, AC043,  
AC113, AC116, AC117