Math Standards with Performance Indicators Grade K

Counting & Cardinality
K.CC.A. Know number names and the count sequence.
K.CC.A.1. Count to 100 by ones and by tens.
K.CC.A.3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
K.CC.B. Count to tell the number of objects.
K.CC.B.5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
K.CC.C. Compare numbers.
K.CC.C.7. Compare two numbers between 1 and 10 presented as written numerals.
Operations & Algebraic Thinking
K.OA.A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
K.OA.A.2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or

drawings to represent the problem.
Number & Operations in Base Ten
K.NBT.A. Work with numbers 11-19 to gain foundations for place value.
K.NBT.A.1. Compose and decompose numbers from 11 to 19 (ten ones and some further ones), e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
Measurement & Data
ESD.MD.K.1 Identify pennies, nickels, dimes, and quarters by name.
K.MD.A. Describe and compare measurable attributes, including length and weight.
K.MD.A.2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.
Geometry
K.G.A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
K.G.A.1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

K.G.A.2. Correctly name shapes regardless of their orientations or overall size.

Math Standards with Performance Indicators Grade 1

Operations & Algebraic Thinking
1.OA.A. Represent and solve problems involving addition and subtraction.
1.OA.A.1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.C. Add and subtract within 20.
1.OA.C.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
1.OA.C.6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$) and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).
Number & Operations in Base Ten
1.NBT.B. Understand place value.

1.NBT.B.2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: ADD IN SPECIAL CASES

1.NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

Measurement & Data

ESD.MD.1.1 Know value of pennies, nickels, dimes, and quarters.

ESD.MD.1.2 Count combinations of pennies, nickels, and dimes up to one-dollar ($1.00).

1.MD.A.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps*.

1.MD.B.3. Tell and write time in hours and half-hours using analog and digital clocks.

1.MD.C.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry

1.G.A. Reason with shapes and their attributes.
1.G.A.1 Distinguish between defining attributes of polygons (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
1.G.A.3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Math Standards with Performance Indicators Grade 2

Operations & Algebraic Thinking
2.OA.A. Represent and solve problems involving addition and subtraction.
2.OA.A.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
2.OA.B. Add and subtract within 20.
2.OA.B.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
Number & Operations in Base Ten

2.NBT.A.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: **(ADD IN SPECIAL CASES)**

2.NBT.B. Use place value understanding and properties of operations to add and subtract.

2.NBT.B.7. Add within 100, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting two-digit numbers, one adds or subtracts, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens.

Measurement & Data

2.MD.A.2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

2.MD.B. Relate addition and subtraction to length.

2.MD.B.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

2.MD.C. Work with time and money.

2.MD.C.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

2.MD.C.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols

appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

2.MD.D. Represent and interpret data.

2.MD.D.10. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph, picture graph, or a line plot.

Geometry

2.G.A. Reason with shapes and their attributes.

2.G.A.1 Recognize and/or draw two-and-three-dimensional shapes, having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals/quadrangles, pentagons and hexagons. Understand that these are polygons.

2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and represent these terms in numerical symbols. Recognize that equal shares of identical whole need not have the same shape.

Math Standards with Performance Indicators Grade 3

Operations and Algebraic Thinking (3.OA)

CCSS.Math. 3.OA.A. Represent and solve problems involving multiplication and division.

3.OA.A.1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects

each.
3.OA.A.2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.
3.OA.A.3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
3.OA.A.4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
3.OA.B.5. Apply properties of operations as strategies to multiply and divide.
3.OA.C. Multiply and divide within 100.
3.OA.C.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
Number & Operations in Base Ten
3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.
3.NBT.A.1. Use place value understanding to round whole numbers to the nearest 10 or 100.
3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction, to include understanding of expanding form.

Number & Operations—Fractions

3.NF.A. Develop understanding of fractions as numbers.

3.NF.A.1. Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

3.NF.A.2a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.

Measurement & Data

3.MD.A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

3.MD.A.1. Using an analog clock, tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

ESD.MD.3.1 Solve real-world problems, involving money to include making change up to ten dollars ($10.00) with: pennies, nickels, dimes, quarters, one-dollar, and five-dollar bills.

3.MD.B. Represent and interpret data.

3.MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

3.MD.B.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

3.MD.C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.MD.C.5a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

3.MD.C.7. Relate area to the operations of multiplication and addition.

3.MD.C.7c. Show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.

3.MD.D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

3.MD.D.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Geometry

3.G.A. Reason with shapes and their attributes.

3.G.A.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses,

rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Math Standards with Performance Indicators Grade 4

CCSS.Math.4OA.A OPERATIONS AND ALGEBRAIC THINKING

4.OA.A.3. Solve multistep word problems posed with whole numbers and having <u>whole-number answers using the four operations</u>, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

4.OA.B.4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Number & Operations in Base Ten

4.NBT.A.2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

4.NBT.B.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Number & Operations—Fractions

4.NF.A.1. Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
4.NF.B.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
4.NF.B.3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
4.NF.C.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
4.NF.C.6. Use decimal notation for fractions with denominators 10 or 100
4.NF.C.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or
Measurement & Data
4.MD.A.1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
4.MD.A.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
4.MD.C.6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

Geometry
4.G.A.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Math Standards with Performance Indicators Grade 5

Operations & Algebraic Thinking
5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Number & Operations in Base Ten
5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10
5.NBT.A.3a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.

5.NBT.A.3b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbol to record the results of comparisons.
5.NBT.A.4. Use place value understanding to round decimals to any place.
5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
Number & Operations—Fractions
5.NF.A.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fraction and number sense of fractions to estimate mentally and assess the reasonableness of answers.
Measurement & Data
5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5

cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.MD.C.3a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

5.MD.C.3b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

5.MD.C.5b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

Geometry

5.G.A.1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

5.G.A.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Math Standards with Performance Indicators Grade 6

CCSS.Math.6.NS Number System
Apply and extend previous understands of multiplication and division to divide fractions by fractions
CCSS.Math.6.NS.A.1 Interpret and compute quotients of fractions, and solve world problems involving division of fraction by fractions, e.g., by using visual fraction models and equations to represent the problem.
Compute fluently with multi-digit numbers and find common factors and multiples.
CCCS.Math.6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.
CCCS.Math.6.NS.B.3 Fluently add, subtract, multiply and divide multi-digit decimals using the standard algorithm for each operation.
Apply and Extend previous understandings of numbers to the system of rational numbers.
CCSS.Math.6.NS.C.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) =3, and that 0 is its own opposite
CCSS.Math.6.NS.C.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by reflections across one or both axes.
CCSS. Math.6.NS.C.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

CCSS.Math.6.EE Expressions and Equations
Apply and extend previous understanding of arithmetic to algebraic expressions.
CCSS.Math.6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.
CCSS.Math.6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.
CCSS. Math.6.EE.A.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with the sides of length s =1/2.
CCSS.Math.6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y+y+y and 3y are equivalent because they name the same number regardless of which number y stands for.
Reason about and solve one-variable equations and inequalities.
CCSS.Math.6.EE.B.5 Understand solving an equation as a process of answering a question: which values from a specified set, if any, make the equation true? Use substitution to determine whether a given number in a specified set makes an equation true.
CCSS. Math.6. EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematica problem; understand that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set.

Geometry
Solve real-world and mathematical problems involving area, surface area, and volume.
CCSS.Math.6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

Math Standards with Performance Indicators Grade 7

CCSS.Math.7.RP Ratios and Proportional Relationships
Analyze proportional relationships and use them to solve real-world and mathematical problems.
CCSS.Math.7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction $^{1/2}/1/4$ miles per hour, equivalently 2 miles per hour.
CCSS.Math.7.RP.A.2 Recognize and represent proportional relationships between quantities.
CCSS.Math.7.RP.A.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
CCSS.Math.7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal

descriptions of proportional relationships.
CCSS.Math.7.RP.A.3 use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
CCSS.Math.7.EE Expressions and Equations
Use properties of operations to generate equivalent expressions.
CCSS.Math.7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
CCSS.Math.7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or @2.50, for a new salary of $27.50. If you want to place a towel bar 9 ¾ inches long in the center of a door that is 27 ½ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
CCSS. Math.7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
CCSS.Math.7.EE.B.4a Solve word problems leading to equations of the form $p = q = r$ and $p(x = q) = r$, where p, q, and r ar

specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

CCSS.Math.7.G Geometry

Draw, construct, and describe geometrical figures and describe the relationships between them.

CCSS.Math.7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

CCSS. Math.7. G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

CCSS.Math.7.SP Statistics and Probability

Investigate chance processes and develop, use, and evaluate probability models.

CCSS.Math.7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

CCSS.Math.Content.8.EE Expressions and Equations

8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.

8.EE.B.5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.

8.EE.C.7.B Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

8.EE.C.8.A Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

8.EE.C.8.B Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.

CCSS.Math.Content.8.F Functions

8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.

8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

CCSS.Math.Content.8.G Geometry

8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations:

8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

8.G.C.9 Know and use the formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems.

CCSS.Math.Content.8.SP Statistics & Probability

8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter

plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.