



VASHON ISLAND SCHOOL DISTRICT

MATHEMATICS GUIDE

GRADES 6 THROUGH 8

Revised June 2006

Sixth Grade

Sixth Grade	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
Number Sense	<p>Find divisors, factors, greatest common factor</p> <p>Find multiples, least common multiple</p> <p>Identify even and odd numbers</p> <p>Identify prime numbers</p> <p>Identify composite numbers</p> <p>Find square numbers</p> <p>Use prime factorization</p> <p>Know place value of whole numbers and decimals</p> <p>Compare and order whole numbers</p> <p>Exponential form (notation) of whole numbers</p> <p>Place decimal numbers on a number line</p> <p>Compare and order decimals</p> <p>Work with decimals related to fractions and percents</p> <p>Decimal benchmarks</p> <p>Estimate decimals</p> <p>Perform operations with decimals</p> <p>Compare and order fractions</p> <p>Work with fractions related to decimals and percents</p> <p>Find equivalent fractions</p> <p>Fraction benchmarks</p> <p>Estimate fractions</p> <p>Unit fractions</p> <p>Determine a reciprocal</p> <p>Perform operations with fractions</p> <p>Work with ratios, rates, unit rates</p> <p>Find equivalent ratios</p> <p>Work with proportions</p> <p>Comparing ratios and proportions</p> <p>Percents related to fractions and decimals</p> <p>Percents benchmarks</p> <p>Estimate with percents</p> <p>Find the percent of a number</p> <p>Determine discounts</p> <p>Determine taxes, tips</p> <p>Work with and construct circle graphs (pie charts)</p> <p>Solve problems with percents</p> <p>Work with positive exponents</p> <p>Work with Pi</p> <p>Illustrate integer values using models and pictures (e.g., temperature, elevators, net worth/debt, riding a bus or subway). [CU]</p> <p>Apply rules of divisibility to show if a quotient is an integer. [RL]</p> <p>Explain the meaning of integers and give examples.</p> <p>Identify the opposite of a given integer.</p> <p>Compare different representations of non-negative rational numbers by implementing strategies (e.g., like denominators, changing to the same form). [RL, CU, MC]</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p> <p>Accelerated Math—(computation and practice, exposure to additional content, individualized, mastery-based)</p>	<p>Find divisors, factors, greatest common factor</p> <p>Find multiples, least common multiple</p> <p>Identify even, odd numbers</p> <p>Identify prime numbers</p> <p>Identify composite numbers</p> <p>Find square numbers</p> <p>Decimals on a number line</p> <p>Decimal benchmarks</p> <p>Operations with decimals</p> <p>Fraction benchmarks</p> <p>Estimating fractions</p> <p>Unit fractions</p> <p>Reciprocals</p> <p>Operations with fractions</p> <p>Percents related to fractions and decimals</p> <p>Percents benchmarks</p> <p>Estimating with percents</p> <p>Finding percent of a number</p> <p>Discounts</p> <p>Circle graphs (pie charts)</p> <p>Illustrate integer values using models and pictures (e.g., temperature, elevators, net worth/debt, riding a bus or subway). [CU]</p> <p>Apply rules of divisibility to show if a quotient is an integer. [RL]</p> <p>Explain the meaning of integers and give examples.</p> <p>Identify the opposite of a given integer.</p> <p>Compare different representations of non-negative rational numbers by implementing strategies (e.g., like denominators, changing to the same form). [RL, CU, MC]</p> <p>Identify equivalence between non-negative integers, fractions, percents, and decimals. [MC]</p> <p>Compare and order integer values and explain which is greater and why (e.g., place the integers on a number line). [CU]</p> <p>Represent and identify integers on a model (e.g., number line, fraction line, or decimal grid). [RL, CU]</p> <p>Illustrate and explain the commutative and associative properties and why they work (e.g., use physical models, pictures). [CU]</p> <p>Use addition and multiplication properties to assist in computations (e.g., $5 \cdot 7 \cdot 6$ can be rewritten as $5 \cdot 6 \cdot 7$ which is $30 \cdot 7$ or 210).</p> <p>Determine whether a solution is accurate based on application commutative, associative, and</p>	<p>1.1.1</p> <p>1.1.2</p> <p>1.1.3</p>

	<p>Identify equivalence between non-negative integers, fractions, percents, and decimals. [MC] Compare and order integer values and explain which is greater and why (e.g., place the integers on a number line). [CU] Represent and identify integers on a model (e.g., number line, fraction line, or decimal grid). [RL, CU] Illustrate and explain the commutative and associative properties and why they work (e.g., use physical models, pictures). [CU] Use addition and multiplication properties to assist in computations (e.g., $5 \cdot 7 \cdot 6$ can be rewritten as $5 \cdot 6 \cdot 7$ which is $30 \cdot 7$ or 210). Determine whether a solution is accurate based on application commutative, associative, and identity properties of addition and/or multiplication. [RL] Write ratios in part/part and part/whole relationships using objects, pictures, and symbols (e.g., using /, :, or “to” as representations for ratios). [CU] Represent equivalent ratios using objects, pictures, or symbols. [CU] Represent equivalent percentages using objects, pictures, and symbols. [CU] Identify percent as 100 equal size parts of a set (e.g., 1% of 200 items is 2 items). Explain ratio and percents and give examples of each. [CU] Explain the meaning of multiplying and dividing non-negative fractions and decimals using words, visual, or physical models (e.g., sharing a restaurant bill, cutting a board into equal-sized pieces, drawing a picture of an equation or situation). [CU, MC] Explain why multiplication of fractions can be done by multiplying denominators while addition of fractions requires finding common denominators. [CU] Use technology to demonstrate how multiplication and division with decimals affects place value. Find the sums or differences of non-negative fractions or decimals. Write and solve real-world problem situations to find sums or differences of decimals or fractions. [CU, MC]</p>		<p>identity properties of addition and/or multiplication. [RL] Write ratios in part/part and part/whole relationships using objects, pictures, and symbols (e.g., using /, :, or “to” as representations for ratios). [CU] Represent equivalent ratios using objects, pictures, or symbols. [CU] Represent equivalent percentages using objects, pictures, and symbols. [CU] Identify percent as 100 equal size parts of a set (e.g., 1% of 200 items is 2 items). Explain ratio and percents and give examples of each. [CU] Explain the meaning of multiplying and dividing non-negative fractions and decimals using words, visual, or physical models (e.g., sharing a restaurant bill, cutting a board into equal-sized pieces, drawing a picture of an equation or situation). [CU, MC] Explain why multiplication of fractions can be done by multiplying denominators while addition of fractions requires finding common denominators. [CU] Use technology to demonstrate how multiplication and division with decimals affects place value. Find the sums or differences of non-negative fractions or decimals. Write and solve real-world problem situations to find sums or differences of decimals or fractions. [CU, MC] Use the least common multiple and the greatest common factor of whole numbers to solve problems with fractions (e.g., to find a common denominator, to add two fractions, or to find the simplified form for a fraction). [MC] Use addition and subtraction to solve real-world problems involving non-negative rational numbers. [SP] Solve multiple-step computations requiring one, two, or more different operations. [MC] Select and justify the selection of appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, CU] Describe strategies for mentally solving problems involving fractions and decimals. [CU]</p>	<p>1.1.4</p> <p>1.1.5</p> <p>1.1.6</p> <p>1.1.7</p>
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	<p>Use the least common multiple and the greatest common factor of whole numbers to solve problems with fractions (e.g., to find a common denominator, to add two fractions, or to find the simplified form for a fraction). [MC]</p> <p>Use addition and subtraction to solve real-world problems involving non-negative rational numbers. [SP]</p> <p>Solve multiple-step computations requiring one, two, or more different operations. [MC]</p> <p>Select and justify the selection of appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, CU]</p> <p>Describe strategies for mentally solving problems involving fractions and decimals. [CU]</p> <p>Use calculators to add and subtract with decimal numbers with precision to the thousandths place and beyond.</p> <p>Identify when an approximation is appropriate. [MC]</p> <p>Apply estimation strategies prior to computation on whole numbers, decimals, and fractions to approximate an answer. [RL]</p> <p>Use estimation to verify the reasonableness of calculated results. [RL]</p> <p>Identify appropriate estimated answers for a given situation.</p> <p>Describe various strategies used during estimation involving fractions and decimals. [CU]</p>		<p>Use calculators to add and subtract with decimal numbers with precision to the thousandths place and beyond.</p> <p>Identify when an approximation is appropriate. [MC]</p> <p>Apply estimation strategies prior to computation on whole numbers, decimals, and fractions to approximate an answer. [RL]</p> <p>Use estimation to verify the reasonableness of calculated results. [RL]</p> <p>Identify appropriate estimated answers for a given situation.</p> <p>Describe various strategies used during estimation involving fractions and decimals. [CU]</p>	1.1.8
Measurement	<p>Estimate angle measures</p> <p>Measure angles</p> <p>Calculate an n-gon angle sum</p> <p>Angles on a circular grid</p> <p>Problems with angles</p> <p>Calculate a quadrilateral angle sum</p> <p>Calculate a triangle angle sum</p> <p>Find the perimeter of rectangles, squares, triangles, irregular polygons</p> <p>Find the perimeter of circles (circumference)</p> <p>Constant perimeter, changing area</p> <p>Solve problems with perimeter</p> <p>Calculate the area of rectangles, squares, triangles, parallelograms, and irregular polygons</p> <p>Calculate the area of circles</p> <p>Constant area, changing perimeter</p> <p>Solve problems with area</p> <p>Determine volumes of figures made from cubes</p> <p>Compare the relative capacity of two containers and explain the differences (e.g., paper cylinders formed horizontally and vertically</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p> <p>Accelerated Math—(computation and practice, exposure to additional content, individualized, mastery-based)</p>	<p>N-gon angle sum</p> <p>Angles on a circular grid</p> <p>Quadrilateral angle sum</p> <p>Triangle angle sum</p> <p>Perimeter of triangles</p> <p>Perimeter of irregular polygons</p> <p>Area of irregular polygons</p> <p>Constant area, changing perimeter</p> <p>Solving problems with area</p> <p>Volumes of figures made from cubes</p> <p>Compare the relative capacity of two containers and explain the differences (e.g., paper cylinders formed horizontally and vertically and filled with popcorn). [RL]</p> <p>Represent the volume for given rectangular prisms using pictures or models. [CU]</p> <p>Compare the surface area of two different rectangular prisms. Describe and provide examples for surface area measurement (e.g., gift wrapping, painting a room, amount of material needed to build a box). [MC]</p>	1.2.1

	<p>and filled with popcorn). [RL] Represent the volume for given rectangular prisms using pictures or models. [CU] Compare the surface area of two different rectangular prisms. Describe and provide examples for surface area measurement (e.g., gift wrapping, painting a room, amount of material needed to build a box). [MC] Explain and give examples of how the area and surface area are related (e.g., surface area is the sums of the areas of all the sides of a rectangular prism). [CU, MC] Describe and compare the use of area and volume (e.g., covering and filling). [CU] Identify cubic units to measure volume (e.g., linking cubes, cubic centimeter). Identify and read incremental units for capacity (e.g., milliliters, cups, ounces). Use the appropriate units when describing a situation (e.g., five square meters of carpet, five cubic meters of water). [MC] Explain why volume is measured in cubic units. [CU, MC] Explain how the selected unit of length affects the size of cubic units (e.g., centimeter versus inch). [CU] Identify the attribute to be measured in the situation (e.g., volume or capacity). Choose the appropriate standard unit for measuring volume or capacity (e.g., cubic inches vs. cubic feet, cups vs. gallons). Select and use tools that match the unit. Count or compute to obtain the volume or capacity and label the measurement. Use volume and capacity to describe and compare figures (e.g., fill containers with cubes to find which has a greater volume). [RL, CU] Measure the capacity of containers using appropriate tools and label (e.g., graduated cylinders, measuring cups, tablespoons). [CU] Evaluate whether measurement has been done correctly. [RL] Identify situations in which estimated measures are sufficient. Estimate volume or capacity. Use estimation to justify reasonableness of a volume of a rectangular prism. [RL] Estimate a measurement of volume or capacity using</p>		<p>Explain and give examples of how the area and surface area are related (e.g., surface area is the sums of the areas of all the sides of a rectangular prism). [CU, MC] Describe and compare the use of area and volume (e.g., covering and filling). [CU] Identify cubic units to measure volume (e.g., linking cubes, cubic centimeter). Identify and read incremental units for capacity (e.g., milliliters, cups, ounces). Use the appropriate units when describing a situation (e.g., five square meters of carpet, five cubic meters of water). [MC] Explain why volume is measured in cubic units. [CU, MC] Explain how the selected unit of length affects the size of cubic units (e.g., centimeter versus inch). [CU] Identify the attribute to be measured in the situation (e.g., volume or capacity). Choose the appropriate standard unit for measuring volume or capacity (e.g., cubic inches vs. cubic feet, cups vs. gallons). Select and use tools that match the unit. Count or compute to obtain the volume or capacity and label the measurement. Use volume and capacity to describe and compare figures (e.g., fill containers with cubes to find which has a greater volume). [RL, CU] Measure the capacity of containers using appropriate tools and label (e.g., graduated cylinders, measuring cups, tablespoons). [CU] Evaluate whether measurement has been done correctly. [RL] Identify situations in which estimated measures are sufficient. Estimate volume or capacity. Use estimation to justify reasonableness of a volume of a rectangular prism. [RL] Estimate a measurement of volume or capacity using standard or non-standard units (e.g., estimate the capacity of a bowl in cups and handfuls). [SP] Use or describe a process to find a reasonable estimate of volume or capacity (e.g., fill a container with rice or popcorn). [CU]</p>	<p>1.2.2</p> <p>1.2.4</p> <p>1.2.6</p>
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	<p>standard or non-standard units (e.g., estimate the capacity of a bowl in cups and handfuls). [SP]</p> <p>Use or describe a process to find a reasonable estimate of volume or capacity (e.g., fill a container with rice or popcorn). [CU]</p>			
Geometric Sense	<p>Parallel lines</p> <p>Vertex angles</p> <p>Central angles</p> <p>Angles of a polygon</p> <p>Angles on a circular grid</p> <p>Properties of polygons</p> <p>Vertex of a polygon</p> <p>Regular polygons</p> <p>Tilings</p> <p>Tessellations</p> <p>Diagonals</p> <p>Classifying triangles</p> <p>Solving problems with polygons</p> <p>Classifying quadrilaterals</p> <p>Polygons with more than 4 sides</p> <p>Logo programming</p> <p>Using circles</p> <p>2-dimensional models</p> <p>3-dimensional models</p> <p>Base plans</p> <p>Outline views</p> <p>Isometric drawings</p> <p>Relationships between 2-and 3-dimensional models</p> <p>Reflectional symmetry</p> <p>Maximum and minimum buildings</p> <p>Ziggurats</p> <p>Reflections</p> <p>Rotations</p> <p>Name and sort circles or rectangular prisms according to their attributes (faces, edges, radii, base, parallel faces). [RL]</p> <p>Draw a figure with given characteristics (e.g., the set of points equidistant from a given point). [CU]</p> <p>Identify lines of symmetry in rectangular prisms.</p> <p>Explain lines of symmetry for circles. [CU]</p> <p>Describe the relationship between the diameter and the radius of a circle. [CU]</p> <p>Identify geometric figures and concepts in nature and art (e.g., triangle in architecture, rhombus in beadwork, culturally relevant textiles, quilts). [MC]</p> <p>Combine polygons to create given two-dimensional figures and represent them on grid paper (e.g., use all pieces of tangrams to create a square). [SP, RL, CU]</p> <p>Create a three-dimensional shape given its net or draw the net of a given three-dimensional shape. [RL]</p> <p>Find the missing measure of an angle using the properties of</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p> <p>Accelerated Math—skill review</p>	<p>Parallel lines</p> <p>Vertex angles</p> <p>Central angles</p> <p>Angles of a polygon</p> <p>Angles on a circular grid</p> <p>Properties of polygons</p> <p>Vertex of a polygon</p> <p>Regular polygons</p> <p>Tessellations</p> <p>Diagonals</p> <p>Classifying triangles</p> <p>Solving problems with polygons</p> <p>Classifying quadrilaterals</p> <p>Polygons with more than 4 sides</p> <p>Logo programming</p> <p>2-dimensional models</p> <p>Base plans</p> <p>Outline views</p> <p>Isometric drawings</p> <p>Relationships between 2-and 3-dimensional models</p> <p>Reflectional symmetry</p> <p>Maximum and minimum buildings</p> <p>Ziggurats</p> <p>Name and sort circles or rectangular prisms according to their attributes (faces, edges, radii, base, parallel faces). [RL]</p> <p>Draw a figure with given characteristics (e.g., the set of points equidistant from a given point). [CU]</p> <p>Identify lines of symmetry in rectangular prisms.</p> <p>Explain lines of symmetry for circles. [CU]</p> <p>Describe the relationship between the diameter and the radius of a circle. [CU]</p> <p>Identify geometric figures and concepts in nature and art (e.g., triangle in architecture, rhombus in beadwork, culturally relevant textiles, quilts). [MC]</p> <p>Combine polygons to create given two-dimensional figures and represent them on grid paper (e.g., use all pieces of tangrams to create a square). [SP, RL, CU]</p> <p>Create a three-dimensional shape given its net or draw the net of a given three-dimensional shape. [RL]</p> <p>Find the missing measure of an angle using the properties of parallel lines, perpendicular lines, vertical and corresponding angles.</p> <p>Find the missing angle given all but one of the angles of a</p>	<p>1.3.1</p> <p>1.3.2</p>

	<p>parallel lines, perpendicular lines, vertical and corresponding angles. Find the missing angle given all but one of the angles of a polygon. [RL] Show the order of a given set of integers on a number line. [CU] Identify the point of final destination given directions for movement on a number line including positive and negative numbers (vertical or horizontal) (e.g., temperature variation at different times of the day, bank accounts, gain and loss of weight). [MC] Determine the distance between any two integers on a number line. [RL] Describe relative location of points and objects on a number line with both positive and negative numbers. [CU] Identify objects on a number line based on given numeric locations. Apply rotations (turns) of 90° or 180° to a simple two-dimensional figure. Create a design using (900, 1800, 2700, 3600) rotations (turns) of a shape. [SP, MC] Show how a shape has been rotated by 90° or 180°. [CU] Describe a rotation so that another person could draw it. [CU] Identify the coordinates of objects that have been rotated 90°, 180°, or 270° on a coordinate grid. Determine whether an object has been translated or rotated on a coordinated grid.</p>		<p>polygon. [RL] Show the order of a given set of integers on a number line. [CU] Identify the point of final destination given directions for movement on a number line including positive and negative numbers (vertical or horizontal) (e.g., temperature variation at different times of the day, bank accounts, gain and loss of weight). [MC] Determine the distance between any two integers on a number line. [RL] Describe relative location of points and objects on a number line with both positive and negative numbers. [CU] Identify objects on a number line based on given numeric locations. Apply rotations (turns) of 90° or 180° to a simple two-dimensional figure. Create a design using (900, 1800, 2700, 3600) rotations (turns) of a shape. [SP, MC] Show how a shape has been rotated by 90° or 180°. [CU] Describe a rotation so that another person could draw it. [CU] Identify the coordinates of objects that have been rotated 90°, 180°, or 270° on a coordinate grid. Determine whether an object has been translated or rotated on a coordinated grid.</p>	<p>1.3.3</p> <p>1.3.4</p>
<p>Probability and Statistics</p>	<p>Questioning Collect and analyze data Interpret data Randomness Conduct surveys Construct line plots Create single, double, stacked bar graphs Create stem-and leaf plots Coordinate graphs, axes Tables Frequency tables Circle graphs (pie charts) Choosing the best mathematical model Mode Median Mean (average) Range Outliers Shape of data Concept of probability Predicting, computing Equally and unequally likely outcomes</p>	<p>Small group work Whole group instruction Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math—(computation and practice, exposure to additional content, individualized, mastery-based)</p>	<p>Line plots Single, double, stacked bar graphs Frequency tables Circle graphs (pie charts) Mode Outliers Concept of probability Predicting, computing Certain, possible, impossible Determine whether a real-life event has zero probability, 50% probability, or 100% probability of occurring. [MC] Express probabilities as fractions or decimals between 0 and 1 and percents between 0 and 100. [CU] Translate between representations of probability (e.g., translate a probability of 6 out of 16 to 3/8 or 37.5%). [MC] Determine and use the probabilities of the outcome of a single event. Represent or describe all possible outcomes of experiments (e.g., an</p>	<p>1.4.1</p> <p>1.4.2</p>

	<p>Certain, possible, impossible Experimental probability Theoretical probability Outcomes, trials Dependent and independent events Expected value Fair and unfair games Genetics Randomness Lists, charts, counting trees, area models</p> <p>Determine whether a real-life event has zero probability, 50% probability, or 100% probability of occurring. [MC]</p> <p>Express probabilities as fractions or decimals between 0 and 1 and percents between 0 and 100. [CU]</p> <p>Translate between representations of probability (e.g., translate a probability of 6 out of 16 to $\frac{3}{8}$ or 37.5%). [MC]</p> <p>Determine and use the probabilities of the outcome of a single event.</p> <p>Represent or describe all possible outcomes of experiments (e.g., an organized list, a table, a tree diagram, or a sample space). [RL, CU]</p> <p>Calculate probability for an event (e.g., pulling colored or numbered balls from a bag, drawing a card, rolling a six on a number cube, spinning a spinner, etc.).</p> <p>Determine all possible outcomes (sample space) of an experiment or event (e.g., all different choices a person has to wear one top and one skirt from three different tops and two different skirts). [CU]</p> <p>Evaluate how a question or data collection method may affect the data. [RL]</p> <p>Determine whether a sampling method will result in a representative sample.</p> <p>Describe a data collection method that will provide an unbiased sample. [CU]</p> <p>Compare data collection methods for a given situation to determine fairness of the method (e.g., compare a phone survey, a web survey, and a personal interview survey). [RL, MC]</p> <p>Identify different ways of selecting a sample (e.g., convenience sampling, response to a survey, random sampling) and explain which method makes a sample more representative for a population. [SP, MC]</p> <p>Determine when it is appropriate to use mean, median, or mode and why a specific measure provides the most useful</p>		<p>organized list, a table, a tree diagram, or a sample space). [RL, CU]</p> <p>Calculate probability for an event (e.g., pulling colored or numbered balls from a bag, drawing a card, rolling a six on a number cube, spinning a spinner, etc.).</p> <p>Determine all possible outcomes (sample space) of an experiment or event (e.g., all different choices a person has to wear one top and one skirt from three different tops and two different skirts). [CU]</p> <p>Evaluate how a question or data collection method may affect the data. [RL]</p> <p>Determine whether a sampling method will result in a representative sample.</p> <p>Describe a data collection method that will provide an unbiased sample. [CU]</p> <p>Compare data collection methods for a given situation to determine fairness of the method (e.g., compare a phone survey, a web survey, and a personal interview survey). [RL, MC]</p> <p>Identify different ways of selecting a sample (e.g., convenience sampling, response to a survey, random sampling) and explain which method makes a sample more representative for a population. [SP, MC]</p> <p>Determine when it is appropriate to use mean, median, or mode and why a specific measure provides the most useful information in a given context. [RL, CU]</p> <p>Use mean, median, and mode to explain familiar situations (e.g., the heights of students in the class, the hair color of students in the class). [CU, MC]</p> <p>Find the missing number given a mean for a data set with a missing element (e.g., given a set of homework scores and the desire to earn an average score of 80%, determine what score the student must earn on the next assignment). [SP, RL]]</p> <p>Justify a choice of a graph type for a given situation using information about the type of data. [RL, CU, MC]</p> <p>Read and interpret data from single line graphs and scatter plots and determine when the use of these graphs is appropriate. [RL, CU]</p> <p>Use an appropriate representation to display data (e.g., table, graphs) given a particular</p>	<p>1.4.3</p> <p>1.4.4</p> <p>1.4.5</p>
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	<p>information in a given context. [RL, CU]</p> <p>Use mean, median, and mode to explain familiar situations (e.g., the heights of students in the class, the hair color of students in the class). [CU, MC]</p> <p>Find the missing number given a mean for a data set with a missing element (e.g., given a set of homework scores and the desire to earn an average score of 80%, determine what score the student must earn on the next assignment). [SP, RL]</p> <p>Justify a choice of a graph type for a given situation using information about the type of data. [RL, CU, MC]</p> <p>Read and interpret data from single line graphs and scatter plots and determine when the use of these graphs is appropriate. [RL, CU]</p> <p>Use an appropriate representation to display data (e.g., table, graphs) given a particular situation and audience. [MC, CU]</p> <p>Make inferences based on a set of data. [RL]</p> <p>Use data from a table, graph, or chart to support an interpretation. [RL, CU]</p> <p>Use technology to generate bar graphs, line graphs, and scatter plots from tables of data. [MC]</p> <p>Compare graphs to data sets (e.g., given unlabeled graphs and data sets, match the appropriate data to a graph). [RL]</p> <p>Judge the appropriateness of inferences made from a set of data and support the judgment. [CU, MC]</p> <p>Identify claims based on statistical data and assess the validity of the claims. [CU, RL]</p> <p>Explain whether the scale on a graph accurately represents the data. [CU]</p> <p>Compare or evaluate two or more interpretations of the same set of data for accuracy.</p>		<p>situation and audience. [MC, CU]</p> <p>Make inferences based on a set of data. [RL]</p> <p>Use data from a table, graph, or chart to support an interpretation. [RL, CU]</p> <p>Use technology to generate bar graphs, line graphs, and scatter plots from tables of data. [MC]</p> <p>Compare graphs to data sets (e.g., given unlabeled graphs and data sets, match the appropriate data to a graph). [RL]</p> <p>Judge the appropriateness of inferences made from a set of data and support the judgment. [CU, MC]</p> <p>Identify claims based on statistical data and assess the validity of the claims. [CU, RL]</p> <p>Explain whether the scale on a graph accurately represents the data. [CU]</p> <p>Compare or evaluate two or more interpretations of the same set of data for accuracy.</p>	1.4.6
Algebraic Sense	<p>Ordered pairs</p> <p>Polar coordinates</p> <p>Recognize or extend patterns and sequences using operations that alternate between terms. [RL]</p> <p>Create, explain, or extend number patterns involving two related sets of numbers and two operations including addition, subtraction, multiplication, or division. [CU]</p> <p>Use rules for generating number patterns (e.g., Fibonacci</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response</p> <p>questions</p> <p>Unit Projects</p>	<p>Recognize or extend patterns and sequences using operations that alternate between terms. [RL]</p> <p>Create, explain, or extend number patterns involving two related sets of numbers and two operations including addition, subtraction, multiplication, or division. [CU]</p> <p>Use rules for generating number patterns (e.g., Fibonacci sequence, bouncing ball) to model real-life situations. [MC]</p>	1.5.1

	<p>sequence, bouncing ball) to model real-life situations. [MC] Use technology to generate patterns based on two arithmetic operations. [SP] Supply missing elements in a pattern based on two operations. Select or create a pattern that is equivalent to a given pattern. Describe the rule for a pattern with combinations of two arithmetic operations in the rule. Identify patterns involving combinations of operations in the rule, including exponents (e.g., 2, 5, 11, 23). [RL, MC] Represent a situation with a rule involving a single operation (e.g., presidential elections occur every four years; when will the next three elections occur after a given year). [CU, MC] Create a pattern involving two operations using a given rule. Express relationships between quantities (decimals, percents, and integers) using =, ≠, <, >, ≤, and ≥. [CU] Match a given situation to the correct inequality or equality. [MC] Express relationships between non-negative rational numbers using symbols. Write an inequality with a single variable to match a particular situation. [RL, CU] Translate a situation involving multiple arithmetic operations into algebraic form using equations, tables, and graphs. [RL, CU, MC] Identify or describe a situation involving two arithmetic operations that matches a given graph. [CU, MC] Represent an equation, expression, or inequality using a variable in place of an unknown number. [CU] Represent or evaluate algebraic expressions involving a single variable. [RL, CU] Represent an equation or expression using a variable in place of an unknown number. [RL, CU] Identify a situation that corresponds to a given equation or expression. Evaluate simple expressions and formulas using pictures and/or symbols. [RL] Represent and evaluate algebraic expressions involving a single variable. [RL, CU] Evaluate an expression by substituting non-negative values</p>	<p>Journals ACE questions Warm-up activities Accelerated Math— (computation and practice, exposure to additional content, individualized, mastery-based)</p>	<p>Use technology to generate patterns based on two arithmetic operations. [SP] Supply missing elements in a pattern based on two operations. Select or create a pattern that is equivalent to a given pattern. Describe the rule for a pattern with combinations of two arithmetic operations in the rule. Identify patterns involving combinations of operations in the rule, including exponents (e.g., 2, 5, 11, 23). [RL, MC] Represent a situation with a rule involving a single operation (e.g., presidential elections occur every four years; when will the next three elections occur after a given year). [CU, MC] Create a pattern involving two operations using a given rule. Express relationships between quantities (decimals, percents, and integers) using =, ≠, <, >, ≤, and ≥. [CU] Match a given situation to the correct inequality or equality. [MC] Express relationships between non-negative rational numbers using symbols. Write an inequality with a single variable to match a particular situation. [RL, CU] Translate a situation involving multiple arithmetic operations into algebraic form using equations, tables, and graphs. [RL, CU, MC] Identify or describe a situation involving two arithmetic operations that matches a given graph. [CU, MC] Represent an equation, expression, or inequality using a variable in place of an unknown number. [CU] Represent or evaluate algebraic expressions involving a single variable. [RL, CU] Represent an equation or expression using a variable in place of an unknown number. [RL, CU] Identify a situation that corresponds to a given equation or expression. Evaluate simple expressions and formulas using pictures and/or symbols. [RL] Represent and evaluate algebraic expressions involving a single variable. [RL, CU] Evaluate an expression by substituting non-negative values for variables (e.g., find the value of $3y + 2$ when $y=3$). [RL, MC]</p>	<p>1.5.2</p> <p>1.5.3</p> <p>1.5.4</p> <p>1.5.5</p>
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	<p>for variables (e.g., find the value of $3y + 2$ when $y=3$). [RL, MC] Determine the expression that represents a given situation. [MC, CU] Describe a situation that fits with a given expression. [RL, MC, CU] Solve one-step equations using pictures and symbols. Solve one-step single variable equations using any strategy (e.g., what number goes in the mystery box). Solve real-world situations involving single variable equations. [CU, MC] Explain a strategy for solving a single variable equation. [CU] Write and solve one-step single variable equations for a given situation. [MC]</p>		<p>Determine the expression that represents a given situation. [MC, CU] Describe a situation that fits with a given expression. [RL, MC, CU] Solve one-step equations using pictures and symbols. Solve one-step single variable equations using any strategy (e.g., what number goes in the mystery box). Solve real-world situations involving single variable equations. [CU, MC] Explain a strategy for solving a single variable equation. [CU] Write and solve one-step single variable equations for a given situation. [MC]</p>	1.5.6
Problem Solving	<p>Use strategies to become informed about the situation (e.g., listing information, asking questions). Summarize the situation (e.g., there is 100 feet of fencing and we want to enclose as much land, in the shape of a rectangle, as possible). Determine whether enough information is given to find a solution (e.g., list what is needed to find the area of a rectangle and compare to the list of known things). Determine whether information is missing or extraneous (e.g., compare the list of known things to the list of needed things to see if there are things that are not needed). Define the problem (e.g., find the rectangle with largest area with a perimeter of 100 feet). Organize relevant information from multiple sources to devise a plan (e.g., create a list of known and unknown information; create a table of values for length, width, and area of rectangles with perimeter of 100). Select and apply appropriate mathematical tools for a situation (e.g., guess and check, creating tables of values [with or without technology], examine relationships between sides of a rectangle and area). Implement the plan devised to solve the problem (e.g., in a table of values of lengths, widths, and areas find the one that shows the largest area; check smaller increments to see if this is the largest that works).</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities</p>	<p>Use strategies to become informed about the situation (e.g., listing information, asking questions). Summarize the situation (e.g., there is 100 feet of fencing and we want to enclose as much land, in the shape of a rectangle, as possible). Determine whether enough information is given to find a solution (e.g., list what is needed to find the area of a rectangle and compare to the list of known things). Determine whether information is missing or extraneous (e.g., compare the list of known things to the list of needed things to see if there are things that are not needed). Define the problem (e.g., find the rectangle with largest area with a perimeter of 100 feet). Organize relevant information from multiple sources to devise a plan (e.g., create a list of known and unknown information; create a table of values for length, width, and area of rectangles with perimeter of 100). Select and apply appropriate mathematical tools for a situation (e.g., guess and check, creating tables of values [with or without technology], examine relationships between sides of a rectangle and area). Implement the plan devised to solve the problem (e.g., in a table of values of lengths, widths, and areas find the one that shows the largest area; check smaller increments to see if this is the largest that works).</p>	<p>2.1.1</p> <p>2.2.1</p> <p>2.2.2</p>

	<p>Identify when an approach is unproductive and modify or try a new approach (e.g., while guess and check may give some sense of a neighborhood of values, it is less efficient than a more organized method). Check the solution to see if it works (e.g., if the solution gives a perimeter that is not 100, it makes no sense in the given problem).</p>		<p>Identify when an approach is unproductive and modify or try a new approach (e.g., while guess and check may give some sense of a neighborhood of values, it is less efficient than a more organized method). Check the solution to see if it works (e.g., if the solution gives a perimeter that is not 100, it makes no sense in the given problem).</p>	
Reasoning	<p>Identify claims based on statistical data and evaluate the validity of the claims. [1.4.5] Read and interpret data from single line graphs and scatter plots and determine when the use of these graphs is appropriate. [1.4.5] Use volume and capacity to describe and compare figures (e.g., fill containers with cubes to find which has a greater volume). [1.2.4] Identify claims based on statistical data and evaluate the validity of the claims. [1.4.5] Predict a future element in a relation (e.g., find the fifteenth term in a pattern). [1.5.1] Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence (e.g., read a newspaper article or ad; draw a conclusion and support that conclusion with evidence from the article or elsewhere). Represent and interpret all possible outcomes of experiments (e.g., an organized list, a table, a tree diagram, or a sample space). [1.4.2] Find and compare rectangular prisms that have a given volume (e.g., if two rectangular prisms have the same volume and one has twice the height of the other, determine how the areas of their bases compare). [1.2.5] Apply estimation strategies prior to computation of whole numbers, decimals, and fractions to determine reasonableness of answers. [1.1.8] Identify different ways of selecting a sample (e.g., convenience sampling, response to a survey, random sampling) and which method makes a sample more representative for a population. [1.4.3] Identify claims based on statistical data and evaluate the validity of the claims. [1.4.5]</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions</p>	<p>Identify claims based on statistical data and evaluate the validity of the claims. [1.4.5] Read and interpret data from single line graphs and scatter plots and determine when the use of these graphs is appropriate. [1.4.5] Use volume and capacity to describe and compare figures (e.g., fill containers with cubes to find which has a greater volume). [1.2.4] Identify claims based on statistical data and evaluate the validity of the claims. [1.4.5] Predict a future element in a relation (e.g., find the fifteenth term in a pattern). [1.5.1] Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence (e.g., read a newspaper article or ad; draw a conclusion and support that conclusion with evidence from the article or elsewhere). Represent and interpret all possible outcomes of experiments (e.g., an organized list, a table, a tree diagram, or a sample space). [1.4.2] Find and compare rectangular prisms that have a given volume (e.g., if two rectangular prisms have the same volume and one has twice the height of the other, determine how the areas of their bases compare). [1.2.5] Apply estimation strategies prior to computation of whole numbers, decimals, and fractions to determine reasonableness of answers. [1.1.8] Identify different ways of selecting a sample (e.g., convenience sampling, response to a survey, random sampling) and which method makes a sample more representative for a population. [1.4.3] Identify claims based on statistical data and evaluate the validity of the claims. [1.4.5]</p>	<p>3.1.1</p> <p>3.2.1</p> <p>3.2.2</p> <p>3.2.3</p> <p>3.3.1</p> <p>3.3.2</p>

Communication	<p>Use mean, median, and mode to explain familiar situations (e.g., the heights of students in the class; the hair color of students in the class). [1.4.4]</p> <p>Decide on information needed to create a report on a mathematical topic (e.g., compare the predicted rainfall in a given period with the actual rainfall).</p> <p>Use mean, median, and mode to explain situations (e.g., the heights of students in the class; hair color of students in the class; favorite movie of students in the class; most watched movie in a specific time frame). [1.1.4]</p> <p>Show the order of the set of integers on a number line with both positive and negative numbers (e.g., organize the given birth years of the following Arabic kings on a number line). [1.3.3]</p> <p>Articulate various strategies used during estimation involving fractions and decimals. [1.1.8]</p> <p>Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose, such as to perform or persuade, with notation and labels as needed.</p> <p>Use an appropriate representation to display data (e.g., table, graphs) given a particular situation and audience. [1.4.5]</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions</p>	<p>Use mean, median, and mode to explain familiar situations (e.g., the heights of students in the class; the hair color of students in the class). [1.4.4]</p> <p>Decide on information needed to create a report on a mathematical topic (e.g., compare the predicted rainfall in a given period with the actual rainfall).</p> <p>Use mean, median, and mode to explain situations (e.g., the heights of students in the class; hair color of students in the class; favorite movie of students in the class; most watched movie in a specific time frame). [1.1.4]</p> <p>Show the order of the set of integers on a number line with both positive and negative numbers (e.g., organize the given birth years of the following Arabic kings on a number line). [1.3.3]</p> <p>Articulate various strategies used during estimation involving fractions and decimals. [1.1.8]</p> <p>Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose, such as to perform or persuade, with notation and labels as needed.</p> <p>Use an appropriate representation to display data (e.g., table, graphs) given a particular situation and audience. [1.4.5]</p>	<p>4.1.1</p> <p>4.1.2</p> <p>4.2.1</p> <p>4.2.2</p>
Connections	<p>Translate a situation involving multiple arithmetic operations into algebraic form using equation, table, and graphs. [1.5.4]</p> <p>Given a set of data, compare various representations (e.g., table, graph, rule) for a given situation. [1.4.5]</p> <p>Represent equivalent ratios or given percentages using objects, pictures, and symbols. [1.1.4]</p> <p>Match a graph with a data set. [1.5.4]</p> <p>Identify geometric figures and concepts in nature and art (e.g., triangle in architecture, rhombus in beadwork). [1.3.2]</p> <p>Show the order of the set of integers on a number line with both positive and negative numbers (e.g., organize and graph on a number line the given birth years of the given Arabic kings).</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions</p>	<p>Translate a situation involving multiple arithmetic operations into algebraic form using equation, table, and graphs. [1.5.4]</p> <p>Given a set of data, compare various representations (e.g., table, graph, rule) for a given situation. [1.4.5]</p> <p>Represent equivalent ratios or given percentages using objects, pictures, and symbols. [1.1.4]</p> <p>Match a graph with a data set. [1.5.4]</p> <p>Identify geometric figures and concepts in nature and art (e.g., triangle in architecture, rhombus in beadwork). [1.3.2]</p> <p>Show the order of the set of integers on a number line with both positive and negative numbers (e.g., organize and graph on a number line the given birth years of the given Arabic kings).</p>	<p>5.1.1</p> <p>5.1.2</p> <p>5.2.1</p>

	<p>[1.3.3] Read a micrometer to the nearest hundredth of an inch or centimeter, depending on the tool.</p> <p>[1.2.4] Create a physical activity plan that results in 2500 calories expended over the week.</p> <p>Calculate the ratio of various parts of an artwork (length of eyes to ears).</p> <p>Discuss the difference between $\frac{3}{4}$ time and $\frac{6}{8}$ time and how it relates to a model.</p> <p>Recognize the contributions of a variety of people to the development of mathematics (e.g., research the concept of the golden ratio).</p> <p>Write and solve real-world problem situations to find sums or differences of decimals or fractions (e.g., explain how to find the change received from a \$50.00 bill when a given amount of CD's and tapes with prices are bought).</p> <p>[1.1.6] Calculate the ratio of bicycle gears.</p> <p>Explain or describe the mathematics necessary to get and perform in a particular job (e.g., complete a project that researches how mathematics is used in careers or occupations of interest).</p> <p>Identify where in a particular career mathematics is used (e.g., police work — looking for patterns in fingerprints or crimes).</p>		<p>[1.3.3] Read a micrometer to the nearest hundredth of an inch or centimeter, depending on the tool.</p> <p>[1.2.4] Create a physical activity plan that results in 2500 calories expended over the week.</p> <p>Calculate the ratio of various parts of an artwork (length of eyes to ears).</p> <p>Discuss the difference between $\frac{3}{4}$ time and $\frac{6}{8}$ time and how it relates to a model.</p> <p>Recognize the contributions of a variety of people to the development of mathematics (e.g., research the concept of the golden ratio).</p> <p>Write and solve real-world problem situations to find sums or differences of decimals or fractions (e.g., explain how to find the change received from a \$50.00 bill when a given amount of CD's and tapes with prices are bought).</p> <p>[1.1.6] Calculate the ratio of bicycle gears.</p> <p>Explain or describe the mathematics necessary to get and perform in a particular job (e.g., complete a project that researches how mathematics is used in careers or occupations of interest).</p> <p>Identify where in a particular career mathematics is used (e.g., police work — looking for patterns in fingerprints or crimes).</p>	<p>5.2.2</p> <p>5.3.1</p> <p>5.3.2</p>
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	<p>Identify prime, square, or composite numbers. [CU] Explain the meaning of rational numbers and give examples. [CU] Compare and order rational numbers using physical models or implementing strategies (e.g., like denominators, changing to the same form). [RL, MC] Locate symbolic representations of rational numbers on a model (e.g., a number line, fraction line, decimal grid, and circle graph). [MC] Explain the value of a given digit in a rational number (e.g., 2.3 is 2 ones and 3 tenths). [CU] Use the inverse relationships between multiplication and division to simplify computations and solve problems. [SP, RL] Use the inverse properties of addition and multiplication to simplify computations with integers, fractions, and decimals. [SP, RL, MC] Identify the inverse elements when using the additive inverse and the multiplicative inverse properties (e.g., $8 + -8 = 0$; $2 \times \frac{1}{2} = 1$). Use the additive inverse property to solve problems. [RL] Illustrate or explain the additive and multiplicative inverse properties and why they work. [CU] Express proportional relationships using objects, pictures, and symbols. [CU] Explain the meaning of a proportion. [CU] Represent a new relationship from a given ratio (e.g., height of a totem pole, May pole). [MC] Represent percentages less than 1% or greater than 100% using objects, pictures, and symbols. [CU] Complete or write a proportion for a given situation. [CU] Solve problems involving proportions (e.g., determine the number and kinds of baked goods to bring to a bake sale based on proportions of different goods sold at previous bake sales). [SP, MC] Use ratios to make predictions about proportions in a future situation. [RL, MC] Explain the meaning of addition and subtraction of integers using real-world models (e.g., reducing debt, temperature increase or decrease, yards gained and lost, movement of a hot-air balloon).</p>		<p>Locate symbolic representations of rational numbers on a model (e.g., a number line, fraction line, decimal grid, and circle graph). [MC] Explain the value of a given digit in a rational number (e.g., 2.3 is 2 ones and 3 tenths). [CU] Use the inverse relationships between multiplication and division to simplify computations and solve problems. [SP, RL] Use the inverse properties of addition and multiplication to simplify computations with integers, fractions, and decimals. [SP, RL, MC] Identify the inverse elements when using the additive inverse and the multiplicative inverse properties (e.g., $8 + -8 = 0$; $2 \times \frac{1}{2} = 1$). Use the additive inverse property to solve problems. [RL] Illustrate or explain the additive and multiplicative inverse properties and why they work. [CU] Express proportional relationships using objects, pictures, and symbols. [CU] Explain the meaning of a proportion. [CU] Represent a new relationship from a given ratio (e.g., height of a totem pole, May pole). [MC] Represent percentages less than 1% or greater than 100% using objects, pictures, and symbols. [CU] Complete or write a proportion for a given situation. [CU] Solve problems involving proportions (e.g., determine the number and kinds of baked goods to bring to a bake sale based on proportions of different goods sold at previous bake sales). [SP, MC] Use ratios to make predictions about proportions in a future situation. [RL, MC] Explain the meaning of addition and subtraction of integers using real-world models (e.g., reducing debt, temperature increase or decrease, yards gained and lost, movement of a hot-air balloon). [CU, MC] Create a problem situation involving addition or subtraction of integers. [CU, MC] Explain or show the meaning of addition or subtraction of integers. [CU] Use technology to demonstrate addition and subtraction with</p>	<p>1.1.3</p> <p>1.1.4</p> <p>1.1.5</p>
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	<p>[CU, MC] Create a problem situation involving addition or subtraction of integers. [CU, MC] Explain or show the meaning of addition or subtraction of integers. [CU] Use technology to demonstrate addition and subtraction with integers. Find the product or quotient using non-negative decimals and fractions with unlike denominators. Apply percentages to solve a problem in a variety of situations (e.g., taxes, discounts, interest). [SP, MC] Use multiplication and division to solve real-world problems involving non-negative rational numbers. [SP] Multiply non-negative decimal numbers to the hundredths place. Divided non-negative decimals numbers to the thousandths place by non-negative decimal numbers to the hundredths place. Select and justify the selection of appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, RL] Convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator. [MC] Use calculators to add and subtract with integers of two or more digits. Use calculators to compute with decimal numbers with precision from the thousandths place and beyond. Identify when an approximation is appropriate in situations. [MC] Use estimation strategies prior to operations on non-negative rational numbers to approximate an answer. [RL] Justify why estimation would be used rather than an exact computation. [CU] Describe a situation where estimation is sufficient in real life contexts. [CU, MC] Use estimation to verify the reasonableness of calculated results. [RL] Evaluate the appropriateness of estimation in a situation and support the evaluation. [RL]</p>		<p>integers. Find the product or quotient using non-negative decimals and fractions with unlike denominators. Apply percentages to solve a problem in a variety of situations (e.g., taxes, discounts, interest). [SP, MC] Use multiplication and division to solve real-world problems involving non-negative rational numbers. [SP] Multiply non-negative decimal numbers to the hundredths place. Divided non-negative decimals numbers to the thousandths place by non-negative decimal numbers to the hundredths place. Select and justify the selection of appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, RL] Convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator. [MC] Use calculators to add and subtract with integers of two or more digits. Use calculators to compute with decimal numbers with precision from the thousandths place and beyond. Identify when an approximation is appropriate in situations. [MC] Use estimation strategies prior to operations on non-negative rational numbers to approximate an answer. [RL] Justify why estimation would be used rather than an exact computation. [CU] Describe a situation where estimation is sufficient in real life contexts. [CU, MC] Use estimation to verify the reasonableness of calculated results. [RL] Evaluate the appropriateness of estimation in a situation and support the evaluation. [RL]</p>	<p>1.1.6</p> <p>1.1.7</p> <p>1.1.8</p>
Measurement	<p>Estimating angles Measuring angles Angles of similar polygons Problems with angles</p>	<p>Small group work Whole group instruction Mathematical</p>	<p>Estimating angles Measuring angles Angles of similar polygons Problems with angles</p>	

	<p>Perimeter of circles (circumference) Missing measures Solving problems with perimeter Relationships of perimeters of similar figures Area of rectangles Area of squares Area of triangles Area of parallelograms Area of circles Relationships of areas of similar figures Volume of cubes Volume of rectangular prisms Volume of general prisms Volume of cylinders Volume of cones Volume of spheres Volume of irregular figures Similar figures and scale factors Volume by water displacement Solving problems with volume Flat patterns (nets) for solid figures Surface area of cubes Surface area of rectangular prisms Surface area of general prisms Surface area of cylinders Surface area of cones Surface area of spheres Surface area of pyramids Least and greatest surface area for given volume Solving problems with surface area Similar triangles using ratios or scale factor Solving problems with missing lengths Similar triangles and height Similar triangles and distance Solving problems using indirect methods Temperature and integers Relationship between cubic centimeters and milliliters Exponential notation for units of measure Benchmarks for units of measure Converting among customary and metric units of measure Describe the relationships among linear dimensions (e.g., radius of a circle, length of a side or base, changes in the diameter affects the amount of deer hide needed to cover a drum face) and area of the figure (e.g., change the radius or length of a side, and check the change in area; describe that change). [CU] Explain changing one, two, or three dimensions in a rectangular prism and how it affects the surface area and volume; give three examples. Solve problems involving the effects of changes in one dimension on area (e.g., given a</p>	<p>reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math— (computation and practice, exposure to additional content, individualized, mastery-based)</p>	<p>Perimeter of circles (circumference) Missing measures Solving problems with perimeter Relationships of perimeters of similar figures Area of triangles Area of parallelograms Area of circles Relationships of areas of similar figures Volume of rectangular prisms Volume of general prisms Volume of cylinders Volume of irregular figures Similar figures and scale factors Volume by water displacement Solving problems with volume Flat patterns (nets) for solid figures Surface area of rectangular prisms Surface area of general prisms Surface area of pyramids Least and greatest surface area for given volume Solving problems with surface area Similar triangles using ratios or scale factor Similar triangles and height Similar triangles and distance Solving problems using indirect methods Temperature and integers Relationship between cubic centimeters and milliliters Exponential notation for units of measure Benchmarks for units of measure Converting among customary and metric units of measure Describe the relationships among linear dimensions (e.g., radius of a circle, length of a side or base, changes in the diameter affects the amount of deer hide needed to cover a drum face) and area of the figure (e.g., change the radius or length of a side, and check the change in area; describe that change). [CU] Explain changing one, two, or three dimensions in a rectangular prism and how it affects the surface area and volume; give three examples. Solve problems involving the effects of changes in one dimension on area (e.g., given a garden with certain dimensions, make the area of the garden x square units by changing only one dimension of the garden). [SP] Select the appropriate measurement tool to match the precision needed (e.g., if needing measurement to the nearest 1/16 inch, select a ruler that has 1/32</p>	<p>1.2.1</p> <p>1.2.3</p>
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	<p>Drawing polygons on coordinate grid Turtle Math Using circles 3-dimensional models Cubes Rectangular prisms Right prisms Oblique prisms Cylinders Spheres Cones Similar 3-dimensional figures Translations Enlarging, reducing Algebraic rules for transformations Identify corresponding sides and angles of two similar figures. Determine and justify if two figures are similar using the definition of similarity. [CU, RL] Differentiate between similar and congruent figures, either geometric figures or real-world objects, and justify the conclusion. [RL, MC] Explain how a scale drawing is an example of similarity. [CU] Identify, describe, compare, and sort figures. Draw rectangular prisms and circles with specified properties (e.g., circumference of an 18 centimeter quadrilateral having equal sides but no right angles; a triangle with no equal sides). [CU] Use the properties of rectangular prisms and circles to solve problems (e.g., determine which of two rectangular prism-shaped boxes will hold the most cans of food at the food drive and explain how the geometric characteristics affect capacity). [SP, RL, CU, MC] Compare two rectangular prisms based on their characteristics (e.g., compare the geometric characteristics of two rectangular prisms with different dimensions and the same volume). [RL] Identify the coordinates of the fourth point to make a rectangle given three points. [RL] Plot and label ordered pairs in any of the four quadrants. [CU] Name the coordinates of a given point in any of the four quadrants. Identify objects or the location of objects on a coordinate grid using coordinates or labels. Use technology to locate objects on a two-dimensional grid. Use ordered pairs to describe the location of objects on a grid. Identify and explain whether a shape has been translated (slid) or reflected (flipped) with or without a grid. [RL, CU]</p>	<p>reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math—skill review</p>	<p>Turtle Math Using circles 3-dimensional models Cubes Rectangular prisms Right prisms Oblique prisms Cylinders Spheres Cones Similar 3-dimensional figures Enlarging, reducing Identify corresponding sides and angles of two similar figures. Determine and justify if two figures are similar using the definition of similarity. [CU, RL] Differentiate between similar and congruent figures, either geometric figures or real-world objects, and justify the conclusion. [RL, MC] Explain how a scale drawing is an example of similarity. [CU] Identify, describe, compare, and sort figures. Draw rectangular prisms and circles with specified properties (e.g., circumference of an 18 centimeter quadrilateral having equal sides but no right angles; a triangle with no equal sides). [CU] Use the properties of rectangular prisms and circles to solve problems (e.g., determine which of two rectangular prism-shaped boxes will hold the most cans of food at the food drive and explain how the geometric characteristics affect capacity). [SP, RL, CU, MC] Compare two rectangular prisms based on their characteristics (e.g., compare the geometric characteristics of two rectangular prisms with different dimensions and the same volume). [RL] Identify the coordinates of the fourth point to make a rectangle given three points. [RL] Plot and label ordered pairs in any of the four quadrants. [CU] Name the coordinates of a given point in any of the four quadrants. Identify objects or the location of objects on a coordinate grid using coordinates or labels. Use technology to locate objects on a two-dimensional grid. Use ordered pairs to describe the location of objects on a grid. Identify and explain whether a shape has been translated (slid) or reflected (flipped) with or without a grid. [RL, CU] Use transformations to create congruent figures and shapes in multiple orientations.</p>	<p>1.3.1</p> <p>1.3.2</p> <p>1.3.3</p> <p>1.3.4</p>
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	<p>Use transformations to create congruent figures and shapes in multiple orientations.</p> <p>Find the coordinate pairs for a translation or a reflection across an axis given a shape on a coordinate grid. [RL]</p> <p>Match a shape with its image following one or two transformations (sliding or flipping). [RL]</p> <p>Use combinations of translations and reflections to draw congruent figures. [RL]</p> <p>Use ordered pairs to describe the location of an object on a coordinate grid after a translation and reflection. [CU]</p>		<p>Find the coordinate pairs for a translation or a reflection across an axis given a shape on a coordinate grid. [RL]</p> <p>Match a shape with its image following one or two transformations (sliding or flipping). [RL]</p> <p>Use combinations of translations and reflections to draw congruent figures. [RL]</p> <p>Use ordered pairs to describe the location of an object on a coordinate grid after a translation and reflection. [CU]</p>	
Probability and Statistics	<p>Questioning</p> <p>Collecting data</p> <p>Analyzing data</p> <p>Interpreting data</p> <p>Data from experiments</p> <p>Coordinate graphs, axes</p> <p>Tables</p> <p>Data expressed as rates</p> <p>Data expressed as totals</p> <p>Probability defined</p> <p>Equally and unequally likely outcomes</p> <p>Experimental probability</p> <p>Theoretical probability</p> <p>Outcomes, trials</p> <p>Dependent and independent events</p> <p>Expected value</p> <p>Fair and unfair games</p> <p>Two-stage games</p> <p>Genetics</p> <p>Randomness</p> <p>Lists, charts, counting trees, area models</p> <p>Simulations</p> <p>Determine and explain when events are mutually exclusive (e.g., your grade on a test is an A, B, or C). [CU, MC]</p> <p>Determine and explain when events are complementary (e.g., a person awake or asleep, you pass or fail a test, coin throw – heads or tails). [CU, MC]</p> <p>Identify or explain when events are complementary, mutually exclusive, or neither (e.g., spinning a 4 or a 5 but with the possibility of spinning 1, 2, 3, or 6) and explain. [CU]</p> <p>Calculate the probabilities of independent or mutually exclusive outcomes or events. Calculate the probability of an event given the probability of its complement.</p> <p>Create a game that has an equal probability for all players to win. [SP, MC]</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p> <p>Accelerated Math— (computation and practice, exposure to additional content, individualized, mastery-based)</p>	<p>Coordinate graphs, axes</p> <p>Data expressed as rates</p> <p>Data expressed as totals</p> <p>Probability defined</p> <p>Experimental probability</p> <p>Theoretical probability</p> <p>Outcomes, trials</p> <p>Dependent and independent events</p> <p>Expected value</p> <p>Fair and unfair games</p> <p>Two-stage games</p> <p>Genetics</p> <p>Randomness</p> <p>Simulations</p> <p>Determine and explain when events are mutually exclusive (e.g., your grade on a test is an A, B, or C). [CU, MC]</p> <p>Determine and explain when events are complementary (e.g., a person awake or asleep, you pass or fail a test, coin throw – heads or tails). [CU, MC]</p> <p>Identify or explain when events are complementary, mutually exclusive, or neither (e.g., spinning a 4 or a 5 but with the possibility of spinning 1, 2, 3, or 6) and explain. [CU]</p> <p>Calculate the probabilities of independent or mutually exclusive outcomes or events. Calculate the probability of an event given the probability of its complement.</p> <p>Create a game that has an equal probability for all players to win. [SP, MC]</p> <p>Revise a game with unequal probabilities for all players and make it a fair game. [SP, MC]</p> <p>Determine, interpret, or express probabilities in the form of a fraction, decimal, or percent. [CU, MC]</p> <p>Predict the probability of outcomes of experiments and test the predictions. [RL]</p>	<p>1.4.1</p> <p>1.4.2</p>

	<p>Graphs for linear equations Fitting linear equations to a graph $y = mx + b$ Finding y-intercepts Writing linear equations from graphs Writing linear equations given slope and one point Writing linear equations given two points Writing linear equations from tables Solving linear equations with tables Solving linear equations by graphing Solving linear equations symbolically Solving linear equations with a graphing calculator Intersecting lines Solving systems of linear equations Definition of linear functions Ordered pairs Graphing equations Graphing functions Slope from graphs x-intercept on a graph y-intercept on a graph Identify patterns that are linear relations and provide missing terms. [RL] Describe the relationship between the terms in a sequence and their positions in the sequence. [CU] Identify, extend, or represent patterns and sequences using tables, graphs, or expressions. [RL, MC] Use technology to generate graphic representations of linear relationships. [SP] Make predictions using linear relationships in situations. [RL] Identify a linear relationship that has the same pattern as another linear relationship. Create a representation of a linear relationship given a rule. [MC] Describe the rule and/or construct a table to represent a pattern with combinations of two arithmetic operations in the rule. Write an expression or equation with a single variable representing a situation or real-world problem. [CU, MC] Write a story about a situation that represents a given linear equation, expression, or graph. [CU, MC] Describe the rule or construct a table to represent a pattern with combinations of two arithmetic operations in the rule. [RL, CU] Use technology to determine the rule for a linear relationship. [SP, RL] Represent relationships between quantities using exponents (squares) and radicals (roots).</p>		<p>arithmetic operations in the rule. Write an expression or equation with a single variable representing a situation or real-world problem. [CU, MC] Write a story about a situation that represents a given linear equation, expression, or graph. [CU, MC] Describe the rule or construct a table to represent a pattern with combinations of two arithmetic operations in the rule. [RL, CU] Use technology to determine the rule for a linear relationship. [SP, RL] Represent relationships between quantities using exponents (squares) and radicals (roots). [CU] Simplify square roots of square numbers (e.g., the square root of 9 is 3). [RL] Demonstrate understanding of square roots with physical models and examples. [CU] Use exponents (squares) and radicals (square roots) to represent relationships (e.g., finding the area of a square with a side of 5 could be represented by 5²). [CU] Represent linear relationships through expressions, equations, tables, and graphs of situations involving non-negative rational numbers. Graph data to demonstrate relationships in familiar contexts (e.g., conversions, perimeter, area, volume, and scaling). [CU, MC] Develop a situation that corresponds to a given equation or expression. [CU, MC] Create a table or graph given a description of, or an equation for, a situation involving a linear relationship. [CU, MC] Describe a situation involving a linear or non-linear relationship that matches a given graph (e.g., time-distance, time-height). [CU, MC] Explain the meaning of a variable in a formula, expression, or equation. [CU] Substitute non-negative rational values for variables in order to evaluate expressions and formulas (e.g., length x width when length=3 and width=4) Explain the simplification of expressions and equations using order of operations. [CU] Evaluate expressions and formulas considering order of</p>	<p>1.5.3</p> <p>1.5.4</p> <p>1.5.5</p>
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	<p>[CU] Simplify square roots of square numbers (e.g., the square root of 9 is 3). [RL] Demonstrate understanding of square roots with physical models and examples. [CU] Use exponents (squares) and radicals (square roots) to represent relationships (e.g., finding the area of a square with a side of 5 could be represented by 5²). [CU] Represent linear relationships through expressions, equations, tables, and graphs of situations involving non-negative rational numbers. Graph data to demonstrate relationships in familiar contexts (e.g., conversions, perimeter, area, volume, and scaling). [CU, MC] Develop a situation that corresponds to a given equation or expression. [CU, MC] Create a table or graph given a description of, or an equation for, a situation involving a linear relationship. [CU, MC] Describe a situation involving a linear or non-linear relationship that matches a given graph (e.g., time-distance, time-height). [CU, MC] Explain the meaning of a variable in a formula, expression, or equation. [CU] Substitute non-negative rational values for variables in order to evaluate expressions and formulas (e.g., length x width when length=3 and width=4) Explain the simplification of expressions and equations using order of operations. [CU] Evaluate expressions and formulas considering order of operations. [RL] Determine the expression that represents a given situation. [MC, CU] Describe a situation that fits with a given expression. [RL, MC, CU] Write expressions or equations for a situation. Explain and justify the solution to a problem in a given context. [RL, CU, MC] Solve two-step equations with one variable on only one side of the equal sign (e.g., $2x + 4 = 12$).</p>		<p>operations. [RL] Determine the expression that represents a given situation. [MC, CU] Describe a situation that fits with a given expression. [RL, MC, CU] Write expressions or equations for a situation. Explain and justify the solution to a problem in a given context. [RL, CU, MC] Solve two-step equations with one variable on only one side of the equal sign (e.g., $2x + 4 = 12$).</p>	1.5.6
Problem Solving	<p>Use strategies to become informed about the situation (e.g., listing information, asking questions). Summarize the situation (e.g., two</p>	<p>Small group work Mathematical reflections Looking back looking ahead</p>	<p>Use strategies to become informed about the situation (e.g., listing information, asking questions). Summarize the situation (e.g., two</p>	2.1.1

	<p>people are shooting free throws, one shot 18, the other 25; we are trying to find the percentage made for each). Determine whether enough information is given to find a solution (e.g., list what is needed to find the percentage of free throws made). Determine whether information is missing or extraneous (e.g., compare the list of known things to the list of needed things to see if there are things that are not needed – names, location). Define the problem (e.g., find the smallest number of free throws Bonita needs to make out of 25 attempts in order to top Juan’s percentage). Organize relevant information from multiple sources (e.g., describe how to calculate percents, set limits on the number that Bonita could make). Select and apply appropriate mathematical tools for a situation (e.g., guess and check, calculate Juan’s percentage and create a table of values [with or without technology] for Bonita’s percentage). Implement the plan devised to solve the problem or answer the question posed (e.g., in a table of values of percentages for Bonita’s possible results and percentages, find the range of values that yield a percentage larger than Juan’s; find the smallest of those and use that number). Identify when an approach is unproductive and modify or try a new approach (e.g., if a result is larger than 25, return to see if the percentage computation is accurate and if it is computed correctly). Check the solution to see if it works (e.g., if the solution is larger than 25, it makes no sense in the given problem).</p>	<p>Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities</p>	<p>people are shooting free throws, one shot 18, the other 25; we are trying to find the percentage made for each). Determine whether enough information is given to find a solution (e.g., list what is needed to find the percentage of free throws made). Determine whether information is missing or extraneous (e.g., compare the list of known things to the list of needed things to see if there are things that are not needed – names, location). Define the problem (e.g., find the smallest number of free throws Bonita needs to make out of 25 attempts in order to top Juan’s percentage). Organize relevant information from multiple sources (e.g., describe how to calculate percents, set limits on the number that Bonita could make). Select and apply appropriate mathematical tools for a situation (e.g., guess and check, calculate Juan’s percentage and create a table of values [with or without technology] for Bonita’s percentage). Implement the plan devised to solve the problem or answer the question posed (e.g., in a table of values of percentages for Bonita’s possible results and percentages, find the range of values that yield a percentage larger than Juan’s; find the smallest of those and use that number). Identify when an approach is unproductive and modify or try a new approach (e.g., if a result is larger than 25, return to see if the percentage computation is accurate and if it is computed correctly). Check the solution to see if it works (e.g., if the solution is larger than 25, it makes no sense in the given problem).</p>	<p>2.1.1</p> <p>2.2.1</p> <p>2.2.2</p>
Reasoning	<p>Explain and compare conclusions reached from data (e.g., from newspapers, web sites, opinions polls). [1.4.6] Use graphs to describe trends, compare, and interpret relationships from data (e.g., from newspapers, web sits, opinion polls). [1.4.5] Predict the probability of future events based on empirical data. [1.4.2] Predict the probability of</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions</p>	<p>Explain and compare conclusions reached from data (e.g., from newspapers, web sites, opinions polls). [1.4.6] Use graphs to describe trends, compare, and interpret relationships from data (e.g., from newspapers, web sits, opinion polls). [1.4.5] Predict the probability of future events based on empirical data. [1.4.2] Predict the probability of</p>	<p>3.1.1</p> <p>3.2.1</p>

	<p>outcomes of experiments and test the predictions. [1.4.2] Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence (e.g., read a newspaper article that includes data, draw a conclusion, and support that conclusion with evidence from the article or elsewhere). Describe how additional data added to data sets may affect the computations of measures of central tendency in various situations. [1.4.4] Justify the reasonableness of an estimate. [1.2.6] Apply a process that can be used to find a reasonable estimate of circle measurements (e.g., wrap a string around the circle). [1.2.6] Apply estimation strategies prior to computing addition and subtraction of integers and operations on non-negative rational numbers to determine reasonableness of answers. [1.1.8] Explain how different representations of the same set of data can support different points of view. [1.4.6]</p>	Warm-up activities	<p>outcomes of experiments and test the predictions. [1.4.2] Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence (e.g., read a newspaper article that includes data, draw a conclusion, and support that conclusion with evidence from the article or elsewhere). Describe how additional data added to data sets may affect the computations of measures of central tendency in various situations. [1.4.4] Justify the reasonableness of an estimate. [1.2.6] Apply a process that can be used to find a reasonable estimate of circle measurements (e.g., wrap a string around the circle). [1.2.6] Apply estimation strategies prior to computing addition and subtraction of integers and operations on non-negative rational numbers to determine reasonableness of answers. [1.1.8] Explain how different representations of the same set of data can support different points of view. [1.4.6]</p>	<p>3.2.2</p> <p>3.2.3</p> <p>3.3.1</p> <p>3.3.2</p>
Communication	<p>Formulate a question and collect data from a population considering how the questions, collection method, and sample population affect the results. [1.4.3] Create a table or graph given a description of, or an equation for, a situation involving a linear or non-linear relationship. [1.5.4] Identify, determine, interpret, or express probabilities in the form of a fraction, decimal, or percent. [1.4.2] Identify data that may represent sampling errors and explain why the sample (and the display) might be biased. [1.4.4] Explain when estimation might be used rather than computation. [1.1.8] Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose such as to perform or persuade with notation and labels as needed.</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities</p>	<p>Formulate a question and collect data from a population considering how the questions, collection method, and sample population affect the results. [1.4.3] Create a table or graph given a description of, or an equation for, a situation involving a linear or non-linear relationship. [1.5.4] Identify, determine, interpret, or express probabilities in the form of a fraction, decimal, or percent. [1.4.2] Identify data that may represent sampling errors and explain why the sample (and the display) might be biased. [1.4.4] Explain when estimation might be used rather than computation. [1.1.8] Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose such as to perform or persuade with notation and labels as needed.</p>	<p>4.1.1</p> <p>4.1.2</p> <p>4.2.1</p> <p>4.2.2</p>

Connections	<p>Write the rational number when given a model (e.g., number line, area model, situation, diagram, picture). [1.1.1]</p> <p>Given a set of data, compare various representations (e.g., box-and-whisker, bar, circle graph) for a given situation. [1.4.5]</p> <p>Explain how different representations of the same set of data can support different points of view. [1.4.6]</p> <p>Match a situation with a data set or graph. [1.5.4]</p> <p>Evaluate and explain conclusions of plant growth drawn from data (e.g., from magazines, newspapers, web sites). [1.4.6]</p> <p>Write a story about a situation that represents a given linear equation, expression, or graph. [1.5.2]</p> <p>Determine the target heart zone for participation in aerobic activities.</p> <p>Chart a one week physical activity log based on calories expended/minute of activity. Determine adjustments needed to achieve a healthy level of fitness. Create a perspective drawing using vanishing point.</p> <p>Mix paint in the correct proportions to create a particular color.</p> <p>Recognize the contributions of a variety of people to the development of mathematics (e.g., research and report on the history of pi).</p> <p>Describe a situation where estimation is sufficient in real life contexts. [1.1.8]</p> <p>Use properties of polygons and circles to solve real-world problems (e.g., find the amount of fencing needed for a pasture). [1.3.2]</p> <p>Compare the unit prices of various soft drinks.</p> <p>Explain how mathematics is used in careers or occupations of interest (e.g., complete a mathematically-based project).</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p>	Write the rational number when given a model (e.g., number line, area model, situation, diagram, picture). [1.1.1]	5.1.1
			Given a set of data, compare various representations (e.g., box-and-whisker, bar, circle graph) for a given situation. [1.4.5]	5.1.2
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		Explain how different representations of the same set of data can support different points of view. [1.4.6]	5.2.1	
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		Write a story about a situation that represents a given linear equation, expression, or graph. [1.5.2]		
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		Compare the unit prices of various soft drinks.		
		Explain how mathematics is used in careers or occupations of interest (e.g., complete a mathematically-based project).	5.3.2	

	<p>Illustrate and explain the distributive property of multiplication over addition (e.g., using an area model or picture). [CU]</p> <p>Use the distributive property to simplify expressions including those using integers. [RL]</p> <p>Use the distributive property to factor expressions (e.g., $3 \cdot 9 + 3 = 3 \cdot (9 + 1)$). [RL]</p> <p>Identify the multiplicative inverse of a number.</p> <p>Solve problems involving ratio and proportion (e.g., similar figures, scale drawings, rates, find unit pricing, increase or decrease a recipe, find the portions for a group converting between different units of measure, or finding medicinal dosages). [SP, MC]</p> <p>Solve problems involving percentages (e.g., percent increase/decrease, tax, commission, discount). [SP, MC]</p> <p>Explain advantages and disadvantages of different representations of ratios or percents in a given situation (e.g., using $\frac{1}{8}$ versus $12\frac{1}{2}\%$). [CU, MC]</p> <p>Determine an unknown value for a dimension or a number of events or objects using ratio or proportion.</p> <p>Complete a proportion in a situation.</p> <p>Create a problem situation to match a given rational number equation. [CU, MC]</p> <p>Explain the meaning of negative and zero exponents. [CU]</p> <p>Demonstrate or describe the meaning of multiplication and division of integers using words, visual, or physical models. [CU]</p> <p>Create a problem situation involving multiplication or division of integers. [CU, MC]</p> <p>Explain solutions when dividing by fractions (e.g., when dividing by a number between 0 and 1, the result is larger than the dividend). [CU]</p> <p>Compute with rational numbers using order of operations.</p> <p>Compute fluently with rational numbers in all forms except exponential.</p> <p>Write and solve problems that involve computation with rational numbers. [CU, MC]</p> <p>Solve problems using rational numbers with whole number powers. [SR]</p> <p>Solve problems using rational numbers with square roots of</p>		<p>Illustrate and explain the distributive property of multiplication over addition (e.g., using an area model or picture). [CU]</p> <p>Use the distributive property to simplify expressions including those using integers. [RL]</p> <p>Use the distributive property to factor expressions (e.g., $3 \cdot 9 + 3 = 3 \cdot (9 + 1)$). [RL]</p> <p>Identify the multiplicative inverse of a number.</p> <p>Solve problems involving ratio and proportion (e.g., similar figures, scale drawings, rates, find unit pricing, increase or decrease a recipe, find the portions for a group converting between different units of measure, or finding medicinal dosages). [SP, MC]</p> <p>Solve problems involving percentages (e.g., percent increase/decrease, tax, commission, discount). [SP, MC]</p> <p>Explain advantages and disadvantages of different representations of ratios or percents in a given situation (e.g., using $\frac{1}{8}$ versus $12\frac{1}{2}\%$). [CU, MC]</p> <p>Determine an unknown value for a dimension or a number of events or objects using ratio or proportion.</p> <p>Complete a proportion in a situation.</p> <p>Create a problem situation to match a given rational number equation. [CU, MC]</p> <p>Explain the meaning of negative and zero exponents. [CU]</p> <p>Demonstrate or describe the meaning of multiplication and division of integers using words, visual, or physical models. [CU]</p> <p>Create a problem situation involving multiplication or division of integers. [CU, MC]</p> <p>Explain solutions when dividing by fractions (e.g., when dividing by a number between 0 and 1, the result is larger than the dividend). [CU]</p> <p>Compute with rational numbers using order of operations.</p> <p>Compute fluently with rational numbers in all forms except exponential.</p> <p>Write and solve problems that involve computation with rational numbers. [CU, MC]</p> <p>Solve problems using rational numbers with whole number powers. [SR]</p> <p>Solve problems using rational numbers with square roots of</p>	<p>1.1.3</p> <p>1.1.4</p> <p>1.1.5</p> <p>1.1.6</p>
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	<p>perfect squares (e.g., given a square garden with an area of nine square meters, how much fence would be needed to encompass a garden twice the size of the original garden). [SR] Select and justify appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, RL] Describe strategies for mentally solving problems involving integers and exponents. [CU] Use calculators to compute with whole number powers beyond the cubed numbers. Use calculators to compute square roots of perfect squares greater than 100. Identify when an approximation is appropriate. [MC] Explain situations involving rational numbers where estimates are sufficient and others for which exact value is required. [CU] Justify why an estimate would be used rather than an exact answer in a given situation. [CU] Describe various strategies used during estimation involving integers. [CU] Use estimation to predict or to verify the reasonableness of calculated results. [RL]</p>		<p>perfect squares (e.g., given a square garden with an area of nine square meters, how much fence would be needed to encompass a garden twice the size of the original garden). [SR] Select and justify appropriate strategies and tools (e.g., mental computation, estimation, calculators, and paper and pencil) to compute in a problem situation. [SP, RL] Describe strategies for mentally solving problems involving integers and exponents. [CU] Use calculators to compute with whole number powers beyond the cubed numbers. Use calculators to compute square roots of perfect squares greater than 100. Identify when an approximation is appropriate. [MC] Explain situations involving rational numbers where estimates are sufficient and others for which exact value is required. [CU] Justify why an estimate would be used rather than an exact answer in a given situation. [CU] Describe various strategies used during estimation involving integers. [CU] Use estimation to predict or to verify the reasonableness of calculated results. [RL]</p>	<p>1.1.7</p> <p>1.1.8</p>
Measurement	<p>Angles of special right triangles Perimeter of rectangles Perimeter of squares Constant perimeter, changing area Area of rectangles Area of squares Area of trapezoids Pythagorean Theorem Volume of cubes Volume of cones Volume of spheres Surface area of cubes Surface area of cylinders Surface area of spheres Surface area of irregular figures Finding missing lengths on a coordinate grid Finding missing lengths by using the Pythagorean Theorem Solving problems with missing lengths Compare the impact that a change in one dimension has on volume and surface area in right cylinders and rectangular prisms. [SP, RL] Describe the relationships among linear dimensions, volume, and surface area (e.g., changing the length of a side affects the surface area and volume). [CU]</p>	<p>Small group work Whole group instruction Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math— (Computation practice and skill review Individualized at student level Exposure to some new content)</p>	<p>Angles of special right triangles Perimeter of rectangles Perimeter of squares Constant perimeter, changing area Area of rectangles Area of squares Area of trapezoids Pythagorean Theorem Volume of cubes Volume of cones Volume of spheres Surface area of cubes Surface area of cylinders Surface area of spheres Surface area of irregular figures Finding missing lengths on a coordinate grid Finding missing lengths by using the Pythagorean Theorem Solving problems with missing lengths Compare the impact that a change in one dimension has on volume and surface area in right cylinders and rectangular prisms. [SP, RL] Describe the relationships among linear dimensions, volume, and surface area (e.g., changing the length of a side affects the surface area and volume). [CU]</p>	<p>1.2.1</p>

	<p>Solve problems involving the effects of changes in one dimension on area (e.g., given a box with certain dimensions, make the volume of the box y cubic units by changing only one dimension of the box). [SP] Explain the concept of a rate. [CU] Explain how division of measurements produces a derived unit of measurement (e.g., miles traveled divided by hours traveled yields the derived unit [miles per hour]). [CU] Find a rate of change in a situation (e.g., increase per year in stamp cost) and label the results. [SP, RL, MC] Use unit analysis to find equivalent rates (e.g., miles per hour to feet per second). [MC] Use rate to determine a measured outcome. Explain the relationships among units within both the customary and metric system (e.g., kilograms to grams, feet to inches). Justify the use of a unit of measure (e.g., measuring to order fencing requires a different precision than if one is selling land and needs to be precise about borders). [CU, MC] Compare situations for the level of precision needed. [RL] Explain and give examples of situations that require more and less precision. [CU] Explain how to use a formula for finding the surface area and volume of a solid. [CU] Find missing sides or area of right triangles (e.g., use the Pythagorean Theorem to find any of the missing values). Calculate measures of objects for which no direct information is given (e.g., apply ratio, proportion, and scale to determine the area, surface area, and/or volume of a similar figure or solid). [SP, MC] Compare surface areas of shapes with given volumes (e.g., compare cost of material to make various right cylinder and right prism containers with a given volume). [RL, MC] Estimate volume and surface area for right cylinders and right prisms. Estimate the length of the remaining side of a right triangle given the lengths of two sides. Approximate distance or height in a problem situation using similar triangles or Pythagorean</p>		<p>Solve problems involving the effects of changes in one dimension on area (e.g., given a box with certain dimensions, make the volume of the box y cubic units by changing only one dimension of the box). [SP] Explain the concept of a rate. [CU] Explain how division of measurements produces a derived unit of measurement (e.g., miles traveled divided by hours traveled yields the derived unit [miles per hour]). [CU] Find a rate of change in a situation (e.g., increase per year in stamp cost) and label the results. [SP, RL, MC] Use unit analysis to find equivalent rates (e.g., miles per hour to feet per second). [MC] Use rate to determine a measured outcome. Explain the relationships among units within both the customary and metric system (e.g., kilograms to grams, feet to inches). Justify the use of a unit of measure (e.g., measuring to order fencing requires a different precision than if one is selling land and needs to be precise about borders). [CU, MC] Compare situations for the level of precision needed. [RL] Explain and give examples of situations that require more and less precision. [CU] Explain how to use a formula for finding the surface area and volume of a solid. [CU] Find missing sides or area of right triangles (e.g., use the Pythagorean Theorem to find any of the missing values). Calculate measures of objects for which no direct information is given (e.g., apply ratio, proportion, and scale to determine the area, surface area, and/or volume of a similar figure or solid). [SP, MC] Compare surface areas of shapes with given volumes (e.g., compare cost of material to make various right cylinder and right prism containers with a given volume). [RL, MC] Estimate volume and surface area for right cylinders and right prisms. Estimate the length of the remaining side of a right triangle given the lengths of two sides. Approximate distance or height in a problem situation using similar triangles or Pythagorean</p>	<p>1.2.2</p> <p>1.2.3</p> <p>1.2.5</p> <p>1.2.6</p>
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	relationships (e.g., height of a flagpole using proportional reasoning, distance across a lake using Pythagorean relationship). [SP] Use or describe a process for finding area of a right triangle.		relationships (e.g., height of a flagpole using proportional reasoning, distance across a lake using Pythagorean relationship). [SP] Use or describe a process for finding area of a right triangle.	
Geometric Sense	<p>Perpendicular lines Congruent polygons Reflections Rotations Translations Glide reflections Combinations of transformations Constructing symmetric figures Algebraic rules for transformations Solving design problems with transformations Identify and label rays, lines, end points, line segments, vertices, and angles. [CU] Match or draw three-dimensional objects from different perspectives using the same properties and relationships (e.g., match to the correct net, draw the top view). [RL] Draw and label with names and symbols, nets of prisms, and cylinders. [RL, CU] Describe everyday objects in terms of their geometric characteristics. [CU] Identify the two-dimensional components of three-dimensional figures. Use properties of similarity to draw, describe, and compare two-dimensional figures. Find the length of a missing side or the measure of a missing angle of one of the figures, given two similar figures. [SP, RL] Create symmetrical, congruent, or similar figures using a variety of tools (e.g., ruler, pattern blocks, geoboards). [RL, CU] Draw a similar shape to a given shape. [RL, CU, MC] Use properties of circles, cylinders, and figures with rotational symmetry to compare figures. [RL, CU] Create a scale drawing and label the scale and the dimensions. (SP, CU, MC). Locate a missing vertex given the coordinates of the vertices of a regular polygon. [RL] Apply the Pythagorean Theorem to find the length of a side of a right triangle or distance between two points. Explain a method for finding the missing side of a triangle in a real-world setting (e.g., the height of a</p>	<p>Small group work Whole group instruction Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math— (Computation practice and skill review Individualized at student level Exposure to some new content)</p>	<p>Perpendicular lines Congruent polygons Reflections Rotations Translations Glide reflections Combinations of transformations Constructing symmetric figures Algebraic rules for transformations Solving design problems with transformations Identify and label rays, lines, end points, line segments, vertices, and angles. [CU] Match or draw three-dimensional objects from different perspectives using the same properties and relationships (e.g., match to the correct net, draw the top view). [RL] Draw and label with names and symbols, nets of prisms, and cylinders. [RL, CU] Describe everyday objects in terms of their geometric characteristics. [CU] Identify the two-dimensional components of three-dimensional figures. Use properties of similarity to draw, describe, and compare two-dimensional figures. Find the length of a missing side or the measure of a missing angle of one of the figures, given two similar figures. [SP, RL] Create symmetrical, congruent, or similar figures using a variety of tools (e.g., ruler, pattern blocks, geoboards). [RL, CU] Draw a similar shape to a given shape. [RL, CU, MC] Use properties of circles, cylinders, and figures with rotational symmetry to compare figures. [RL, CU] Create a scale drawing and label the scale and the dimensions. (SP, CU, MC). Locate a missing vertex given the coordinates of the vertices of a regular polygon. [RL] Apply the Pythagorean Theorem to find the length of a side of a right triangle or distance between two points. Explain a method for finding the missing side of a triangle in a real-world setting (e.g., the height of a</p>	<p>1.3.1</p> <p>1.3.2</p> <p>1.3.3</p>

	<p>totem pole or building). [CU] Describe the relationship of any two or more points on a coordinate grid. [CU] Find the distance between two points on a coordinate grid including lines that are non-parallel with either axis (oblique). [RL, MC] Identify and explain how a shape has been translated, reflected, or rotated with or without a grid (e.g., location of the North Star, rotate the Big Dipper). [CU] Use transformations (rotations, reflections, and translations) to draw or locate congruent two-dimensional figures. [RL, CU] Find the image of a given shape after a combination of transformations. [RL] Tessellate a plane by using transformations. [RL, MC] Create a design using a combination of two or more transformations with one or two two-dimensional figures. [SP, RL]</p>		<p>totem pole or building). [CU] Describe the relationship of any two or more points on a coordinate grid. [CU] Find the distance between two points on a coordinate grid including lines that are non-parallel with either axis (oblique). [RL, MC] Identify and explain how a shape has been translated, reflected, or rotated with or without a grid (e.g., location of the North Star, rotate the Big Dipper). [CU] Use transformations (rotations, reflections, and translations) to draw or locate congruent two-dimensional figures. [RL, CU] Find the image of a given shape after a combination of transformations. [RL] Tessellate a plane by using transformations. [RL, MC] Create a design using a combination of two or more transformations with one or two two-dimensional figures. [SP, RL]</p>	1.3.4
Probability and Statistics	<p>Questioning Collecting data Analyzing data Interpreting data Samples and populations Types of samples Comparing samples Randomness Random numbers with graphing calculators Drawing conclusions Comparing data Conducting surveys Solving problems with samples and populations Data from experiments Stem-and-leaf plots Tables Histograms Box-and-whisker plots (box plots) Box plots with graphing calculators Scatter plots Choosing the best mathematical model Median Mean (average) Range Shape of data Data distribution Percentiles Quartiles Interquartile range (IQR) Maximum, minimum Equally and unequally likely outcomes Lists, charts, counting trees, area models Counting techniques Determine and explain when</p>	<p>Small group work Whole group instruction Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math—skill review</p>	<p>Questioning Collecting data Analyzing data Interpreting data Samples and populations Types of samples Comparing samples Randomness Random numbers with graphing calculators Drawing conclusions Comparing data Conducting surveys Solving problems with samples and populations Data from experiments Stem-and-leaf plots Table Histograms Box-and-whisker plots (box plots) Box plots with graphing calculators Scatter plots Choosing the best mathematical model Median Mean (average) Range Shape of data Data distribution Percentiles Quartiles Interquartile range (IQR) Maximum, minimum Equally and unequally likely outcomes Lists, charts, counting trees, area models Counting techniques Determine and explain when</p>	1.4.1

	<p>events are compound. [CU] Explain the difference between compound events involving 'and' and 'or' (e.g., rolling a six and rolling an odd number vs. rolling a six or rolling an odd number). [CU] Calculate the probability of two independent events occurring simultaneously using various methods (e.g., organized list, tree diagram, counting procedures, and area model). Explain the relationship between theoretical and empirical probability of compound events. [CU] Predict the probability of outcomes of experiments and compare the predictions to empirical results. [RL] Design or create a situation that would produce a given probability (e.g., how many of each colored marble would it take to have a given probability of selecting one particular color). [SP, MC] Design a game using compound probabilities with equal chances of winning for all players. [SP, MC] Identify sources of sampling bias given a situation (e.g., interviewing only girls, only a certain age group, or too few people). [CU, MC] Describe a procedure for selecting an unbiased sample. [CU, MC] Compare the results of a survey given two different sample groups. [RL, CU] Identify the appropriate population for a given research question. Describe how sampling may have affected the resulting data. [CU] Identify clusters and outliers and determine how clusters or outliers may affect measures of central tendency. [RL] Alter a set of data so that the median is a more reasonable measure than the mean. [RL, CU, MC] Use and interpret the most appropriate measure of central tendency and the range to describe a given set of data (e.g., the model hourly wage earned by eighth graders is \$5.75 per hour and the range is \$5.00 to \$6.50; therefore, there are very small differences in hourly wages for eighth graders). [RL, CU, MC] Interpret graphic and tabular representations of bivariate data.</p>		<p>events are compound. [CU] Explain the difference between compound events involving 'and' and 'or' (e.g., rolling a six and rolling an odd number vs. rolling a six or rolling an odd number). [CU] Calculate the probability of two independent events occurring simultaneously using various methods (e.g., organized list, tree diagram, counting procedures, and area model). Explain the relationship between theoretical and empirical probability of compound events. [CU] Predict the probability of outcomes of experiments and compare the predictions to empirical results. [RL] Design or create a situation that would produce a given probability (e.g., how many of each colored marble would it take to have a given probability of selecting one particular color). [SP, MC] Design a game using compound probabilities with equal chances of winning for all players. [SP, MC] Identify sources of sampling bias given a situation (e.g., interviewing only girls, only a certain age group, or too few people). [CU, MC] Describe a procedure for selecting an unbiased sample. [CU, MC] Compare the results of a survey given two different sample groups. [RL, CU] Identify the appropriate population for a given research question. Describe how sampling may have affected the resulting data. [CU] Identify clusters and outliers and determine how clusters or outliers may affect measures of central tendency. [RL] Alter a set of data so that the median is a more reasonable measure than the mean. [RL, CU, MC] Use and interpret the most appropriate measure of central tendency and the range to describe a given set of data (e.g., the model hourly wage earned by eighth graders is \$5.75 per hour and the range is \$5.00 to \$6.50; therefore, there are very small differences in hourly wages for eighth graders). [RL, CU, MC] Interpret graphic and tabular representations of bivariate data.</p>	<p>1.4.2</p> <p>1.4.3</p> <p>1.4.4</p> <p>1.4.5</p>
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	<p>Use a line of best fit to predict a future value of a variable. [RL] Use a line of best fit to interpolate between existing data values. [RL] Draw trend lines with or without technology and make predictions about real-world situations (e.g., population trends, socio-economic trends). [CU, MC, RL] Examine data in a two-column table to interpolate or extrapolate additional values. [RL] Use observations about differences between two or more samples to make conjectures about the populations from which the samples were taken (e.g., age groups, regions of the U.S., genders, racial/ethnic distributions). [RL, MC, CU] Critique the use of data and data displays for bivariate data. [RL] Judge the reasonableness of conclusions drawn from a set of data and support that position with evidence (e.g., from newspapers, web sites, opinion polls). [MC, RL] Determine whether a prediction is reasonable based on a trend line and explain the rationale. [RL] Determine whether claims made about results are based on biased representations of data (e.g., whether a scale has been intentionally used to support a point of view).</p>		<p>Use a line of best fit to predict a future value of a variable. [RL] Use a line of best fit to interpolate between existing data values. [RL] Draw trend lines with or without technology and make predictions about real-world situations (e.g., population trends, socio-economic trends). [CU, MC, RL] Examine data in a two-column table to interpolate or extrapolate additional values. [RL] Use observations about differences between two or more samples to make conjectures about the populations from which the samples were taken (e.g., age groups, regions of the U.S., genders, racial/ethnic distributions). [RL, MC, CU] Critique the use of data and data displays for bivariate data. [RL] Judge the reasonableness of conclusions drawn from a set of data and support that position with evidence (e.g., from newspapers, web sites, opinion polls). [MC, RL] Determine whether a prediction is reasonable based on a trend line and explain the rationale. [RL] Determine whether claims made about results are based on biased representations of data (e.g., whether a scale has been intentionally used to support a point of view).</p>	1.4.6
Algebraic Sense	<p>Dependent and independent variables Variables on a coordinate grid Graphs of variables Relationships with variables Equations with variables Rates of change Patterns between variables Analyzing and making predictions from patterns Rules for patterns Formulas for rules Equations for rules Constant terms Like, constant, linear, and quadratic terms Evaluating expressions Equivalent expressions Factored form Expanded form Exploring shapes of graphs Writing stories to match graphs Linear relationships Nonlinear relationships Inverse Slope Slopes of perpendicular lines Slopes of parallel lines Comparing linear and exponential</p>	<p>Small group work Whole group instruction Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities Accelerated Math— (Computation practice and skill review Individualized at student level Exposure to some new content)</p>	<p>Dependent and independent variables Variables on a coordinate grid Graphs of variables Relationships with variables Equations with variables Rates of change Patterns between variables Analyzing and making predictions from patterns Rules for patterns Formulas for rules Equations for rules Constant terms Like, constant, linear, and quadratic terms Evaluating expressions Equivalent expressions Factored form Expanded form Exploring shapes of graphs Writing stories to match graphs Linear relationships Nonlinear relationships Inverse Slope Slopes of perpendicular lines Slopes of parallel lines Comparing linear and exponential</p>	

	<p>relationships Exponential growth Exponential decay Graphing linear equations with graphing calculator Tables for linear equations Graphs for linear equations Fitting linear equations to a graph $y = mx + b$ Finding y-intercepts Writing linear equations from graphs Writing linear equations given slope and y-intercept Writing linear equations given slope and one point Writing linear equations given two points Writing linear equations from tables Solving linear equations with tables Solving linear equations by graphing Solving linear equations symbolically Solving linear equations with a graphing calculator Solving systems of linear equations Comparing linear equations with quadratic and exponential Writing quadratic equations from tables Writing quadratic equations from graphs Writing quadratic equations from problems Finding maximum and minimum Finding x-and y-intercepts of quadratic equations Comparing quadratic equations with linear and exponential Parabolas Graphing quadratic equations with graphing calculator Solving quadratic equations with tables Solving quadratic equations by graphing Solving quadratic equations symbolically Solving quadratic equations by factoring Finding roots of quadratic equations Solving cubic equations by graphing Solving cubic equations by factoring Writing exponential equations from tables Writing exponential equations from graphs Graphing exponential equations with graphing calculator Models for nonlinear equations Exploring nonlinear equations from tables, equations, graphs Quadratic functions related to parabolas Patterns of change Factored form of quadratic equations Expanded form of quadratic equations Binomial expansion</p>		<p>relationships Exponential growth Exponential decay Graphing linear equations with graphing calculator Tables for linear equations Graphs for linear equations Fitting linear equations to a graph $y = mx + b$ Finding y-intercepts Writing linear equations from graphs Writing linear equations given slope and y-intercept Writing linear equations given slope and one point Writing linear equations given two points Writing linear equations from tables Solving linear equations with tables Solving linear equations by graphing Solving linear equations symbolically Solving linear equations with a graphing calculator Solving systems of linear equations Comparing linear equations with quadratic and exponential Writing quadratic equations from tables Writing quadratic equations from graphs Writing quadratic equations from problems Finding maximum and minimum Finding x-and y-intercepts of quadratic equations Comparing quadratic equations with linear and exponential Parabolas Graphing quadratic equations with graphing calculator Solving quadratic equations with tables Solving quadratic equations by graphing Solving quadratic equations symbolically Solving quadratic equations by factoring Finding roots of quadratic equations Solving cubic equations by graphing Solving cubic equations by factoring Writing exponential equations from tables Writing exponential equations from graphs Graphing exponential equations with graphing calculator Models for nonlinear equations Exploring nonlinear equations from tables, equations, graphs Quadratic functions related to parabolas Patterns of change Factored form of quadratic equations Expanded form of quadratic equations Binomial expansion</p>	
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	<p>Exponential growth Compound growth Exponential decay Graphing rectangular coordinates Ordered pairs Polar coordinates Graphing equations Graphing functions Slope from graphs y-intercept on a graph Transformations on a graph</p> <p>Extend, represent, or create linear and non-linear patterns and sequences using tables and graphs. [RL] Explain the difference between linear and non-linear relationships. [CU] Predict an outcome given a linear relationship (e.g., from a graph of profit projections, predict the profit). [RL] Use technology to generate linear and non-linear relationship. [SP, RL] Use technology to help develop a table or graph from an iterative definition (e.g., the number of cells doubles every hour starting with one cell at noon). [CU, MC] Explain the nature of changes in quantities in linear relationships using graphs, tables, or expressions. [CU, MC] Develop recursive equations that describe linear relations in terms of current and previous values (e.g., start = 7; Current = Previous + 5 would give a set of values (1,7),(2,12),(3,17) ...). Use words or algebraic symbols to describe a rule for a linear relationship between two sets of numbers (e.g., given a table, describe a rule). [CU] Represent relationships between quantities using exponents (squares) and radicals (roots). [CU] Explain the placement of numbers including square roots and exponents on a number line. [CU] Model or describe a real-life situation using absolute value (e.g., the taxi-cab distance from one point to another can be represented by the sum of two absolute values). [CU, MC] Use relational symbols to express relationships between rational numbers including percents, square roots, absolute value, and exponents. [CU] Represent variable quantities, through expressions, linear equations, inequalities, tables, and graphs of situations. [CU]</p>		<p>Exponential growth Compound growth Exponential decay Graphing rectangular coordinates Ordered pairs Polar coordinates Graphing equations Graphing functions Slope from graphs y-intercept on a graph Transformations on a graph</p> <p>Extend, represent, or create linear and non-linear patterns and sequences using tables and graphs. [RL] Explain the difference between linear and non-linear relationships. [CU] Predict an outcome given a linear relationship (e.g., from a graph of profit projections, predict the profit). [RL] Use technology to generate linear and non-linear relationship. [SP, RL] Use technology to help develop a table or graph from an iterative definition (e.g., the number of cells doubles every hour starting with one cell at noon). [CU, MC] Explain the nature of changes in quantities in linear relationships using graphs, tables, or expressions. [CU, MC] Develop recursive equations that describe linear relations in terms of current and previous values (e.g., start = 7; Current = Previous + 5 would give a set of values (1,7),(2,12),(3,17) ...). Use words or algebraic symbols to describe a rule for a linear relationship between two sets of numbers (e.g., given a table, describe a rule). [CU] Represent relationships between quantities using exponents (squares) and radicals (roots). [CU] Explain the placement of numbers including square roots and exponents on a number line. [CU] Model or describe a real-life situation using absolute value (e.g., the taxi-cab distance from one point to another can be represented by the sum of two absolute values). [CU, MC] Use relational symbols to express relationships between rational numbers including percents, square roots, absolute value, and exponents. [CU] Represent variable quantities, through expressions, linear equations, inequalities, tables, and graphs of situations. [CU]</p>	<p>1.5.1</p> <p>1.5.2</p> <p>1.5.3</p> <p>1.5.4</p>
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	<p>Write an expression, equation, or inequality with a single variable representing a situation or real-world problem. [SP, RL, MC] Identify and use variables to read and write relationships involving rational numbers. Model a given description or situation involving relationships with a graph or table. [CU, MC] Describe a situation involving relationships that matches a given graph. [CU, MC] Create a table or graph given a description of, or an expression for, a situation involving a linear or non-linear relationship. [CU, MC] Simplify expressions and evaluate formulas involving integers. [RL, MC] Match expressions to equivalent simplified expressions. [MC] Explain a simplification of an expression involving integers. [CU] Simplify expressions by combining like terms. Simplify expressions using mathematical properties (distributive, commutative, associative, etc.). [RL] Determine the expression that represents a given situation. [MC, CU] Describe a situation that fits with a given expression. [RL, MC, CU] Solve multi-step equations and one-step inequalities with one variable. Solve single variable equations involving parentheses, like terms, or variables on both sides of the equal sign. Solve one-step inequalities (e.g., $2x < 6$, $x + 4 > 10$). Solve real-world situations involving single variable equations and proportional relationships and verify that the solution is reasonable for the problem. [SP, RL, CU]</p>		<p>Write an expression, equation, or inequality with a single variable representing a situation or real-world problem. [SP, RL, MC] Identify and use variables to read and write relationships involving rational numbers. Model a given description or situation involving relationships with a graph or table. [CU, MC] Describe a situation involving relationships that matches a given graph. [CU, MC] Create a table or graph given a description of, or an expression for, a situation involving a linear or non-linear relationship. [CU, MC] Simplify expressions and evaluate formulas involving integers. [RL, MC] Match expressions to equivalent simplified expressions. [MC] Explain a simplification of an expression involving integers. [CU] Simplify expressions by combining like terms. Simplify expressions using mathematical properties (distributive, commutative, associative, etc.). [RL] Determine the expression that represents a given situation. [MC, CU] Describe a situation that fits with a given expression. [RL, MC, CU] Solve multi-step equations and one-step inequalities with one variable. Solve single variable equations involving parentheses, like terms, or variables on both sides of the equal sign. Solve one-step inequalities (e.g., $2x < 6$, $x + 4 > 10$). Solve real-world situations involving single variable equations and proportional relationships and verify that the solution is reasonable for the problem. [SP, RL, CU]</p>	<p>1.5.5</p> <p>1.5.6</p>
<p>Problem Solving</p>	<p>Use strategies to become informed about the situation (e.g., listing information, asking questions). Summarize the problem (e.g., we have information about the relationship between the number of steps per second and the speed in feet per second; we wish to find approximate speed or stride rates). Determine whether enough information is given to find a solution (e.g., list what is needed</p>	<p>Small group work Mathematical reflections Looking back looking ahead Work with manipulatives Write story problems Extended response questions Unit Projects Journals ACE questions Warm-up activities</p>	<p>Use strategies to become informed about the situation (e.g., listing information, asking questions). Summarize the problem (e.g., we have information about the relationship between the number of steps per second and the speed in feet per second; we wish to find approximate speed or stride rates). Determine whether enough information is given to find a solution (e.g., list what is needed</p>	<p>2.1.1</p>

	<p>ad, draw a conclusion and support that conclusion with evidence in the article or elsewhere).</p> <p>Critique conclusions drawn from a set of data and support with evidence (e.g., from magazines, newspapers, web sites, opinion polls). [1.4.6]</p> <p>Use estimation to predict or to verify the reasonableness of calculated results. [1.1.8]</p> <p>Explain why a given rational number is greater than or less than another rational number. [1.1.2]</p>		<p>ad, draw a conclusion and support that conclusion with evidence in the article or elsewhere).</p> <p>Critique conclusions drawn from a set of data and support with evidence (e.g., from magazines, newspapers, web sites, opinion polls). [1.4.6]</p> <p>Use estimation to predict or to verify the reasonableness of calculated results. [1.1.8]</p> <p>Explain why a given rational number is greater than or less than another rational number. [1.1.2]</p>	<p>3.2.3</p> <p>3.3.1</p> <p>3.3.2</p>
Communication	<p>Describe a procedure for selecting an unbiased sample. [1.4.3]</p> <p>Compare the results of a survey given two different sample groups. [1.4.3]</p> <p>Model the relationship with a table or graph given a description of, or an equation for, a situation involving an inequality or linear relationship. [1.5.4]</p> <p>Design and conduct a simulation, with and without technology, to determine the probability of an event occurring. [1.4.2]</p> <p>Articulate various strategies used during estimation involving integers. [1.1.8]</p> <p>Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose, such as to perform or persuade, with notation and labels as needed.</p> <p>Explain situations involving real numbers where estimates are sufficient and others for which exact value is required. [1.1.8]</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p>	<p>Describe a procedure for selecting an unbiased sample. [1.4.3]</p> <p>Compare the results of a survey given two different sample groups. [1.4.3]</p> <p>Model the relationship with a table or graph given a description of, or an equation for, a situation involving an inequality or linear relationship. [1.5.4]</p> <p>Design and conduct a simulation, with and without technology, to determine the probability of an event occurring. [1.4.2]</p> <p>Articulate various strategies used during estimation involving integers. [1.1.8]</p> <p>Clearly explain, describe, or represent mathematical information in a pictorial, tabular, graphical, two- or three-dimensional drawing, or other form as appropriate for the mathematical information (e.g., time, distance, categories), audience, and/or purpose, such as to perform or persuade, with notation and labels as needed.</p> <p>Explain situations involving real numbers where estimates are sufficient and others for which exact value is required. [1.1.8]</p>	<p>4.1.1</p> <p>4.1.2</p> <p>4.2.1</p> <p>4.2.2</p>
Connections	<p>Solve problems involving ratio and proportion (e.g., similar figures, scale drawings, rates, find unit pricing, increase or decrease a recipe, find the portions for a group converting between different units of measure, or finding medicinal dosages). [1.1.4]</p> <p>Find the area of a circle given the coordinates of the center and a point on the circle. [1.3.3]</p> <p>Create a problem situation to match a given rational number equation. [1.1.5]</p> <p>Match a situation with a data set or graph. [1.5.4]</p>	<p>Small group work</p> <p>Whole group instruction</p> <p>Mathematical reflections</p> <p>Looking back looking ahead</p> <p>Work with manipulatives</p> <p>Write story problems</p> <p>Extended response questions</p> <p>Unit Projects</p> <p>Journals</p> <p>ACE questions</p> <p>Warm-up activities</p>	<p>Solve problems involving ratio and proportion (e.g., similar figures, scale drawings, rates, find unit pricing, increase or decrease a recipe, find the portions for a group converting between different units of measure, or finding medicinal dosages). [1.1.4]</p> <p>Find the area of a circle given the coordinates of the center and a point on the circle. [1.3.3]</p> <p>Create a problem situation to match a given rational number equation. [1.1.5]</p> <p>Match a situation with a data set or graph. [1.5.4]</p>	<p>5.1.1</p> <p>5.1.2</p>

Adopted Instructional Materials

Pre-kindergarten and Kindergarten:

Growing with Mathematics, The Wright Group/McGraw Hill

First Grade through Fifth Grade:

Everyday Mathematics, The Wright Group/McGraw Hill

Sixth Grade through Eighth Grade:

Connected Mathematics Program, Prentice Hall

Accelerated Mathematics, SRA (Supplemental, not primary instructional materials)

Algebra 1, Prentice Hall, 2004 (Honors Algebra, 8th grade)

Ninth Grade through Twelfth Grade:

Pre-Algebra, Prentice Hall, 2004

Algebra 1, Prentice Hall, 2004

Geometry, Prentice Hall, 2004

Geometry, Houghton Mifflin, 1978 (Honors Geometry, 9th grade)

Algebra 2, Prentice Hall, 2004

Precalculus: Numerical, Graphical, Algebraic, Pearson/Prentice Hall, 2004

Calculus: Numerical, Graphical, Algebraic, Prentice Hall, 2003