

# Teaching to Standards: Math by the Attainment Company

Alignment to

***South Carolina Academic Standards for Mathematics – 2007***

## **Grade Band Format**

**Note:**

Alignment to standards is indicated in yellow highlights. Teaching to Standards: Math includes units of study for Geometry, Algebra, Measurement, Numbers and Operations, and Data Analysis; the same content areas of South Carolina's standards for math.

	Grade K	Grade 1	Grade 2
--	---------	---------	---------

<b>Number and Operations</b>	<p>K-2: The student will demonstrate through the mathematical processes an emerging sense of quantity and numeral relationships, sets, and place values.</p>	<p>1-2: The student will demonstrate through the mathematical processes a sense of quantity and numeral relationships; the relationship among addition, subtraction, and related basic facts; and the connections among numeric, oral and written-word forms of whole numbers.</p>	<p>2-2: The student will demonstrate through the mathematical processes an understanding of the base-ten numeration system; place values; and accurate, efficient, and generalizable methods of adding and subtracting whole numbers.</p>			
	K-2.1	Recall numbers, counting forward through 99 and backward from 10.				
	K-2.2	Translate between numeral and quantity through 31.	1-2.1	Translate between numeral and quantity through 100.	2-2.1	Generate estimation strategies to determine the approximate number of objects in a set of no more than 1,000 objects.
	K-2.3	Compare sets of no more than 31 objects by using the terms <i>more than</i> , <i>less than</i> , and <i>the same as</i> .	1-2.2	Use estimation to determine the approximate number of objects in a set of 20 to 100 objects.	2-2.2	Represent quantities in word form through <i>twenty</i> .
	K-2.4	Represent simple joining and separating situations through 10.	1-2.3	Represent quantities in word form through <i>ten</i> .	2-2.3	Represent multiples of ten in word form through <i>ninety</i> .
	K-2.5	Understand that addition results in increase and subtraction results in decrease.	1-2.4	Recognize whole-number words that correspond to numerals through <i>twenty</i> .	2-2.4	Compare whole-number quantities through 999 by using the terms <i>is less than</i> , <i>is greater than</i> , and <i>is equal to</i> and the symbols $<$ , $>$ , and $=$ .
	K-2.6	Analyze the magnitude of digits through 99 on the basis of their place values.	1-2.5	Compare whole-number quantities through 100 by using the terms <i>is greater than</i> , <i>is less than</i> , and <i>is equal to</i> .	2-2.5	Interpret models of equal grouping (multiplication) as repeated addition and arrays.
	K-2.7	Represent the place value of each digit in a two-digit whole number.	1-2.6	Recall basic addition facts through $9 + 9$ and corresponding subtraction facts.	2-2.6	Interpret models of sharing equally (division) in as repeated subtraction and arrays.
	K-2.8	Identify ordinal positions through 31st.	1-2.7	Summarize the inverse relationship between addition and subtraction.	2-2.7	Generate strategies to add and subtract pairs of two-digit whole numbers with regrouping.
			1-2.8	Generate strategies to add and subtract without regrouping through two-digit numbers.	2-2.8	Generate addition and subtraction strategies to find missing addends and subtrahends in number combinations through 20.
		1-2.9	Analyze the magnitude of digits through 999 on the basis of their place values.	2-2.9	Generate strategies to round numbers through 90 to the nearest 10.	
				2-2.10	Analyze the magnitude of digits through 9,999 on the basis of their place values.	
	<b>Grade K</b>	<b>Grade 1</b>	<b>Grade 2</b>			

<b>Algebra</b>	<p>K-3: The student will demonstrate through the mathematical processes an emerging sense of repeating and growing patterns and classification based on attributes.</p>	<p>1-3: The student will demonstrate through the mathematical processes a sense of numeric patterns, the relationship between addition and subtraction, and change over time.</p>	<p>2-3: The student will demonstrate through the mathematical processes an understanding of numeric patterns and quantitative and qualitative change.</p>
	<p>K-3.1 Identify simple growing patterns.</p>	<p>1-3.1 Analyze numeric patterns in addition and subtraction to develop strategies for acquiring basic facts.</p>	<p>2-3.1 Analyze numeric patterns in skip counting that uses the numerals 1 through 10.</p>
	<p>K-3.2 Analyze simple repeating and growing relationships to extend patterns.</p>	<p>1-3.2 Translate patterns into rules for simple addition and subtraction.</p>	<p>2-3.2 Translate patterns into rules for simple multiples.</p>
	<p>K-3.3 Translate simple repeating and growing patterns into rules.</p>	<p>1-3.3 Illustrate the commutative property based on basic facts.</p>	<p>2-3.3 Analyze relationships to complete and extend growing and repeating patterns involving numbers, symbols, and objects.</p>
	<p>K-3.4 Classify objects according to one or more attributes such as color, size, shape, and thickness.</p>	<p>1-3.4 Analyze numeric relationships to complete and extend simple patterns.</p> <p>1-3.5 Classify a number as odd or even.</p> <p>1-3.6 Classify change over time as quantitative or qualitative</p>	<p>2-3.4 Identify quantitative and qualitative change over time.</p> <p>2-3.5 Analyze quantitative and qualitative change over time.</p>

	Grade K	Grade 1	Grade 2
<b>Geometry</b>	<p>K-4: The student will demonstrate through the mathematical processes an emerging sense of two- and three-dimensional geometric shapes and relative positions in space.</p> <p>K-4.1 Identify the two-dimensional geometric shapes square, circle, triangle, and rectangle and the three-dimensional shapes cube, sphere, and cylinder.</p> <p>K-4.2 Represent two-dimensional geometric shapes.</p> <p>K-4.3 Use the positional words <i>near, far, below, above, beside, next to, across from, and between</i> to describe the location of an object.</p> <p>K-4.4 Use the directional words <i>left, and right</i> to describe movement.</p>	<p>1-4: The student will demonstrate through the mathematical processes a sense of two- and three-dimensional geometric shapes, symmetry, and relative positions and directions in space.</p> <p>1-4.1 Identify the three-dimensional geometric shapes prism, pyramid, and cone.</p> <p>1-4.2 Analyze the two-dimensional shapes circle, square, triangle, and rectangle.</p> <p>1-4.3 Classify two-dimensional shapes as polygons or nonpolygons.</p> <p>1-4.4 Identify a line of symmetry.</p> <p>1-4.5 Use the positional and directional terms <i>north, south, east, and west</i> to describe location and movement.</p>	<p>2-4: The student will demonstrate through the mathematical processes an understanding of basic spatial reasoning and the connection between the identification of basic attributes and the classification of three-dimensional shapes.</p> <p>2-4.1 Analyze the three-dimensional shapes spheres, cubes, cylinders, prisms, pyramids, and cones according to the number and shape of the faces, edges, corners, and bases of each.</p> <p>2-4.2 Identify multiple lines of symmetry.</p> <p>2-4.3 Predict the results of combining and subdividing polygons and circles.</p>

	Grade K	Grade 1	Grade 2
<b>Measurement</b>	K-5: The student will demonstrate through the mathematical processes an emerging sense of coin values and the measurement concepts of length, weight, time, and temperature.	1-5: The student will demonstrate through the mathematical processes a sense of the value of combinations of coins and the measurement of length, weight, time, and temperature.	2-5: The student will demonstrate through the mathematical processes an understanding of the value of combinations of coins and bills and the measurement of length, weight, time, and temperature.
	K-5.1 Identify a penny, a nickel, a dime, a quarter, and a dollar and the value of each.	1-5.1 Use a counting procedure to determine the value of a collection of pennies, nickels, dimes, and quarters totaling less than a dollar.	2-5.1 Use a counting procedure to determine the value of a collection of coins and bills.
	K-5.2 Compare the lengths of two objects, both directly and indirectly, to order objects according to length.	1-5.2 Represent a nickel, a dime, a quarter, a half-dollar, and a dollar in combinations of coins.	2-5.2 Use coins to make change up to one dollar.
	K-5.3 Use nonstandard units to explore the measurement concepts of length and weight.	1-5.3 Represent money by using the cent and dollar notations.	2-5.3 Use appropriate tools to measure objects to the nearest whole unit: measuring length in centimeters, feet, and yards; measuring liquid volume in cups, quarts, and gallons; measuring weight in ounces and pounds; and measuring temperature on Celsius and Fahrenheit thermometers.
	K-5.4 Identify rulers, yardsticks, and tape measures as devices used to measure length; scales and balances as devices used to measure weight; calendars and analog and digital clocks as devices used to measure time; and digital and standard thermometers as devices used to measure temperature.	1-5.4 Use whole-inch units to measure the length of an object.	2-5.4 Generate common measurement referents for feet, yards, and centimeters.
	K-5.5 Understand which measure – length, weight, time, or temperature – is appropriate for a given situation.	1-5.5 Generate common referents for whole inches.	2-5.5 Use common measurement referents to make estimates in feet, yards, and centimeters.
	K-5.6 Use analog and digital clocks to tell time to the hour.	1-5.6 Use common referents to make estimates in whole inches.	2-5.6 Predict whether the measurement will be greater or smaller when different units are used to measure the same object.
	K-5.7 Use a calendar to identify dates, days of the week, and months of the year.	1-5.7 Use nonstandard units to measure the weight of objects.	2-5.7 Use analog and digital clocks to tell and record time to the nearest quarter hour and to the nearest five-minute interval.
	K-5.8 Recall equivalencies associated with time: 7 days = 1 week and 12 months = 1 year.	1-5.8 Use analog and digital clocks to tell and record time to the half hour.	2-5.8 Match <i>a.m.</i> and <i>p.m.</i> to familiar situations.
		1-5.9 Illustrate past and future dates on a calendar.	2-5.9 Recall equivalencies associated with length and time: 12 inches = 1 foot, 3 feet = 1 yard, 60 minutes = 1 hour, and 24 hours = 1 day.
	1-5.10 Represent dates in standard form (June 1, 2007, for example) and numeric form (6-1-2007, for example).		
	1-5.11 Use Celsius and Fahrenheit thermometers to measure temperature.		

	Grade K	Grade 1	Grade 2
Data Analysis and Probability	<p>K-6: The student will demonstrate through the mathematical processes an emerging sense of organizing and interpret data.</p> <p>K-6.1 Organize data in graphic displays in the form of drawings and pictures.</p> <p>K-6.2 Interpret data in graphic displays in the form of drawings and pictures.</p>	<p>1-6: The student will demonstrate through the mathematical processes a sense of collecting, organizing and interpreting data and of making predictions on the basis of data.</p> <p>1-6.1 Use survey questions to collect data.</p> <p>1-6.2 Organize data in picture graphs, object graphs, bar graphs, and tables.</p> <p>1-6.3 Interpret data in picture graphs, object graphs, bar graphs, and tables by using the comparative terms <i>more</i>, <i>less</i>, <i>greater</i>, <i>fewer</i>, <i>greater than</i>, and <i>less than</i>.</p> <p>1-6.4 Predict on the basis of data whether events are <i>likely</i> or <i>unlikely</i> to occur.</p>	<p>2-6: The student will demonstrate through the mathematical processes an understanding of creating questions to collect data, organizing data, describing trends of a data set, and making predictions based on data.</p> <p>2-6.1 Create survey questions to collect data.</p> <p>2-6.2 Organize data in charts, pictographs, and tables.</p> <p>2-6.3 Infer trends in a data set as increasing, decreasing, or random.</p> <p>2-6.4 Predict on the basis of data whether events are <i>more likely</i> or <i>less likely</i> to occur.</p>

	Grade 3	Grade 4	Grade 5
Number and Operations	3-2: The student will demonstrate through the mathematical processes an understanding of the representation of whole numbers and fractional parts; the addition and subtraction of whole numbers; accurate, efficient, and generalizable methods of multiplying whole numbers; and the relationships among multiplication, division, and related basic facts.	4-2: The student will demonstrate through the mathematical processes an understanding of decimal notation as an extension of the place-value system; the relationships between fractions and decimals; the multiplication of whole numbers; and accurate, efficient, and generalizable methods of dividing whole numbers, adding decimals, and subtracting decimals.	5-2: The student will demonstrate through the mathematical processes an understanding of the place value system; the division of whole numbers; the addition and subtraction of decimals; the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions.
	3-2.1 Compare whole-number quantities through 999,999 by using the terms <i>is less than</i> , <i>is greater than</i> , and <i>is equal to</i> and the symbols <, >, and =.	4-2.1 Recognize the period in the place-value structure of whole numbers: units, thousands, millions, and billions.	5-2.1 Analyze the magnitude of a digit on the basis of its place value, using whole numbers and decimal numbers through thousandths.
	3-2.2 Represent in word form whole numbers through <i>nine hundred ninety-nine thousand</i> .	4-2.2 Apply divisibility rules for 2, 5, and 10.	5-2.2 Apply an algorithm to divide whole numbers fluently.
	3-2.3 Apply an algorithm to add and subtract whole numbers fluently.	4-2.3 Apply an algorithm to multiply whole numbers fluently.	5-2.3 Understand the relationship among the divisor, dividend, and quotient.
	3-2.4 Apply procedures to round any whole number to the nearest 10, 100, or 1,000.	4-2.4 Explain the effect on the product when one of the factors is changed.	5-2.4 Compare whole numbers, decimals, and fractions by using the symbols <, >, and =.
	3-2.5 Understand fractions as parts of a whole.	4-2.5 Generate strategies to divide whole numbers by single-digit divisors.	5-2.5 Apply an algorithm to add and subtract decimals through thousandths.
	3-2.6 Represent fractions that are greater than or equal to 1.	4-2.6 Analyze the magnitude of digits through hundredths on the basis of their place value.	5-2.6 Classify numbers as prime, composite, or neither.
	3-2.7 Recall basic multiplication facts through 12 x 12 and the corresponding division facts.	4-2.7 Compare decimals through hundredths by using the terms <i>is less than</i> , <i>is greater than</i> , and <i>is equal to</i> and the symbols <, >, and =.	5-2.7 Generate strategies to find the greatest common factor and the least common multiple of two whole numbers.
	3-2.8 Compare the inverse relationship between multiplication and division.	4-2.8 Apply strategies and procedures to find equivalent forms of fractions.	5-2.8 Generate strategies to add and subtract fractions with like and unlike denominators.
	3-2.9 Analyze the effect that adding, subtracting, or multiplying odd and/or even numbers has on the outcome.	4-2.9 Compare the relative size of fractions to the benchmarks 0, $\frac{1}{2}$ , and 1.	5-2.9 Apply divisibility rules for 3, 6, and 9.
	3-2.10 Generate strategies to multiply whole numbers by using one single-digit factor and one multidigit factor.	4-2.10 Identify the common fraction/decimal equivalents $\frac{1}{2} = .5$ , $\frac{1}{4} = .25$ , $\frac{3}{4} = .75$ , $\frac{1}{3} \approx .33$ , $\frac{2}{3} \approx .67$ , multiples of $\frac{1}{10}$ , and multiples of $\frac{1}{100}$ .	
	3-2.11 Use basic number combinations to compute related multiplication problems that involve multiples of 10.	4-2.11 Represent improper fractions, mixed numbers, and decimals.	
3-2.12 Analyze the magnitude of digits through 999,999 on the basis of their place value	4-2.12 Generate strategies to add and subtract decimals through hundredths.		

	Grade 3	Grade 4	Grade 5
Algebra	<p>3-3: The student will demonstrate through the mathematical processes an understanding of numeric patterns, symbols as representations of unknown quantity, and situations showing increase over time.</p> <p>3-3.1 Create numeric patterns that involve whole-number operations.</p> <p>3-3.2 Apply procedures to find missing numbers in numeric patterns that involve whole-number operations.</p> <p>3-3.3 Use symbols to represent an unknown quantity in a simple addition, subtraction, or multiplication equation.</p> <p>3-3.4 Illustrate situations that show change over time as increasing.</p>	<p>4-3: The student will demonstrate through the mathematical processes an understanding of numeric and nonnumeric patterns, the representation of simple mathematical relationships, and the application of procedures to find the value of an unknown.</p> <p>4-3.1 Analyze numeric, nonnumeric, and repeating patterns involving all operations and decimal patterns through hundredths.</p> <p>4-3.2 Generalize a rule for numeric, nonnumeric, and repeating patterns involving all operations.</p> <p>4-3.3 Use a rule to complete a sequence or a table.</p> <p>4-3.4 Translate among, letters, symbols, and words to represent quantities in simple mathematical expressions or equations.</p> <p>4-3.5 Apply procedures to find the value of an unknown letter or symbol in a whole-number equation.</p> <p>4-3.6 Illustrate situations that show change over time as either increasing, decreasing, or varying.</p>	<p>5-3: The student will demonstrate through the mathematical processes an understanding of the use of patterns, relations, functions models, structures, and algebraic symbols to represent quantitative relationships and will analyze change in various contexts.</p> <p>5-3.1 Represent numeric, algebraic, and geometric patterns in words, symbols, algebraic expressions, and algebraic equations.</p> <p>5-3.2 Analyze patterns and functions with words, tables, and graphs.</p> <p>5-3.3 Match tables, graphs, expressions, equations, and verbal descriptions of the same problem situation.</p> <p>5-3.4 Identify applications of commutative, associative, and distributive properties with whole numbers.</p> <p>5-3.5 Analyze situations that show change over time.</p>

	Grade 3	Grade 4	Grade 5
Geometry	3-4: The student will demonstrate through the mathematical processes an understanding of the connection between the identification of basic attributes and the classification of two-dimensional shapes.	4-4: The student will demonstrate through the mathematical processes an understanding of the relationship between two- and three-dimensional shapes, the use of transformations to determine congruency, and the representation of location and movement within the first quadrant of a coordinate system.	5-4: The student will demonstrate through the mathematical processes an understanding of congruency, spatial relationships, and relationships among the properties of quadrilaterals.
	3-4.1 Identify the specific attributes of circles: center, radius, circumference, and diameter.		5-4.1 Apply the relationships of quadrilaterals to make logical arguments about their properties.
	3-4.2 Classify polygons as either triangles, quadrilaterals, pentagons, hexagons, or octagons according to the number of their sides.	4-4.1 Analyze the quadrilaterals squares, rectangles, trapezoids, rhombuses, and parallelograms according to their properties.	5-4.2 Compare the angles, side lengths, and perimeters of congruent shapes.
	3-4.3 Classify lines and line segments as either parallel, perpendicular, or intersecting.	4-4.2 Analyze the relationship between three-dimensional geometric shapes in the form of cubes, rectangular prisms, and cylinders and their two-dimensional nets.	5-4.3 Classify shapes as congruent.
	3-4.4 Classify angles as either right, acute, or obtuse.	4-4.3 Predict the results of multiple transformations of the same type—translation, reflection, or rotation—on a two-dimensional geometric shape.	5-4.4 Translate between two-dimensional representations and three-dimensional objects.
	3-4.5 Classify triangles by the length of their sides as either scalene, isosceles, or equilateral according and by the sizes of their angles as either acute, obtuse, or right.	4-4.4 Represent the two-dimensional shapes trapezoids, rhombuses, and parallelograms and the three-dimensional shapes cubes, rectangular prisms, and cylinders.	5-4.5 Predict the results of multiple transformations on a geometric shape when combinations of translation, reflection, and rotation are used.
	3-4.6 Exemplify points, lines, line segments, rays, and angles.	4-4.5 Use transformation(s) to prove congruency.	5-4.6 Analyze shapes to determine line symmetry and/or rotational symmetry.
	3-4.7 Analyze the results of combining and subdividing circles, triangles, quadrilaterals, pentagons, hexagons, and octagons.	4-4.6 Represent points, lines, line segments, rays, angles, and polygons.	
	3-4.8 Predict the results of one transformation—either slide, flip, or turn—of a geometric shape.	4-4.7 Represent with ordered pairs of whole numbers the location of points in the first quadrant of a coordinate grid.	
	4-4.8 Illustrate possible paths from one point to another along vertical and horizontal grid lines in the first quadrant of the coordinate plane.		

	Grade 3	Grade 4	Grade 5
Measurement	3-5: The student will demonstrate through the mathematical processes an understanding of length, time, weight, and liquid volume measurements; the relationships between systems of measure; accurate, efficient, and generalizable methods of determining the perimeters of polygon; and the values and combinations of coins required to make change.	4-5: The student will demonstrate through the mathematical processes an understanding of elapsed time; conversions within the U.S. Customary System; and accurate, efficient, and generalizable methods of determining area.	5-5: The student will demonstrate through the mathematical processes an understanding of the units and systems of measurement and the application of tools and formulas to determine measurement.
	3-5.1 Use the fewest possible number of coins when making change.	4-5.1 Use appropriate tools to measure objects to the nearest unit: measuring length in quarter inches, centimeters, and millimeters; measuring liquid volume in cups, quarts, and liters; and measuring weight and mass in pounds, milligrams, and kilograms.	5-5.1 Use appropriate tools and units to measure objects to the precision of one-eighth inch.
	3-5.2 Use appropriate tools to measure objects to the nearest unit: measuring length in meters and half inches; measuring liquid volume in fluid ounces, pints, and liters; and measuring mass in grams.	4-5.2 Compare angle measures with referent angles of 45 degrees, 90 degrees, and 180 degrees to estimate angle measures.	5-5.2 Use a protractor to measure angles from 0 to 180 degrees.
	3-5.3 Recognize the relationship between meters and yards, kilometers and miles, liters and quarts, and kilograms and pounds.	4-5.3 Use equivalencies to convert units of measure within the U.S. Customary System: converting length in inches, feet, yards, and miles; converting weight in ounces, pounds, and tons; converting liquid volume in cups, pints, quarts, and gallons; and converting time in years, months, weeks, days, hours, minutes, and seconds.	5-5.3 Use equivalencies to convert units of measure within the metric system: converting length in millimeters, centimeters, meters, and kilometers; converting liquid volume in milliliters, centiliters, liters, and kiloliters; and converting mass in milligrams, centigrams, grams, and kilograms.
	3-5.4 Use common referents to make comparisons and estimates associated with length, liquid volume, and mass and weight: meters compared to yards, kilometers to miles, liters to quarts, and kilograms to pounds.	4-5.4 Analyze the perimeter of a polygon.	5-5.4 Apply formulas to determine the perimeters and areas of triangles, rectangles, and parallelograms.
	3-5.5 Generate strategies to determine the perimeters of polygons.	4-5.5 Generate strategies to determine the area of rectangles and triangles.	5-5.5 Apply strategies and formulas to determine the volume of rectangular prisms.
	3-5.6 Use analog and digital clocks to tell time to the nearest minute.	4-5.6 Apply strategies and procedures to determine the amount of elapsed time in hours and minutes within a 12-hour period, either a.m. or p.m.	5-5.6 Apply procedures to determine the amount of elapsed time in hours, minutes, and seconds within a 24-hour period.
	3-5.7 Recall equivalencies associated with time and length: 60 seconds = 1 minute and 36 inches = 1 yard.	4-5.7 Use Celsius and Fahrenheit thermometers to determine temperature changes during time intervals.	5-5.7 Understand the relationship between the Celsius and Fahrenheit temperature scales.
		4-5.8 Recall equivalencies associated with liquid volume, time, weight, and length: 8 liquid ounces = 1 cup, 2 cups = 1 pint, 2 pints = 1 quart, 4 quarts = 1 gallon; 365 days = 1 year, 52 weeks = 1 year; 16 ounces = 1 pound, 2,000 pounds = 1 ton; and 5,280 feet = 1 mile.	5-5.8 Recall equivalencies associated with length, liquid volume, and mass: 10 millimeters = 1 centimeter, 100 centimeters = 1 meter, 1000 meters = 1 kilometer; 10 milliliters = 1 centiliter, 100 centiliters = 1 liter, 1000 liters = 1 kiloliter; and 10 milligrams = 1 centigram, 100 centigrams = 1 gram, 1000 grams = 1 kilogram.
		4-5.9 Exemplify situations in which highly accurate measurements are required.	

	Grade 3	Grade 4	Grade 5
Data Analysis and Probability	3-6: The student will demonstrate through the mathematical processes an understanding of organizing, interpreting, analyzing and making predictions about data, the benefits of multiple representations of a data set, and the basic concepts of probability.	4-6: The student will demonstrate through the mathematical processes an understanding of the impact of data-collection methods, the appropriate graph for categorical or numerical data, and the analysis of possible outcomes for a simple event.	5-6: The student will demonstrate through the mathematical processes an understanding of investigation design, the effect of data-collection methods on a data set, the interpretation and application of the measures of central tendency, and the application of basic concepts of probability.
	3-6.1 Apply a procedure to find the range of a data set.	4-6.1 Compare how data-collection methods impact survey results.	5-6.1 Design a mathematical investigation to address a question.
	3-6.2 Organize data in tables, bar graphs, and dot plots.	4-6.2 Interpret data in tables, line graphs, bar graphs, and double bar graphs whose scale increments are greater than or equal to 1.	5-6.2 Analyze how data-collection methods affect the nature of the data set.
	3-6.3 Interpret data in tables, bar graphs, pictographs, and dot plots.	4-6.3 Organize data in tables, line graphs, and bar graphs whose scale increments are greater than or equal to 1.	5-6.3 Apply procedures to calculate the measures of central tendency (mean, median, and mode).
	3-6.4 Analyze dot plots and bar graphs to make predictions about populations.	4-6.4 Distinguish between categorical and numerical data.	5-6.4 Interpret the meaning and application of the measures of central tendency.
	3-6.5 Compare the benefits of using tables, bar graphs, and dot plots as representations of a given data set.	4-6.5 Match categorical and numerical data to appropriate graphs.	5-6.5 Represent the probability of a single-stage event in words and fractions.
	3-6.6 Predict on the basis of data whether events are <i>likely</i> , <i>unlikely</i> , <i>certain</i> , or <i>impossible</i> to occur.	4-6.6 Predict on the basis of data whether events are <i>likely</i> , <i>unlikely</i> , <i>certain</i> , <i>impossible</i> , or <i>equally likely</i> to occur.	5-6.6 Conclude why the sum of the probabilities of the outcomes of an experiment must equal 1.
3-6.7 Understand when the probability of an event is 0 or 1.	4-6.7 Analyze possible outcomes for a simple event.		

	Grade 6	Grade 7	Grade 8
Number and Operations	6-2: The student will demonstrate through the mathematical processes an understanding of the concept of whole-number percentages, integers, and ratio and rate; the addition and subtraction of fractions; accurate, efficient, and generalizable methods of multiplying and dividing fractions and decimals; and the use of exponential notation to represent whole numbers.	7-2: The student will demonstrate through the mathematical processes an understanding of the representation of rational numbers, percentages, and square roots of perfect squares; the application of ratios, rates, and proportions to solve problems; accurate, efficient, and generalizable methods for operations with integers; the multiplication and division of fractions and decimals; and the inverse relationship between squaring and finding the square roots of perfect squares.	8-2: The student will demonstrate through the mathematical processes an understanding of operations with integers, the effects of multiplying and dividing with rational numbers, the comparative magnitude of rational and irrational numbers, the approximation of cube and square roots, and the application of proportional reasoning.
	6-2.1 Understand whole-number percentages through 100.		8-2.1 Apply an algorithm to add, subtract, multiply, and divide integers.
	6-2.2 Understand integers.	7-2.1 Understand fractional percentages and percentages greater than one hundred.	8-2.2 Understand the effect of multiplying and dividing a rational number by another rational number.
	6-2.3 Compare rational numbers and whole-number percentages through 100 by using the symbols $\leq$ , $\geq$ , $<$ , $>$ , and $=$ .	7-2.2 Represent the location of rational numbers and square roots of perfect squares on a number line.	8-2.3 Represent the approximate location of irrational numbers on a number line.
	6-2.4 Apply an algorithm to add and subtract fractions.	7-2.3 Compare rational numbers, percentages, and square roots of perfect squares by using the symbols $\leq$ , $\geq$ , $<$ , $>$ , and $=$ .	8-2.4 Compare rational and irrational numbers by using the symbols $\leq$ , $\geq$ , $<$ , $>$ , and $=$ .
	6-2.5 Generate strategies to multiply and divide fractions and decimals.	7-2.4 Understand the meaning of absolute value.	8-2.5 Apply the concept of absolute value.
	6-2.6 Understand the relationship between ratio/rate and multiplication/division.	7-2.5 Apply ratios, rates, and proportions to discounts, taxes, tips, interest, unit costs, and similar shapes.	8-2.6 Apply strategies and procedures to approximate between two whole numbers the square roots or cube roots of numbers less than 1,000.
	6-2.7 Apply strategies and procedures to determine values of powers of 10, up to $10^6$ .	7-2.6 Translate between standard form and exponential form.	8-2.7 Apply ratios, rates, and proportions.
	6-2.8 Represent the prime factorization of numbers by using exponents.	7-2.7 Translate between standard form and scientific notation.	
	6-2.9 Represent whole numbers in exponential form.	7-2.8 Generate strategies to add, subtract, multiply, and divide integers.	
	7-2.9 Apply an algorithm to multiply and divide fractions and decimals.		
	7-2.10 Understand the inverse relationship between squaring and finding the square roots of perfect squares.		

	Grade 6	Grade 7	Grade 8
Algebra	6-3: The student will demonstrate through the mathematical processes an understanding of writing, interpreting, and using mathematical expressions, equations, and inequalities.	7-3: The student will demonstrate through the mathematical processes an understanding of proportional relationships.	8-3: The student will demonstrate through the mathematical processes an understanding of equations, inequalities, and linear functions.
	6-3.1 Analyze numeric and algebraic patterns and pattern relationships.	7-3.1 Analyze geometric patterns and pattern relationships.	8-3.1 Translate among verbal, graphic, tabular, and algebraic representations of linear functions.
	6-3.2 Apply order of operations to simplify whole-number expressions.	7-3.2 Analyze tables and graphs to describe the rate of change between and among quantities.	8-3.2 Represent algebraic relationships with equations and inequalities.
	6-3.3 Represent algebraic relationships with variables in expressions, simple equations, and simple inequalities.	7-3.3 Understand slope as a constant rate of change.	8-3.3 Use commutative, associative, and distributive properties to examine the equivalence of a variety of algebraic expressions.
	6-3.4 Use the commutative, associative, and distributive properties to show that two expressions are equivalent.	7-3.4 Use inverse operations to solve two-step equations and two-step inequalities.	8-3.4 Apply procedures to solve multistep equations.
	6-3.5 Use inverse operations to solve one-step equations that have whole-number solutions and variables with whole-number coefficients.	7-3.5 Represent on a number line the solution of a two-step inequality.	8-3.5 Classify relationships between two variables in graphs, tables, and/or equations as either linear or nonlinear.
		7-3.6 Represent proportional relationships with graphs, tables, and equations.	8-3.6 Identify the coordinates of the $x$ - and $y$ -intercepts of a linear equation from a graph, equation, and/or table.
		7-3.7 Classify relationships as either directly proportional, inversely proportional, or nonproportional.	8-3.7 Identify the slope of a linear equation from a graph, equation, and/or table.

	Grade 6	Grade 7	Grade 8
Geometry	6-4: The student will demonstrate through the mathematical processes an understanding of shape, location, and movement within a coordinate system; similarity, complementary, and supplementary angles; and the relationship between line and rotational symmetry.	7-4: The student will demonstrate through the mathematical processes an understanding of proportional reasoning, tessellations, the use of geometric properties to make deductive arguments, the results of the intersection of geometric shapes in a plane, and the relationship among angles formed when a transversal intersects two parallel lines.	8-4: The student will demonstrate through the mathematical processes an understanding of the Pythagorean theorem; the use of ordered pairs, equations, intercepts, and intersections to locate points and lines in a coordinate plane; and the effect of a dilation in a coordinate plane.
	6-4.1 Represent with ordered pairs of integers the location of points in a coordinate grid.	7-4.1 Analyze geometric properties and the relationships among the properties of triangles, congruence, similarity, and transformations to make deductive arguments.	8-4.1 Apply the Pythagorean theorem.
	6-4.2 Apply strategies and procedures to find the coordinates of the missing vertex of a square, rectangle, or right triangle when given the coordinates of the polygon's other vertices.	7-4.2 Explain the results of the intersection of two or more geometric shapes in a plane.	8-4.2 Use ordered pairs, equations, intercepts, and intersections to locate points and lines in a coordinate plane.
	6-4.3 Generalize the relationship between line symmetry and rotational symmetry for two-dimensional shapes.	7-4.3 Illustrate the cross section of a solid.	8-4.3 Apply a dilation to a square, rectangle, or right triangle in a coordinate plane.
	6-4.4 Construct two-dimensional shapes with line or rotational symmetry.	7-4.4 Translate between two- and three-dimensional representations of compound figures.	8-4.4 Analyze the effect of a dilation on a square, rectangle, or right triangle in a coordinate plane.
	6-4.5 Identify the transformation(s) used to move a polygon from one location to another in the coordinate plane.	7-4.5 Analyze the congruent and supplementary relationships—specifically, alternate interior, alternate exterior, corresponding, and adjacent—of the angles formed by parallel lines and a transversal.	
	6-4.6 Explain how transformations affect the location of the original polygon in the coordinate plane.	7-4.6 Compare the areas of similar shapes and the areas of congruent shapes.	
	6-4.7 Compare the angles, side lengths, and perimeters of similar shapes.	7-4.7 Explain the proportional relationship among attributes of similar shapes.	
	6-4.8 Classify shapes as similar.	7-4.8 Apply proportional reasoning to find missing attributes of similar shapes.	
	6-4.9 Classify pairs of angles as either complementary or supplementary.	7-4.9 Create tessellations with transformations.	
	7-4.10 Explain the relationship of the angle measurements among shapes that tessellate.		

	Grade 6	Grade 7	Grade 8
Measurement	<p>6-5: The student will demonstrate through the mathematical processes an understanding of surface area; the perimeter and area of irregular shapes; the relationships among the circumference, diameter, and radius of a circle; the use of proportions to determine unit rates; and the use of scale to determine distance.</p> <p>6-5.1 Explain the relationships among the circumference, diameter, and radius of a circle.</p> <p>6-5.2 Apply strategies and formulas with an approximation of <math>\pi</math> (3.14, or <math>\frac{22}{7}</math>) to find the circumference and area of a circle.</p> <p>6-5.3 Generate strategies to determine the surface area of a rectangular prism and a cylinder.</p> <p>6-5.4 Apply strategies and procedures to estimate the perimeters and areas of irregular shapes.</p> <p>6-5.5 Apply strategies and procedures of combining and subdividing to find the perimeters and areas of irregular shapes.</p> <p>6-5.6 Use proportions to determine unit rates.</p> <p>6-5.7 Use a scale to determine distance</p>	<p>7-5: The student will demonstrate through the mathematical processes an understanding of how to use ratio and proportion to solve problems involving scale factors and rates and how to use one-step unit analysis to convert between and within the U.S. Customary System and the metric system.</p> <p>7-5.1 Use ratio and proportion to solve problems involving scale factors and rates.</p> <p>7-5.2 Apply strategies and formulas to determine the surface area and volume of the three-dimensional shapes prism, pyramid, and cylinder.</p> <p>7-5.3 Generate strategies to determine the perimeters and areas of trapezoids.</p> <p>7-5.4 Recall equivalencies associated with length, mass and weight, and liquid volume: 1 square yard = 9 square feet, 1 cubic meter = 1 million cubic centimeters, 1 kilometer = <math>\frac{5}{8}</math> mile, 1 inch = 2.54 centimeters; 2.2 kilograms = 1 pound; and 1.06 quarts = 1 liter.</p> <p>7-5.5 Use one-step unit analysis to convert between and within the U.S. Customary System and the metric system.</p>	<p>8-5: The student will demonstrate through the mathematical processes an understanding of the proportionality of similar figures; the necessary levels of accuracy and precision in measurement; the use of formulas to determine circumference, perimeter, area, and volume; and the use of conversions within and between the U.S. Customary System and the metric system.</p> <p>8-5.1 Use proportional reasoning and the properties of similar shapes to determine the length of a missing side.</p> <p>8-5.2 Explain the effect on the area of two-dimensional shapes and on the volume of three-dimensional shapes when one or more of the dimensions are changed.</p> <p>8-5.3 Apply strategies and formulas to determine the volume of the three-dimensional shapes cone and sphere.</p> <p>8-5.4 Apply formulas to determine the exact (<math>\pi</math>) circumference and area of a circle.</p> <p>8-5.5 Apply formulas to determine the perimeters and areas of trapezoids.</p> <p>8-5.6 Analyze a variety of measurement situations to determine the necessary level of accuracy and precision.</p> <p>8-5.7 Use multistep unit analysis to convert between and within U.S. Customary System and the metric system.</p>

	Grade 6	Grade 7	Grade 8
Data Analysis and Probability	<p>6-6: The student will demonstrate through the mathematical processes an understanding of the relationships within one population or sample.</p> <p>6-6.1 Predict the characteristics of one population based on the analysis of sample data.</p> <p>6-6.2 Organize data in frequency tables, histograms, or stem-and-leaf plots as appropriate.</p> <p>6-6.3 Analyze which measure of central tendency (mean, median, or mode) is the most appropriate for a given purpose.</p> <p>6-6.4 Use theoretical probability to determine the sample space and probability for one- and two-stage events such as tree diagrams, models, lists, charts, and pictures.</p> <p>6-6.5 Apply procedures to calculate the probability of complementary events.</p>	<p>7-6: The student will demonstrate through the mathematical processes an understanding of the relationships between two populations or samples.</p> <p>7-6.1 Predict the characteristics of two populations based on the analysis of sample data.</p> <p>7-6.2 Organize data in box plots or circle graphs as appropriate.</p> <p>7-6.3 Apply procedures to calculate the interquartile range.</p> <p>7-6.4 Interpret the interquartile range for data.</p> <p>7-6.5 Apply procedures to calculate the probability of mutually exclusive simple or compound events.</p> <p>7-6.6 Interpret the probability of mutually exclusive simple or compound events.</p> <p>7-6.7 Differentiate between experimental and theoretical probability of the same event.</p> <p>7-6.8 Use the fundamental counting principle to determine the number of possible outcomes for a multistage event.</p>	<p>8-6: The student will demonstrate through the mathematical processes an understanding of the relationships between two variables within one population or sample.</p> <p>8-6.1 Generalize the relationship between two sets of data by using scatterplots and lines of best fit.</p> <p>8-6.2 Organize data in matrices or scatterplots as appropriate.</p> <p>8-6.3 Use theoretical and experimental probability to make inferences and convincing arguments about an event or events.</p> <p>8-6.4 Apply procedures to calculate the probability of two dependent events.</p> <p>8-6.5 Interpret the probability for two dependent events.</p> <p>8-6.6 Apply procedures to compute the odds of a given event.</p> <p>8-6.7 Analyze probability using area models.</p> <p>8-6.8 Interpret graphic and tabular data representations by using range and the measures of central tendency (mean, median, and mode).</p>