



VASHON ISLAND SCHOOL DISTRICT  
MATHEMATICS GUIDE  
GRADES 3 THROUGH 5

Revised June 2006

Pre-Kindergarten

Strand	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
Number Sense	<p>Match number symbols 1, 2, and 3 to groups of objects</p> <p>Count the objects in a group (up to five)</p> <p>Make groups of up to five objects</p> <p>Math number symbols 1-5 to groups of objects</p> <p>Identify and describe quantities in terms of <i>more</i> or <i>less (fewer)</i></p> <p>Place objects in a stated order: first, second, third, last</p> <p>Say the numbers one to ten in sequence</p> <p>Match number symbols 1-6 to groups of objects</p> <p>Place pictures showing one to six objects in correct order</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Match number symbols 1, 2, and 3 to groups of objects</p> <p>Count the objects in a group (up to five)</p> <p>Make groups of up to five objects</p> <p>Math number symbols 1-5 to groups of objects</p> <p>Identify and describe quantities in terms of <i>more</i> or <i>less (fewer)</i></p> <p>Place objects in a stated order: first, second, third, last</p> <p>Say the numbers one to ten in sequence</p> <p>Match number symbols 1-6 to groups of objects</p> <p>Place pictures showing one to six objects in correct order</p>	NONE AT THIS TIME
Measurement	<p>Sequence events in a logical order</p> <p>Identify and describe an object as <i>heavy</i> or <i>light</i></p> <p>Understand and use language such as <i>empty, full, more, and less</i> in relation to capacity</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Sequence events in a logical order</p> <p>Identify and describe an object as <i>heavy</i> or <i>light</i></p> <p>Understand and use language such as <i>empty, full, more, and less</i> in relation to capacity</p>	
Geometric Sense	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i></p> <p>Understand and use language for describing and informally naming 3-D shapes such as <i>flat sides, round/not round, box shape, ball shape, can shape</i></p> <p>Match 3-D shapes to pictures of shapes</p> <p>Identify a <i>triangle, square, and circle</i>, and understand and use language for describing these shapes</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i></p> <p>Understand and use language for describing and informally naming 3-D shapes such as <i>flat sides, round/not round, box shape, ball shape, can shape</i></p> <p>Match 3-D shapes to pictures of shapes</p> <p>Identify a <i>triangle, square, and circle</i>, and understand and use language for describing these shapes</p>	
Probability and Statistics	<p>Sort objects according to a specified attribute or sorting rule</p> <p>Describe how a group of objects has been sorted</p> <p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p> <p>Order objects by a given attribute and describe the order</p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Sort objects according to a specified attribute or sorting rule</p> <p>Describe how a group of objects has been sorted</p> <p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p> <p>Order objects by a given attribute and describe the order</p>	
Algebraic Sense	<p>Recognize and name colors</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to color.</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to texture</p> <p>Use the language of <i>big</i> and <i>small</i></p> <p>Use the language of <i>short, long, and tall</i></p> <p>Use the language of <i>wide</i> and <i>narrow</i></p>	<p>Discussion</p> <p>Modeling</p> <p>Manipulatives</p> <p>Journals</p> <p>Games</p> <p>Songs</p> <p>Calendar math</p> <p>Concepts Lap Books</p> <p>Math Literature Books</p>	<p>Recognize and name colors</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to color.</p> <p>Use the terms <i>same</i> and <i>different</i> in relation to texture</p> <p>Use the language of <i>big</i> and <i>small</i></p> <p>Use the language of <i>short, long, and tall</i></p> <p>Use the language of <i>wide</i> and <i>narrow</i></p>	

	<p>Sort objects according to a specified attribute or sorting rule Describe how a group of objects has been sorted Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting Order objects by a given attribute and describe the order Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions Identify and describe patterns as stripes and spots Participate in creating a pattern Describe and continue a repeating pattern Create a repeating pattern</p>		<p>Sort objects according to a specified attribute or sorting rule Describe how a group of objects has been sorted Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting Order objects by a given attribute and describe the order Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions Identify and describe patterns as stripes and spots Participate in creating a pattern Describe and continue a repeating pattern Create a repeating pattern</p>	
Problem Solving	<p>Create a repeating pattern Order objects by a given attribute and describe the order Describe and continue a repeating pattern</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Create a repeating pattern Order objects by a given attribute and describe the order Describe and continue a repeating pattern</p>	
Reasoning	<p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Sort objects according to an appropriate self-selected attribute or sorting rule, and explain the sorting</p>	
Communication	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i> Use the language of <i>big</i> and <i>small</i> Use the language of <i>short, long, and tall</i> Use the language of <i>wide</i> and <i>narrow</i> Describe how a group of objects has been sorted Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions</p>	<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>	<p>Use language describing the position of an object such as <i>under, over, in back of, in front of, next to, outside, inside</i> Use the language of <i>big</i> and <i>small</i> Use the language of <i>short, long, and tall</i> Use the language of <i>wide</i> and <i>narrow</i> Describe how a group of objects has been sorted Explain and describe the rule used to order a set of objects by size Demonstrate pattern through actions</p>	
Connections		<p>Discussion Modeling Manipulatives Journals Games Songs Calendar math Concepts Lap Books Math Literature Books</p>		

Third Grade

Third Grade		Delivery Methods	Year-end Proficiencies	State GLEs
<p>Number Sense</p>	<p>Read, write, and compare whole numbers up to 7 digits            Read and write 3-digit decimals            Compare and order fractions            Convert between mixed numbers and fractions            Solve number stories involving positive and negative numbers            Understand function and placement of parentheses in number sentences            Make ballpark estimates for sums and products            Identify fractions on a number line            Find equivalent fractions            Solve fraction number stories            Find factors of a number            Interpret remainders in division problems            Estimate answers to multi-digit addition and subtraction problems            Solve number stories involving equal groups by using multiplication            Solve number stories involving equal sharing and equal grouping            Know multiplication facts having 3 or 4 as one factor and 2 through 7 as the other factor            Compare and order decimals            Identify place value in decimals            Read and write 1-and 2-digit decimals            Recognize and know square products            Know multiplication facts from second set of Fact Triangles            Solve extended multiplication facts to tens x tens            Identify fractional parts of a set            Identify fractional parts of a region            Solve extended multiplication facts to hundreds x hundreds            Solve number stories involving equal shares and equal groups            Know multiplication facts            Count by 10s and 100s            Apply place-value concepts in 4-digit numbers            Count combinations of bills and coins and write the total in dollars-and-cents notation            Find equivalent names for numbers            Use basic facts to solve fact extensions            Know multiplication facts having 2, 5, or 10 as a factor            Complete multiplication/division fact families            Know multiplication facts from the first set of Fact Triangles            Know basic addition and subtraction facts            Complete fact and number families            Solve addition and subtraction multi-</p>	<p>Math Message            Math Boxes—review problems            Student explorations            Games            Hands on Activities            Drill and practice—math masters            Modeling            Demonstration            Cross-age tutoring            Direct instruction            Discussion            Explain your solution orally and in written form            Write a math story            Journals            Projects            Minute math</p>	<p>Know basic addition and subtraction facts            Complete fact and number families            Solve addition and subtraction multidigit number stories            Add multidigit numbers            Subtract multidigit numbers            Know multiplication facts having 0 or 1 as a factor            Read, write, and compare whole numbers up to 5 digits            Identify place value in whole numbers up to 5 digits            Know multiplication facts from the first set of Fact Triangles  <b>Represent a number to at least 10,000 in different ways (e.g., words, numerals, pictures, physical models). [CU]</b>  <b>Translate from one representation of a whole number to another in standard, expanded, and word forms. [MC]</b>  <b>Generate equivalent representations for a given number by decomposing and composing. [MC]</b>  <b>Explain the difference between the natural numbers and the whole numbers.</b>  <b>Identify place values of digits of whole number to the hundreds or thousands place using words, pictures, or numbers.</b>  <b>Write whole numbers to 999.</b>  <b>Decompose whole numbers into components (e.g., 35 is made of 3 tens and 5 ones) using words, numbers, or pictures.</b>  <b>Compare whole number values to at least 10,000 using the symbols for "greater than," "less than," and "equal to".</b>  <b>Order three or more numbers to at least 10,000 from smallest to largest. [CU]</b>  <b>Compare combined quantities (e.g., <math>50 + 3</math> is greater than <math>40 + 9</math>). [RL]</b>  <b>Explain or show how the commutative property works with addition and not subtraction using words, numbers, or physical models. [CU]</b>  <b>Describe how the identity property works with addition. [CU]</b>  <b>Determine whether addition equations are true or false and explain, based on the commutative or identity properties for addition (e.g., <math>15 + 3 + 5 = 15 + 5 + 3</math>). [CU]</b>  <b>Identify an equivalent expression</b></p>	<p>1.1.1</p> <p>1.1.2</p> <p>1.1.3</p>

	<p>digit number stories  Add multi-digit numbers  Subtract multi-digit numbers  Know multiplication facts having 0 or 1 as a factor  Identify place value in whole numbers up to 5 digits  <b>Represent a number to at least 10,000 in different ways (e.g., words, numerals, pictures, physical models).</b> [CU]  <b>Translate from one representation of a whole number to another in standard, expanded, and word forms.</b> [MC]  <b>Generate equivalent representations for a given number by decomposing and composing.</b> [MC]  <b>Explain the difference between the natural numbers and the whole numbers.</b>  <b>Identify place values of digits of whole number to the hundreds or thousands place using words, pictures, or numbers.</b>  <b>Write whole numbers to 999.</b>  <b>Decompose whole numbers into components (e.g., 35 is made of 3 tens and 5 ones) using words, numbers, or pictures.</b>  <b>Compare whole number values to at least 10,000 using the symbols for "greater than," "less than," and "equal to".</b>  <b>Order three or more numbers to at least 10,000 from smallest to largest.</b> [CU]  <b>Compare combined quantities (e.g., <math>50 + 3</math> is greater than <math>40 + 9</math>).</b> [RL]  <b>Explain or show how the commutative property works with addition and not subtraction using words, numbers, or physical models.</b> [CU]  <b>Describe how the identity property works with addition.</b> [CU]  <b>Determine whether addition equations are true or false and explain, based on the commutative or identity properties for addition (e.g., <math>15 + 3 + 5 = 15 + 5 + 3</math>).</b> [CU]  <b>Identify an equivalent expression using the commutative property. Show how the commutative property works using pictures or objects.</b> [CU]  <b>Illustrate multiplication and division using models and diagrams.</b> [CU]  <b>Illustrate and explain the inverse relationship between multiplication and division using physical diagrams, words, and symbols (e.g., arrays, fact</b></p>		<p><b>using the commutative property. Show how the commutative property works using pictures or objects.</b> [CU]  <b>Illustrate multiplication and division using models and diagrams.</b> [CU]  <b>Illustrate and explain the inverse relationship between multiplication and division using physical diagrams, words, and symbols (e.g., arrays, fact families).</b> [CU]  <b>Describe and compare strategies to solve problems involving multiplication and division (e.g., alternative algorithms, different strategies, decomposition, properties of multiplication).</b> [CU]  <b>Demonstrate the relationship between multiplication and repeated addition.</b>  <b>Demonstrate the relationship between division and repeated subtraction.</b>  <b>Describe and compare strategies to solve three-digit addition and subtraction problems (e.g., child developed algorithms, decomposition).</b> [RL, CU]  <b>Use joining, separating, adding-on, and finding the difference to add and subtract.</b>  <b>Write and solve multi-step problem situations that involve addition and subtraction.</b> [CU, MC]  <b>Use calculators to compute with large numbers (e.g., adding three or more 3-digit numbers; subtracting 3 digit from 4 digit numbers).</b>  <b>Use appropriate strategies and tools from among mental computation, estimation, calculators, and paper and pencil to compute in a problem situation.</b> [SP, RL]  <b>Defend situations in which estimation is sufficient (e.g., grocery shopping or party supplies).</b> [CU]  <b>Use mental arithmetic, pencil and paper, or calculator as appropriate to the task involving addition and subtraction of whole numbers.</b>  <b>Identify when an approximation is appropriate.</b>  <b>Use estimation to determine the reasonableness of answers in situations.</b> [RL]  <b>Describe and justify reasonableness of an estimate in computation.</b> [RL, CU]  <b>Use a variety of estimation strategies (e.g., multiples of 10</b></p>	<p>1.1.5</p> <p>1.1.6</p> <p>1.1.7</p> <p>1.1.8</p>
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	<p>families). [CU]  Describe and compare strategies to solve problems involving multiplication and division (e.g., alternative algorithms, different strategies, decomposition, properties of multiplication). [CU]  Demonstrate the relationship between multiplication and repeated addition.  Demonstrate the relationship between division and repeated subtraction.  Describe and compare strategies to solve three-digit addition and subtraction problems (e.g., child developed algorithms, decomposition). [RL, CU]  Use joining, separating, adding-on, and finding the difference to add and subtract.  Write and solve multi-step problem situations that involve addition and subtraction. [CU, MC]  Use calculators to compute with large numbers (e.g., adding three or more 3-digit numbers; subtracting 3 digit from 4 digit numbers).  Use appropriate strategies and tools from among mental computation, estimation, calculators, and paper and pencil to compute in a problem situation. [SP, RL]  Defend situations in which estimation is sufficient (e.g., grocery shopping or party supplies). [CU]  Use mental arithmetic, pencil and paper, or calculator as appropriate to the task involving addition and subtraction of whole numbers.  Identify when an approximation is appropriate.  Use estimation to determine the reasonableness of answers in situations. [RL]  Describe and justify reasonableness of an estimate in computation. [RL, CU]  Use a variety of estimation strategies (e.g., multiples of 10 and 100, rounding, front-end estimation, compatible numbers, clustering).  Describe and justify whether an approximation is or is not appropriate. {RL, CU}</p>		<p>and 100, rounding, front-end estimation, compatible numbers, clustering).  Describe and justify whether an approximation is or is not appropriate. {RL, CU}</p>	
Measurement	<p>Find the volume of rectangular prisms  Find the area of a rectangular region divided into square units  Measure in centimeters and inches  Know units of measure</p>	<p>Math Message  Math Boxes—review problems  Student explorations  Games  Hands on Activities</p>	<p>Measure line segments to the nearest 1/4 inch  Measure line segments to the nearest centimeter  <b>Given an object, name the attributes that can be measured.</b></p>	1.2.1

	<p>Tell and show times to the nearest minute</p> <p>Measure line segments to the nearest 1/4 inch</p> <p>Measure line segments to the nearest centimeter</p> <p><b>Given an object, name the attributes that can be measured. [CU, MC]</b></p> <p><b>Explain how length is used to describe objects. [CU]</b></p> <p><b>Explain or show how height and weight are different. [CU]</b></p> <p><b>Explain or show how clocks measure the passage of time. [CU]</b></p> <p><b>Explain how money is used to describe the value of purchased items. [CU]</b></p> <p><b>Identify when two unit measurements are not necessarily equal (e.g., one pace long can represent different lengths). [CU, MC]</b></p> <p><b>Determine whether measurement can or cannot be compared based on whether the units are the same or different.</b></p> <p><b>Show how length units are shown on rulers, tape measures, and other linear measuring tools. [MC, CU]</b></p> <p><b>Show how weight units are shown on a grocery scale. [MC]</b></p> <p><b>Explain why people created standard units for length or weight/mass. [CU]</b></p> <p><b>Describe the various units of measurement for length and capacity and explain how they are organized.</b></p> <p><b>Explain the benefits and appropriate uses of standard units of measurement for length and capacity using our customary (U.S.) system. [CU]</b></p> <p><b>Demonstrate or explain how inches are organized into feet and feet are organized into yards. [CU]</b></p> <p><b>Demonstrate or explain how cups are organized into pints, pints into quarts, and quarts into gallons. [CU]</b></p> <p><b>Identify attribute to measure. Select and use appropriate units (e.g., meters, minutes, pounds, dollars, degrees).</b></p> <p><b>Select and use tools that match the unit (e.g., ruler, clock, scales, calculator, thermometer).</b></p> <p><b>Count or compute and label measures.</b></p> <p><b>Explain and use a method for making change with coins. [CU].</b></p> <p><b>Compare measures of two or more like objects. [RL]</b></p> <p><b>Identify situations in which estimated measurements are</b></p>	<p>Drill and practice—math masters</p> <p>Modeling</p> <p>Demonstration</p> <p>Cross-age tutoring</p> <p>Direct instruction</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p> <p>Minute math</p>	<p><b>[CU, MC]</b></p> <p><b>Explain how length is used to describe objects. [CU]</b></p> <p><b>Explain or show how height and weight are different. [CU]</b></p> <p><b>Explain or show how clocks measure the passage of time. [CU]</b></p> <p><b>Explain how money is used to describe the value of purchased items. [CU]</b></p> <p><b>Identify when two unit measurements are not necessarily equal (e.g., one pace long can represent different lengths). [CU, MC]</b></p> <p><b>Determine whether measurement can or cannot be compared based on whether the units are the same or different.</b></p> <p><b>Show how length units are shown on rulers, tape measures, and other linear measuring tools. [MC, CU]</b></p> <p><b>Show how weight units are shown on a grocery scale. [MC]</b></p> <p><b>Explain why people created standard units for length or weight/mass. [CU]</b></p> <p><b>Describe the various units of measurement for length and capacity and explain how they are organized.</b></p> <p><b>Explain the benefits and appropriate uses of standard units of measurement for length and capacity using our customary (U.S.) system. [CU]</b></p> <p><b>Demonstrate or explain how inches are organized into feet and feet are organized into yards. [CU]</b></p> <p><b>Demonstrate or explain how cups are organized into pints, pints into quarts, and quarts into gallons. [CU]</b></p> <p><b>Identify attribute to measure. Select and use appropriate units (e.g., meters, minutes, pounds, dollars, degrees).</b></p> <p><b>Select and use tools that match the unit (e.g., ruler, clock, scales, calculator, thermometer).</b></p> <p><b>Count or compute and label measures.</b></p> <p><b>Explain and use a method for making change with coins. [CU].</b></p> <p><b>Compare measures of two or more like objects. [RL]</b></p> <p><b>Identify situations in which estimated measurements are sufficient; estimate length, time, money, weight or temperature. Estimate a measurement using standard or non-standard units (e.g., fingers, arms, paper clips, inches, minutes, or foot lengths).</b></p> <p><b>Create and use referents to standard units (e.g., width of</b></p>	<p>1.2.2</p> <p>1.2.3</p> <p>1.2.4</p> <p>1.2.6</p>
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	<p>sufficient; estimate length, time, money, weight or temperature. Estimate a measurement using standard or non-standard units (e.g., fingers, arms, paper clips, inches, minutes, or foot lengths). Create and use referents to standard units (e.g., width of pinkie finger is similar to a centimeter). [RL, MC]</p> <p>Use estimation to decide whether standard or non-standard units of measurement have been used in a situation. [RL]</p> <p>Determine when estimation is useful.</p>		<p>pinkie finger is similar to a centimeter). [RL, MC]</p> <p>Use estimation to decide whether standard or non-standard units of measurement have been used in a situation. [RL]</p> <p>Determine when estimation is useful.</p>	
Geometric Sense	<p>Find the perimeter of a polygon</p> <p>Identify, draw, and name line segments, lines and rays</p> <p>Draw parallel and intersecting line segments, lines and rays</p> <p>Draw angles as records of rotations</p> <p>Identify right angles</p> <p>Identify and name 2-D and 3-D shapes</p> <p>Identify symmetric figures and draw lines of symmetry</p> <p><b>Identify, describe, and compare congruent two-dimensional geometric figures. [RL, CU]</b></p> <p><b>Given a variety of figures, determine which figures are congruent.</b></p> <p><b>Draw a shape that is congruent to a given two-dimensional shape. [CU]</b></p> <p><b>Explain congruence and use an example to demonstrate it. [CU]</b></p> <p><b>Use attributes and properties to identify, name, draw, compare, and/or sort two-dimensional shapes and figures. [RL, CU]</b></p> <p><b>Draw and label two-dimensional figures given particular attributes (e.g., triangle, rectangle with all sides the same length). [CU]</b></p> <p><b>Identify, name, and describe the attributes and properties of polygons. [CU]</b></p> <p><b>Given two polygons, explain how they are alike and different in terms of their attributes and properties (e.g., using a Venn diagram). [CU]</b></p> <p><b>Give directions so that someone else can duplicate a design involving polygons (e.g., a friend who can't see the design). [CU]</b></p> <p><b>Given directions for movement on a positive number line, identify the point of final destination using real-world examples (e.g., travel back and forth on a street, temperature variation at different times of the day, dance steps from diverse cultures). [SP, RL, MC]</b></p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Hands on Activities</p> <p>Drill and practice—math masters</p> <p>Modeling</p> <p>Demonstration</p> <p>Cross-age tutoring</p> <p>Direct instruction</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p> <p>Minute math</p>	<p>Identify right angles</p> <p>Identify and name 2-D and 3-D shapes</p> <p>Identify symmetric figures and draw lines of symmetry</p> <p><b>Identify, describe, and compare congruent two-dimensional geometric figures. [RL, CU]</b></p> <p><b>Given a variety of figures, determine which figures are congruent.</b></p> <p><b>Draw a shape that is congruent to a given two-dimensional shape. [CU]</b></p> <p><b>Explain congruence and use an example to demonstrate it. [CU]</b></p> <p><b>Use attributes and properties to identify, name, draw, compare, and/or sort two-dimensional shapes and figures. [RL, CU]</b></p> <p><b>Draw and label two-dimensional figures given particular attributes (e.g., triangle, rectangle with all sides the same length). [CU]</b></p> <p><b>Identify, name, and describe the attributes and properties of polygons. [CU]</b></p> <p><b>Given two polygons, explain how they are alike and different in terms of their attributes and properties (e.g., using a Venn diagram). [CU]</b></p> <p><b>Give directions so that someone else can duplicate a design involving polygons (e.g., a friend who can't see the design). [CU]</b></p> <p><b>Given directions for movement on a positive number line, identify the point of final destination using real-world examples (e.g., travel back and forth on a street, temperature variation at different times of the day, dance steps from diverse cultures). [SP, RL, MC]</b></p> <p><b>Identify the interval on a given number line (e.g., describe the scale on a graph). [CU]</b></p> <p><b>Describe the relative locations of points on a number line with positive coordinates. [CU]</b></p>	<p>1.3.1</p> <p>1.3.2</p> <p>1.3.3</p>

	<p>Identify the interval on a given number line (e.g., describe the scale on a graph). [CU]</p> <p>Describe the relative locations of points on a number line with positive coordinates. [CU]</p> <p>Use unit values to describe the location of objects on a number line.</p> <p>Draw points or objects on a number line based on unit values given.</p>		<p>Use unit values to describe the location of objects on a number line.</p> <p>Draw points or objects on a number line based on unit values given.</p>	
Probability and Statistics	<p>Find the mean of a data set</p> <p>Understands and uses the language of probability</p> <p>Uses fractions to record probability of events</p> <p>Uses random draws to predict outcomes</p> <p>Collects and organizes data for use in predicting outcomes</p> <p>Understands area model of probability and solves simple spinner problems</p> <p>Find the median of a data set</p> <p>Make a frequency table</p> <p><b>Interpret graphs for comparative information (e.g., find the difference in selected data). [RL, CU, MC]</b></p> <p><b>Pose questions and gather data relevant to the questions posed. Design a survey; collect, and record data in easy-to-use formats (e.g., use tally marks, make a table). [CU]</b></p> <p><b>Organize category data into bar graphs with unit scales for ease of interpretation. [RL]</b></p> <p><b>Organize data into picture graphs with unit scales for ease of interpretation. [RL]</b></p> <p><b>Determine questions needed to gather data about themselves and their classmates.</b></p> <p><b>Create and solve a problem situation where mode is meaningful for a set of data. [RL, CU, MC]</b></p> <p><b>Explain what the mode represents and how to find it in a given set of data. [CU]</b></p> <p><b>Identify the mode for a given set of data.</b></p> <p><b>Pose questions that can be answered from a given graph. [CU, MC]</b></p> <p><b>Make inferences based on the data or determine if the data can support inferences made. [CU, MC]</b></p> <p><b>Read and report on data from tables, charts, and bar graphs. [CU]</b></p> <p><b>Explain how types of graphs or the graph construction can support different points of view</b></p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Hands on Activities</p> <p>Drill and practice—math masters</p> <p>Modeling</p> <p>Demonstration</p> <p>Cross-age tutoring</p> <p>Direct instruction</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p> <p>Minute math</p>	<p><b>Interpret graphs for comparative information (e.g., find the difference in selected data). [RL, CU, MC]</b></p> <p><b>Pose questions and gather data relevant to the questions posed. Design a survey; collect, and record data in easy-to-use formats (e.g., use tally marks, make a table). [CU]</b></p> <p><b>Organize category data into bar graphs with unit scales for ease of interpretation. [RL]</b></p> <p><b>Organize data into picture graphs with unit scales for ease of interpretation. [RL]</b></p> <p><b>Determine questions needed to gather data about themselves and their classmates.</b></p> <p><b>Create and solve a problem situation where mode is meaningful for a set of data. [RL, CU, MC]</b></p> <p><b>Explain what the mode represents and how to find it in a given set of data. [CU]</b></p> <p><b>Identify the mode for a given set of data.</b></p> <p><b>Pose questions that can be answered from a given graph. [CU, MC]</b></p> <p><b>Make inferences based on the data or determine if the data can support inferences made. [CU, MC]</b></p> <p><b>Read and report on data from tables, charts, and bar graphs. [CU]</b></p> <p><b>Explain how types of graphs or the graph construction can support different points of view (e.g., starting the axis numbers at 50 rather than 0). [CU, SP, RL]</b></p> <p><b>Create bar graphs including labels for title, both axes, scale units (e.g., 2's, 5's, 10's), and key if needed. [SP, RL, CU, MC]</b></p> <p><b>Interpret graphs for comparative information (e.g., find the difference in selected data). [RL, CU, MC]</b></p>	<p>1.4.3</p> <p>1.4.4</p> <p>1.4.5</p>



	<p>children in class; if 15 are present, how many are absent?). [CU]  Solve problems involving equality (e.g., <math>5 + 3 = \square + 2</math>). [SP, RL]  Solve equations with addition and subtraction using manipulatives, pictures, and symbols. [SP, RL, CU]  Describe a strategy used to solve an equation with addition or subtraction. [CU]</p>		<p>pictures, and symbols. [SP, RL, CU]  Describe a strategy used to solve an equation with addition or subtraction. [CU]</p>	
Problem Solving	<p><b>Use strategies/approaches to examine the situation and determine if there is a problem to solve (e.g., ask questions, or paraphrase information provided: Miguel is taking a survey to determine about how many minutes students read on school nights. The class goal is at least 30 minutes each night). Determine the problem using information from investigation (e.g., has the class met its reading goal for the week?) Generate questions that would need to be answered in order to solve the problem (e.g., about how many minutes did each person read? Can we estimate or do we need an exact number? What is the difference between the goal and the minutes read?). Identify known and unknown information (e.g., known: who the students are, the class goal [30 minutes x 5 nights x 10 students is 1500 total minutes]; unknown: the number of minutes each student read, if the class reached the goal). Identify information that is needed and not needed to solve the problem (e.g., needed: the class goal; not needed: Miguel likes Matt Christopher books). Gather and organize data and information (e.g., create a survey to find out about how many minutes students are watching TV; organize data on a two-column chart). Determine what strategy will be used to solve the problem (e.g., estimate minutes read per night per week from data gathered). Use strategies to solve problems (e.g., use number estimation — if one student reads 45 minutes [around 50] one night and if the same student reads 18 [around 20] minutes the next night, that is about 70 minutes). Use appropriate tools to estimate solution (e.g., mental math or paper and pencil). Recognize when an approach is</b></p>	<p>Math Message  Math Boxes—review problems  Student explorations  Games  Hands on Activities  Practice—math masters  Modeling  Demonstration  Discussion  Write a math story  Journals  Projects</p>	<p><b>Use strategies/approaches to examine the situation and determine if there is a problem to solve (e.g., ask questions, or paraphrase information provided: Miguel is taking a survey to determine about how many minutes students read on school nights. The class goal is at least 30 minutes each night). Determine the problem using information from investigation (e.g., has the class met its reading goal for the week?) Generate questions that would need to be answered in order to solve the problem (e.g., about how many minutes did each person read? Can we estimate or do we need an exact number? What is the difference between the goal and the minutes read?). Identify known and unknown information (e.g., known: who the students are, the class goal [30 minutes x 5 nights x 10 students is 1500 total minutes]; unknown: the number of minutes each student read, if the class reached the goal). Identify information that is needed and not needed to solve the problem (e.g., needed: the class goal; not needed: Miguel likes Matt Christopher books). Gather and organize data and information (e.g., create a survey to find out about how many minutes students are watching TV; organize data on a two-column chart). Determine what strategy will be used to solve the problem (e.g., estimate minutes read per night per week from data gathered). Use strategies to solve problems (e.g., use number estimation — if one student reads 45 minutes [around 50] one night and if the same student reads 18 [around 20] minutes the next night, that is about 70 minutes). Use appropriate tools to estimate solution (e.g., mental math or paper and pencil). Recognize when an approach is</b></p>	<p>2.1.1</p> <p>2.2.1</p> <p>2.2.2</p>

	unproductive and try a new approach.		unproductive and try a new approach.	
Reasoning	<p><b>Break down results from data to determine about how many minutes per night students are reading in order to estimate whether the class has met 30 minutes each night goal.</b></p> <p><b>Make a reasonable prediction based on prior knowledge and investigation of situation (e.g., after collecting survey data and before estimation, predict whether the class will meet its goal).</b></p> <p><b>Defend prediction with evidence from the situation.</b></p> <p><b>Make inferences (conjectures) using information from the situation to support the inference (e.g., the class probably did not make the reading goal because the community softball league has started up and most kids are involved in the evenings).</b></p> <p><b>Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence.</b></p> <p><b>Describe and compare estimation strategies used (e.g., front end estimation vs. using compatible numbers). [1.1.8]</b></p> <p><b>Check for reasonableness of results by using a different strategy or tool to solve the problem (e.g., use front end estimation to determine about how many minutes students were reading each night).</b></p> <p><b>Justify whether estimation is appropriate for the situation.</b></p> <p><b>Explain how comparisons can be used to draw a conclusion (e.g., the class won't have met the reading goal because fewer students read less than more this week and didn't make the goal last week).</b></p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Work with manipulatives</p> <p>Modeling</p> <p>Demonstration</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p>	<p><b>Break down results from data to determine about how many minutes per night students are reading in order to estimate whether the class has met 30 minutes each night goal.</b></p> <p><b>Make a reasonable prediction based on prior knowledge and investigation of situation (e.g., after collecting survey data and before estimation, predict whether the class will meet its goal).</b></p> <p><b>Defend prediction with evidence from the situation.</b></p> <p><b>Make inferences (conjectures) using information from the situation to support the inference (e.g., the class probably did not make the reading goal because the community softball league has started up and most kids are involved in the evenings).</b></p> <p><b>Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence.</b></p> <p><b>Describe and compare estimation strategies used (e.g., front end estimation vs. using compatible numbers). [1.1.8]</b></p> <p><b>Check for reasonableness of results by using a different strategy or tool to solve the problem (e.g., use front end estimation to determine about how many minutes students were reading each night).</b></p> <p><b>Justify whether estimation is appropriate for the situation.</b></p> <p><b>Explain how comparisons can be used to draw a conclusion (e.g., the class won't have met the reading goal because fewer students read less than more this week and didn't make the goal last week).</b></p>	3.1.1
				3.2.1
				3.2.2
				3.2.3
				3.3.1
				3.3.2
Communication	<p><b>Determine how to collect information for a specific purpose or audience (e.g., to convince a parent or other adult, to demonstrate a need for change, to provide information).</b></p> <p><b>Develop and follow a plan based on the kind of information needed, the purpose, and the audience (e.g., survey, gather data from a chart or graph, read in a text to gather information).</b></p> <p><b>Read and report on data from tables, charts, and bar graphs. [1.4.5]</b></p>	<p>Math Message</p> <p>Student explorations</p> <p>Games</p> <p>Work with manipulatives</p> <p>Modeling</p> <p>Demonstration</p> <p>Cross-age tutoring</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p>	<p><b>Determine how to collect information for a specific purpose or audience (e.g., to convince a parent or other adult, to demonstrate a need for change, to provide information).</b></p> <p><b>Develop and follow a plan based on the kind of information needed, the purpose, and the audience (e.g., survey, gather data from a chart or graph, read in a text to gather information).</b></p> <p><b>Read and report on data from tables, charts, and bar graphs. [1.4.5]</b></p>	4.1.1
				4.1.2

	<p>Read directions for movement on a positive number line, identify the point of final destination using real-world examples (e.g., travel back and forth on a street, temperature variations during the day). [1.3.3]</p> <p>Create a display to represent information from survey results (e.g., the approximate number of minutes read and whether or not the goal was met).</p> <p>Create bar graphs including labels for title, both axes, scale units (e.g., 2's, 5's, 10's), and key if needed. [1.4.2]</p> <p>Create and solve a problem situation where mode is meaningful for a set of data. [1.4.4]</p> <p>Display information to be shared.</p> <p>Translate from one representation of a whole number to another in standard, expanded, and word forms. [1.1.1]</p> <p>Name attributes of an object that can be measured. [1.2.4]</p> <p>Identify, describe, and compare congruent two-dimensional geometric shapes. [1.3.1]</p> <p>Make a survey and collect data (e.g., use tally marks, make a table). [1.4.3]</p> <p>Identify and use appropriate symbols and notation in reading and writing simple expressions and equations involving addition and subtraction. [1.5.4]</p>		<p>Read directions for movement on a positive number line, identify the point of final destination using real-world examples (e.g., travel back and forth on a street, temperature variations during the day). [1.3.3]</p> <p>Create a display to represent information from survey results (e.g., the approximate number of minutes read and whether or not the goal was met).</p> <p>Create bar graphs including labels for title, both axes, scale units (e.g., 2's, 5's, 10's), and key if needed. [1.4.2]</p> <p>Create and solve a problem situation where mode is meaningful for a set of data. [1.4.4]</p> <p>Display information to be shared.</p> <p>Translate from one representation of a whole number to another in standard, expanded, and word forms. [1.1.1]</p> <p>Name attributes of an object that can be measured. [1.2.4]</p> <p>Identify, describe, and compare congruent two-dimensional geometric shapes. [1.3.1]</p> <p>Make a survey and collect data (e.g., use tally marks, make a table). [1.4.3]</p> <p>Identify and use appropriate symbols and notation in reading and writing simple expressions and equations involving addition and subtraction. [1.5.4]</p>	<p>4.2.1</p> <p>4.2.2</p>
Connections	<p>Conduct a survey for a question, collect data, and use three-digit addition and subtraction to compute the results of the survey. [1.1.6, 1.4.4]</p> <p>Explain and use a method for making change with coins. [1.1.1, 1.2.4]</p> <p>Translate from one representation of a whole number to another in standard, expanded, and word forms. [1.1.1]</p> <p>Compare strategies to solve problems involving multiplication and division (e.g., alternative algorithms, use of properties of multiplication). [1.1.5]</p> <p>Use the inverse relationship between multiplication and division using physical diagrams, words, and symbols (e.g., arrays, fact families). [1.1.5]</p> <p>Given an object, identify geometric attributes that can be measured.</p> <p>Interpret graphs for comparative</p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Work with manipulatives</p> <p>Modeling</p> <p>Demonstration</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p>	<p>Conduct a survey for a question, collect data, and use three-digit addition and subtraction to compute the results of the survey. [1.1.6, 1.4.4]</p> <p>Explain and use a method for making change with coins. [1.1.1, 1.2.4]</p> <p>Translate from one representation of a whole number to another in standard, expanded, and word forms. [1.1.1]</p> <p>Compare strategies to solve problems involving multiplication and division (e.g., alternative algorithms, use of properties of multiplication). [1.1.5]</p> <p>Use the inverse relationship between multiplication and division using physical diagrams, words, and symbols (e.g., arrays, fact families). [1.1.5]</p> <p>Given an object, identify geometric attributes that can be measured.</p> <p>Interpret graphs for comparative</p>	<p>5.1.1</p> <p>5.1.2</p> <p>5.2.1</p>

	<p>information. [1.4.3]  <b>Pose questions and gather data about self and surroundings.</b> [1.4.3]  <b>Make inferences based on data or determine if the data can support inferences made.</b> [1.4.5]  <b>Recognize the contributions to the development of mathematics by women, men, and various cultures (e.g., complete a mathematically based project that researches the history of 0?).</b>  <b>Write and solve multi-step situations that involve addition and subtraction.</b> [1.1.6]  <b>Use referents to standard units (e.g., width of pinkie finger is similar to a centimeter).</b> [1.2.6]  <b>Identify the point of final destination using real-world examples given directions for movement on a positive number line (e.g., travel back and forth on a street, temperature variation at different times of the day, climbing up and down stairs).</b> [1.3.3]  <b>Pose questions and gather data about self and surroundings.</b> [1.4.2]  <b>Create and solve a problem situation where mode is meaningful for a set of data.</b> [1.4.4]  <b>Make inferences on data from a real-world context and then use the context to determine if the inference is valid.</b> [1.4.5]</p>		<p>information. [1.4.3]  <b>Pose questions and gather data about self and surroundings.</b> [1.4.3]  <b>Make inferences based on data or determine if the data can support inferences made.</b> [1.4.5]  <b>Recognize the contributions to the development of mathematics by women, men, and various cultures (e.g., complete a mathematically based project that researches the history of 0?).</b>  <b>Write and solve multi-step situations that involve addition and subtraction.</b> [1.1.6]  <b>Use referents to standard units (e.g., width of pinkie finger is similar to a centimeter).</b> [1.2.6]  <b>Identify the point of final destination using real-world examples given directions for movement on a positive number line (e.g., travel back and forth on a street, temperature variation at different times of the day, climbing up and down stairs).</b> [1.3.3]  <b>Pose questions and gather data about self and surroundings.</b> [1.4.2]  <b>Create and solve a problem situation where mode is meaningful for a set of data.</b> [1.4.4]  <b>Make inferences on data from a real-world context and then use the context to determine if the inference is valid.</b> [1.4.5]</p>	<p>5.2.2  5.3.1</p>
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Fourth Grade

Fourth Grade	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
<p>Number Sense</p>	<p>Use exponential notation to represent powers of 10            Add and subtract fractions            Use an estimation strategy to divide decimals by whole numbers            Use an estimation strategy to multiply decimals by whole numbers            Add integers            Subtract positive and negative integers            Use and explain strategies for solving addition and subtraction number stories            Solve basic division facts            Express metric measures with decimals            Read and write decimals to thousandths            Compare and order decimals            Solve 1- and 2-place decimal addition and subtraction problems and number stories            Solve extended multiplication facts            Make magnitude estimates for products of multi-digit numbers            Solve multi-digit multiplication problems            Round whole numbers to a given place            Read and write numbers to billions; name the values of digits in numerals to billions            Have a successful strategy for solving whole-number division problems            Express the remainder of a whole-number division problem as a fraction and the answer as a mixed number            Use and explain strategies for solving multiplication and division number stories            Rename fractions with denominators of 10 and 100 as decimals            Compare and order fractions            Find fractions equivalent to a given fraction            Estimate the area of a figure by counting unit squares and fractions of unit squares inside the figure            Find a percent or a fraction of a number            Give equivalencies between "easy" fractions (fourths, fifths, and tenths), decimals, and percents            Add positive and negative integers            Solve addition and subtraction facts            Have a successful strategy for subtracting multi-digit numbers            Have a successful strategy for adding multi-digit numbers            Read and write numerals to hundred-millions; give the value of</p>	<p>Math Message            Math Boxes—review problems            Student explorations            Games            Work with manipulatives            Drill and practice—math masters            Modeling            Demonstration            Cross-age tutoring            Direct instruction            Discussion            Explain your solution orally and in written form            Write a math story            Journals            Projects            Minute math</p>	<p>Solve addition and subtraction facts            Have a successful strategy for subtracting multi-digit numbers            Have a successful strategy for adding multi-digit numbers            Read and write numerals to hundred-millions; give the value of the digits in numerals to hundred-millions            Give equivalent names for numbers            Solve basic multiplication facts            Understand the relationship between multiplication and division            Use dollars-and-cents notations            Compare large numbers            Estimate sums            Identify the whole for fractions            Identify fractional parts of a collection of objects            Identify fractional parts of regions            Give equivalencies between hundredths-fractions, decimals and percents            Use a calculator to rename any fractions as a decimal or percent  <b>Interpret fractions as parts of a whole object, number, or set (e.g., half of a medium pizza and half of a large pizza are not equal amounts).</b>  <b>Symbolically represent parts of a whole or parts of a set with common denominators. [CU]</b>  <b>Explain how fractions (denominators of 2, 3, 4, 6, and 8) represent information across the curriculum (e.g., interpreting circle graphs, fraction of states that border an ocean). [CU, MC]</b>  <b>Represent decimals (money) in multiple ways (e.g., symbols, physical models). [CU]</b>  <b>Explain or show how a fraction can be decomposed into smaller fractions (e.g., <math>\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}</math>).</b>  <b>Model and describe equivalent fractions (e.g., paper folding, geoboards, parallel number lines). [CU]</b>  <b>Use a number line to approximate and label halves, thirds, and fourths in relationship to whole units. [CU, MC]</b>  <b>Order fractions with like denominators. [RL]</b>  <b>Demonstrate and explain equivalent relationships between decimals and fractions (e.g., \$.50 is equal to <math>\frac{1}{2}</math> a dollar and 50/100 of a dollar) using models. [CU, MC]</b>  <b>Demonstrate or show the order of like denominator fractions using</b></p>	<p>1.1.1</p> <p>1.1.2</p>

	<p>the digits in numerals to hundred-millions  Give equivalent names for numbers  Solve basic multiplication facts  Understand the relationship between multiplication and division  Use dollars-and-cents notations  Compare large numbers  Estimate sums  Identify the whole for fractions  Identify fractional parts of a collection of objects  Identify fractional parts of regions  Give equivalencies between hundredths-fractions, decimals and percents  Use a calculator to rename any fractions as a decimal or percent  <b>Interpret fractions as parts of a whole object, number, or set (e.g., half of a medium pizza and half of a large pizza are not equal amounts).</b>  <b>Symbolically represent parts of a whole or parts of a set with common denominators. [CU]</b>  <b>Explain how fractions (denominators of 2, 3, 4, 6, and 8) represent information across the curriculum (e.g., interpreting circle graphs, fraction of states that border an ocean). [CU, MC]</b>  <b>Represent decimals (money) in multiple ways (e.g., symbols, physical models). [CU]</b>  <b>Explain or show how a fraction can be decomposed into smaller fractions (e.g., <math>\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}</math>).</b>  <b>Model and describe equivalent fractions (e.g., paper folding, geoboards, parallel number lines). [CU]</b>  <b>Use a number line to approximate and label halves, thirds, and fourths in relationship to whole units. [CU, MC]</b>  <b>Order fractions with like denominators. [RL]</b>  <b>Demonstrate and explain equivalent relationships between decimals and fractions (e.g., \$.50 is equal to <math>\frac{1}{2}</math> a dollar and <math>\frac{50}{100}</math> of a dollar) using models. [CU, MC]</b>  <b>Demonstrate or show the order of like denominator fractions using pictures or objects. [CU]</b>  <b>Describe how the commutative property works with multiplication and not division using words, numbers, or physical models. [CU]</b>  <b>Describe how the identity property for addition is different from the identity property for multiplication using words, numbers, pictures, or physical</b></p>		<p><b>pictures or objects. [CU]</b>  <b>Describe how the commutative property works with multiplication and not division using words, numbers, or physical models. [CU]</b>  <b>Describe how the identity property for addition is different from the identity property for multiplication using words, numbers, pictures, or physical models. [CU]</b>  <b>Determine whether equations are true or false and explain, based on any of the properties for multiplication (e.g., <math>4 \times (5 \times 6) = (4 \times 5) \times 6</math>). [CU]</b>  <b>Determine whether equations are true or false and explain, based on any of the properties (e.g., <math>14 + (62 + 38) = (14 + 62) + 38</math>). [CU]</b>  <b>Demonstrate commutative, associative, or identity properties of addition or multiplication using pictures or objects. [CU]</b>  <b>Represent addition and subtraction of fractions with like denominators using models (e.g., everyday objects, fraction circles, number lines, geoboards). [CU]</b>  <b>Explain the meaning of addition and subtraction of like denominator fractions. [CU]</b>  <b>Represent addition or subtraction of like-denominator fractions that represent sets of objects (e.g., <math>\frac{1}{4}</math> of 24 marbles plus <math>\frac{1}{4}</math> of 24 marbles = <math>\frac{2}{4}</math> of 24 marbles or 12). Demonstrate the meaning of addition or subtraction of like denominators with multiple examples. [CU]</b>  <b>Use a variety of strategies to mentally access multiplication and division facts through 12's. Recall multiplication and division facts through 12's. Record, share, and evaluate algorithms used in computational situations. [CU]</b>  <b>Write and solve problem situations with whole numbers using a combination of any two operations. [CU, MC]</b>  <b>Interpret remainders of a division problem in a given situation. [RL, MC]</b>  <b>Use calculators to compute with large numbers (e.g., multiplying two digits times three digits; dividing three or four digits by two digits without remainders). Select and justify appropriate strategies and tools from among mental computation, estimation, calculators, and paper and pencil to compute in a problem situation.</b></p>	<p>1.1.3</p> <p>1.1.5</p> <p>1.1.6</p> <p>1.1.7</p>
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	<p>models. [CU]  Determine whether equations are true or false and explain, based on any of the properties for multiplication (e.g., <math>4 \times (5 \times 6) = (4 \times 5) \times 6</math>). [CU]  Determine whether equations are true or false and explain, based on any of the properties (e.g., <math>14 + (62 + 38) = (14 + 62) + 38</math>). [CU]  Demonstrate commutative, associative, or identity properties of addition or multiplication using pictures or objects. [CU]  Represent addition and subtraction of fractions with like denominators using models (e.g., everyday objects, fraction circles, number lines, geoboards). [CU]  Explain the meaning of addition and subtraction of like denominator fractions. [CU]  Represent addition or subtraction of like-denominator fractions that represent sets of objects (e.g., <math>\frac{1}{4}</math> of 24 marbles plus <math>\frac{1}{4}</math> of 24 marbles = <math>\frac{2}{4}</math> of 24 marbles or 12).  Demonstrate the meaning of addition or subtraction of like denominators with multiple examples. [CU]  Use a variety of strategies to mentally access multiplication and division facts through 12's.  Recall multiplication and division facts through 12's.  Record, share, and evaluate algorithms used in computational situations. [CU]  Write and solve problem situations with whole numbers using a combination of any two operations. [CU, MC]  Interpret remainders of a division problem in a given situation. [RL, MC]  Use calculators to compute with large numbers (e.g., multiplying two digits times three digits; dividing three or four digits by two digits without remainders).  Select and justify appropriate strategies and tools from among mental computation, estimation, calculators, and paper and pencil to compute in a problem situation. [SP, RL]  Use estimation strategies appropriately when the exact answer is not necessary. [SP, RL]  Identify and justify situations when estimation is not appropriate. [SP, RL, CU, MC]  Use mathematical tools as appropriate to the task involving multiplication and division of whole numbers.</p>		<p>[SP, RL]  Use estimation strategies appropriately when the exact answer is not necessary. [SP, RL]  Identify and justify situations when estimation is not appropriate. [SP, RL, CU, MC]  Use mathematical tools as appropriate to the task involving multiplication and division of whole numbers.  Identify when an approximation is appropriate.  Use a variety of strategies to approximate sums, differences, products, and quotients. [RL]  Use estimation to determine the reasonableness of answers in situations. [RL]  Make and explain an appropriate adjustment when an estimate and a solution don't agree. [RL, CU]</p>	<p>1.1.8</p>
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	<p><b>Identify when an approximation is appropriate.</b></p> <p><b>Use a variety of strategies to approximate sums, differences, products, and quotients. [RL]</b></p> <p><b>Use estimation to determine the reasonableness of answers in situations. [RL]</b></p> <p><b>Make and explain an appropriate adjustment when an estimate and a solution don't agree. [RL, CU]</b></p>			
Measurement	<p>Identify locations on Earth for which latitude and longitude are given; find latitude and longitude for given locations</p> <p>Use a formula to calculate the volume of rectangular prisms</p> <p>Use a map scale to estimate distances</p> <p>Convert between metric measures</p> <p>Draw and measure line segments to the nearest millimeter</p> <p>Use personal references to estimate lengths in metric units</p> <p>Use formulas to find area of rectangles, parallelograms, and triangles</p> <p>Find the perimeter of a polygon</p> <p>Estimate the weight of objects in ounces or grams; weigh objects in ounces or grams</p> <p>Draw and measure line segments to the nearest centimeter</p> <p><b>Demonstrate and explain how area covers a shape and perimeter encloses a shape. [CU, MC]</b></p> <p><b>Describe situations where area is the needed measurable attribute (e.g., buying carpet to cover a floor, painting a wall, building fishnets based on fishing ground, calculating needed area for teepees and lodges, amount of area needed for a pow-wow, describing the amount of floor space in a room). [CU, MC]</b></p> <p><b>Compare areas of different shapes and sizes. [RL]</b></p> <p><b>Use measurements of area to describe objects. [CU]</b></p> <p><b>Measure perimeter and area for regular and irregular shapes (e.g., use tiles, inches, or grid paper to find perimeter or area of mats, CDs, or skateboards). [SP, RL, MC]</b></p> <p><b>Compare and describe area measurements made using different units (e.g., square inches vs. square centimeters). [SP, RL]</b></p> <p><b>Describe how the unit chosen to measure linear dimensions can determine the unit used to measure area (e.g., measuring perimeter in centimeters produces an area in square centimeters).</b></p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Work with manipulatives</p> <p>Drill and practice—math masters</p> <p>Modeling</p> <p>Demonstration</p> <p>Cross-age tutoring</p> <p>Direct instruction</p> <p>Discussion</p> <p>Explain your solution orally and in written form</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p> <p>Minute math</p>	<p>Draw and measure line segments to the nearest centimeter</p> <p><b>Demonstrate and explain how area covers a shape and perimeter encloses a shape. [CU, MC]</b></p> <p><b>Describe situations where area is the needed measurable attribute (e.g., buying carpet to cover a floor, painting a wall, building fishnets based on fishing ground, calculating needed area for teepees and lodges, amount of area needed for a pow-wow, describing the amount of floor space in a room). [CU, MC]</b></p> <p><b>Compare areas of different shapes and sizes. [RL]</b></p> <p><b>Use measurements of area to describe objects. [CU]</b></p> <p><b>Measure perimeter and area for regular and irregular shapes (e.g., use tiles, inches, or grid paper to find perimeter or area of mats, CDs, or skateboards). [SP, RL, MC]</b></p> <p><b>Compare and describe area measurements made using different units (e.g., square inches vs. square centimeters). [SP, RL]</b></p> <p><b>Describe how the unit chosen to measure linear dimensions can determine the unit used to measure area (e.g., measuring perimeter in centimeters produces an area in square centimeters).</b></p> <p><b>Know and correctly label the basic units of measurement for time and weight measure in the metric and customary system. [CU]</b></p> <p><b>Explain the benefits and appropriate uses of standard units of measurement for area using both customary and metric systems. [CU]</b></p> <p><b>Demonstrate or explain how seconds are organized into minutes, minutes into hours, hours into days, days into weeks, and weeks into years. [CU]</b></p> <p><b>Demonstrate or explain how months are organized into years. [CU]</b></p> <p><b>Demonstrate or explain how ounces are organized into</b></p>	<p>1.2.1</p> <p>1.2.2</p> <p>1.2.3</p>

	<p>Know and correctly label the basic units of measurement for time and weight measure in the metric and customary system. [CU]</p> <p>Explain the benefits and appropriate uses of standard units of measurement for area using both customary and metric systems. [CU]</p> <p>Demonstrate or explain how seconds are organized into minutes, minutes into hours, hours into days, days into weeks, and weeks into years. [CU]</p> <p>Demonstrate or explain how months are organized into years. [CU]</p> <p>Demonstrate or explain how ounces are organized into pounds. [CU]</p> <p>Select and use appropriate units (e.g., square units). Select and use tools that match the unit (e.g., grid paper, squares). Count or compute and label area measures. Explain and use a method for measuring the area of an irregular shape (e.g., describe an irregular shape in terms of the composition of regular figures). [CU] Solve problems involving area measurement. [SP] Analyze a measurement situation and determine whether measurement has been done correctly. [RL] Identify situations in which estimate measurements are sufficient. Apply a process that can be used to find a reasonable estimate of the area measurement of an irregular shape (e.g., use tiles or pieces of paper to measure leaves, ponds). [SP, RL, CU] Compare areas of irregular shapes with different perimeters (e.g., leaves, ponds). [RL, MC] Explain whether estimation or precision is needed in a given situation. [CU] Determine whether a given measurement is exact or an estimate.</p>		<p>pounds. [CU] Select and use appropriate units (e.g., square units). Select and use tools that match the unit (e.g., grid paper, squares). Count or compute and label area measures. Explain and use a method for measuring the area of an irregular shape (e.g., describe an irregular shape in terms of the composition of regular figures). [CU] Solve problems involving area measurement. [SP] Analyze a measurement situation and determine whether measurement has been done correctly. [RL] Identify situations in which estimate measurements are sufficient. Apply a process that can be used to find a reasonable estimate of the area measurement of an irregular shape (e.g., use tiles or pieces of paper to measure leaves, ponds). [SP, RL, CU] Compare areas of irregular shapes with different perimeters (e.g., leaves, ponds). [RL, MC] Explain whether estimation or precision is needed in a given situation. [CU] Determine whether a given measurement is exact or an estimate.</p>	<p>1.2.4</p> <p>1.2.6</p>
Geometric Sense	<p>Use a compass and straightedge to construct geometric figures Make and interpret scale drawings Rotate figures Identify properties of polygons Classify quadrangles according to side and angle properties Name and locate points specified by ordered number pairs on a coordinate grid</p>	<p>Math Message Math Boxes—review problems Student explorations Games Work with manipulatives Drill and practice—math masters Modeling</p>	<p>Name, draw, and label line segments, lines and rays Name, draw, and label angles, triangles, and quadrangles Identify and describe right angles and parallel lines and line segments Use a transparent mirror to draw the reflection of a figure Identify lines of symmetry, lines of reflection, reflected figures, and</p>	

	<p>Identify acute, right, obtuse, straight, and reflex angles          Make turns and fractions of turns; relate turns and angles          Use a circular protractor and a half-circle protractor to measure and draw angles          Translate figures          Solve cube-stacking volume problems          Describe properties of geometric solids          Name, draw, and label line segments, lines and rays          Name, draw, and label angles, triangles, and quadrangles          Identify and describe right angles and parallel lines and line segments          Use a transparent mirror to draw the reflection of a figure          Identify lines of symmetry, lines of reflection, reflected figures, and figures with line symmetry  <b>Identify symmetrical two-dimensional figures and shapes (e.g., quilt blocks, textiles). [CU]</b>  <b>Complete a picture or design from a variety of cultures that incorporate a line of symmetry (e.g., basket design, beadwork, quilts, pyramids, nature). Identify and draw a line of symmetry (e.g., folding or using a mirror). [CU]</b>  <b>Identify parallel and perpendicular lines in two-dimensional figures and shapes and in the environment. [MC]</b>  <b>Describe characteristics of two-dimensional geometric figures using appropriate vocabulary of parallel, perpendicular, symmetric (e.g., the U.S. flag, a stop sign, a yield sign, a race track, a football field). [CU, MC]</b>  <b>Explain parallel and perpendicular and give examples to demonstrate them. [CU]</b>  <b>Identify, describe, and compare attributes of congruent figures in multiple orientations. [CU, SP, RL]</b>  <b>Build and draw congruent figures. [CU]</b>  <b>Identify, name, compare, and sort congruent two-dimensional figures and shapes in multiple orientations. [RL]</b>  <b>Solve problems involving congruence (e.g., create a design made out of congruent shapes). [SP]</b>  <b>Describe the location in the first quadrant on a coordinate grid in terms of horizontal and vertical position (e.g., to the right and up, longitude and latitude). [CU, MC]</b>  <b>Plot a given set of ordered pairs in</b></p>	<p>Demonstration          Cross-age tutoring          Direct instruction          Discussion          Explain your solution orally and in written form          Write a math story          Journals          Projects          Minute math</p>	<p>figures with line symmetry  <b>Identify symmetrical two-dimensional figures and shapes (e.g., quilt blocks, textiles). [CU]</b>  <b>Complete a picture or design from a variety of cultures that incorporate a line of symmetry (e.g., basket design, beadwork, quilts, pyramids, nature). Identify and draw a line of symmetry (e.g., folding or using a mirror). [CU]</b>  <b>Identify parallel and perpendicular lines in two-dimensional figures and shapes and in the environment. [MC]</b>  <b>Describe characteristics of two-dimensional geometric figures using appropriate vocabulary of parallel, perpendicular, symmetric (e.g., the U.S. flag, a stop sign, a yield sign, a race track, a football field). [CU, MC]</b>  <b>Explain parallel and perpendicular and give examples to demonstrate them. [CU]</b>  <b>Identify, describe, and compare attributes of congruent figures in multiple orientations. [CU, SP, RL]</b>  <b>Build and draw congruent figures. [CU]</b>  <b>Identify, name, compare, and sort congruent two-dimensional figures and shapes in multiple orientations. [RL]</b>  <b>Solve problems involving congruence (e.g., create a design made out of congruent shapes). [SP]</b>  <b>Describe the location in the first quadrant on a coordinate grid in terms of horizontal and vertical position (e.g., to the right and up, longitude and latitude). [CU, MC]</b>  <b>Plot a given set of ordered pairs in the first quadrant of a coordinate grid. [CU]</b>  <b>Give directions from one location to another using ordered pairs in the first quadrant of a coordinate grid (e.g., given a state map, specify location of landmarks). [CU, MC]</b>  <b>Simulate translations and reflections using objects (e.g., pattern blocks, geo blocks). [MC]</b>  <b>Record results of a translation or a reflection (e.g., given a polygon on a grid, translate or reflect it and list the new ordered pairs of the vertices). [CU]</b>  <b>Identify and draw a single translation (slide) or a single reflection (flip). [CU]</b>  <b>Create designs using translations and/or reflections. [SP]</b></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>objects and pictures (e.g., a stair step sequence, or a “growing” L shape in which a unit is added to each leg to show 3, 5, 7, 9, . . .). [RL, CU]</p> <p>Describe the rule for a pattern based on one operation (e.g., add 4, multiply by 2). [CU]</p> <p>Analyze a pattern to determine a rule. [RL]</p> <p>Use a rule to generate a pattern. Compare multiplication or division expressions using the symbols <math>&gt;</math>, <math>&lt;</math>, and <math>=</math> (e.g., <math>5 \times 3 &gt; 3 \times 2</math>). [RL]</p> <p>Select operational and relational symbols to make a multiplication or division number sentence true (e.g., <math>4 \_ 3 = 12</math>; <math>5 \times 12 \_ 64</math>). Explain inequality and the use of “<math>&gt;</math>” or “<math>&lt;</math>” in inequalities. [CU]</p> <p>Identify or write a situation that represents it given an expression or equation using <math>&lt;</math> or <math>&gt;</math>. [CU, MC]</p> <p>Identify and use mathematical symbols and notations in reading and writing expressions and equations. Write a situation that represents it given an equation involving multiplication or division. [CU, MC]</p> <p>Write an equation that represents it given a situation involving multiplication or division. [CU, MC]</p> <p>Substitute a numeric value for a symbol in expressions or equations (e.g., if <math>\square = 7</math>, find <math>\square \times 3</math>; if <math>w = 12</math> and <math>l = 36</math>, what is <math>w \times l</math>?). Solve missing factor equations (e.g., <math>\square \times 3 = 12</math>). [SP, RL]</p> <p>Describe and compare strategies used to solve an equation with multiplication. [SP, RL, CU]</p>		<p>based on one operation (e.g., add 4, multiply by 2). [CU]</p> <p>Analyze a pattern to determine a rule. [RL]</p> <p>Use a rule to generate a pattern. Compare multiplication or division expressions using the symbols <math>&gt;</math>, <math>&lt;</math>, and <math>=</math> (e.g., <math>5 \times 3 &gt; 3 \times 2</math>). [RL]</p> <p>Select operational and relational symbols to make a multiplication or division number sentence true (e.g., <math>4 \_ 3 = 12</math>; <math>5 \times 12 \_ 64</math>). Explain inequality and the use of “<math>&gt;</math>” or “<math>&lt;</math>” in inequalities. [CU]</p> <p>Identify or write a situation that represents it given an expression or equation using <math>&lt;</math> or <math>&gt;</math>. [CU, MC]</p> <p>Identify and use mathematical symbols and notations in reading and writing expressions and equations. Write a situation that represents it given an equation involving multiplication or division. [CU, MC]</p> <p>Write an equation that represents it given a situation involving multiplication or division. [CU, MC]</p> <p>Substitute a numeric value for a symbol in expressions or equations (e.g., if <math>\square = 7</math>, find <math>\square \times 3</math>; if <math>w = 12</math> and <math>l = 36</math>, what is <math>w \times l</math>?). Solve missing factor equations (e.g., <math>\square \times 3 = 12</math>). [SP, RL]</p> <p>Describe and compare strategies used to solve an equation with multiplication. [SP, RL, CU]</p>	<p>1.5.3</p> <p>1.5.4</p> <p>1.5.5</p> <p>1.5.6</p>
Problem Solving	<p>Use strategies/approaches to examine the situation and determine if there is a problem to solve (e.g., ask questions, make lists, or paraphrase information provided in ads: two kids want to buy a pet. They have some money but they need to find out if they can afford a mouse, hamster, or guinea pig and the equipment and food for it). Determine the problem using information from investigation (e.g., do Jamal and Aleesha have enough money?). Generate questions that would need to be answered in order to solve the problem (e.g., how much will each animal cost? How much is equipment and food for each animal?).</p>	<p>Math Message Math Boxes—review problems Student explorations Games Work with manipulatives Practice—math masters Modeling Demonstration Discussion Write a math story Journals Projects</p>	<p>Use strategies/approaches to examine the situation and determine if there is a problem to solve (e.g., ask questions, make lists, or paraphrase information provided in ads: two kids want to buy a pet. They have some money but they need to find out if they can afford a mouse, hamster, or guinea pig and the equipment and food for it). Determine the problem using information from investigation (e.g., do Jamal and Aleesha have enough money?). Generate questions that would need to be answered in order to solve the problem (e.g., how much will each animal cost? How much is equipment and food for each animal?).</p>	2.1.1

	<p>Identify known and unknown information (e.g., known: how much money Jamal and Aleesha have; unknown: all the costs for each animal). Identify information that is needed or not needed (e.g., needed: all costs related to purchasing the animals, the amount that the kids have saved; not needed: the money is in quarters). Gather and organize data (e.g., determine how to break information into categories such as cost of animal, cost of cage, cost of food, cost of bedding, cost of equipment in order to create a table). Determine what tools should be used to construct a solution (e.g., calculators, paper and pencil, calculator, mental math physical models such as play money). Use strategies to solve problems (e.g., column addition, play money to determine costs, and subtraction to determine how much money is needed if they don't have enough). Use appropriate tools to solve problems (e.g., paper and pencil, calculator, or physical models, play money). Recognize when an approach is unproductive and try a new approach.</p>		<p>Identify known and unknown information (e.g., known: how much money Jamal and Aleesha have; unknown: all the costs for each animal). Identify information that is needed or not needed (e.g., needed: all costs related to purchasing the animals, the amount that the kids have saved; not needed: the money is in quarters). Gather and organize data (e.g., determine how to break information into categories such as cost of animal, cost of cage, cost of food, cost of bedding, cost of equipment in order to create a table). Determine what tools should be used to construct a solution (e.g., calculators, paper and pencil, calculator, mental math physical models such as play money). Use strategies to solve problems (e.g., column addition, play money to determine costs, and subtraction to determine how much money is needed if they don't have enough). Use appropriate tools to solve problems (e.g., paper and pencil, calculator, or physical models, play money). Recognize when an approach is unproductive and try a new approach.</p>	<p>2.2.1</p> <p>2.2.2</p>
Reasoning	<p>Break down the research information in order to explain or paraphrase it (e.g., each animal has costs related to cage, bedding, food which must be calculated in order to see if the kids have enough money to buy an animal). Make a reasonable prediction based on prior knowledge and investigation of situation (e.g., after reading the pet store ads, predict whether the kids will be able to buy a pet). Defend prediction with evidence from the situation. Make inferences (conjectures) using information from the situation or data to support the inference (e.g., guinea pig equipment/food is more expensive because the animal is larger and requires a bigger cage and pellets). Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence. Describe and compare data organization methods (e.g., charts</p>	<p>Math Message Math Boxes—review problems Student explorations Games Work with manipulatives Modeling Discussion Explain your solution orally and in written form Write a math story Journals Projects</p>	<p>Break down the research information in order to explain or paraphrase it (e.g., each animal has costs related to cage, bedding, food which must be calculated in order to see if the kids have enough money to buy an animal). Make a reasonable prediction based on prior knowledge and investigation of situation (e.g., after reading the pet store ads, predict whether the kids will be able to buy a pet). Defend prediction with evidence from the situation. Make inferences (conjectures) using information from the situation or data to support the inference (e.g., guinea pig equipment/food is more expensive because the animal is larger and requires a bigger cage and pellets). Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence. Describe and compare data organization methods (e.g., charts</p>	<p>3.1.1</p> <p>3.2.1</p> <p>3.2.2</p> <p>3.2.3</p>

	<p>used for organizing costs for each animal). [1.4.3]  Check for reasonableness of results by using a different strategy or tool to solve the problem (e.g., use front end estimation to determine about how much each animal will cost). Provide examples to support results.  Explain the meaning of decimal using physical models. [1.1.5]  Explain what the relative position of numbers on a positive number line means (e.g., to the right means greater than). [1.3.3]</p>		<p>used for organizing costs for each animal). [1.4.3]  Check for reasonableness of results by using a different strategy or tool to solve the problem (e.g., use front end estimation to determine about how much each animal will cost). Provide examples to support results.  Explain the meaning of decimal using physical models. [1.1.5]  Explain what the relative position of numbers on a positive number line means (e.g., to the right means greater than). [1.3.3]</p>	<p>3.3.1</p> <p>3.3.2</p>
Communication	<p>Determine how to collect information for a specific purpose or audience (e.g., to convince a parent or other adult, to demonstrate a need for change, to provide information).  Develop and follow a plan based on the kind of information needed, the purpose, and the audience (e.g., survey, gather data from a chart or graph, read in a text to gather information).  Listen and observe to simulate translations and reflections using objects (e.g., pattern blocks, geo blocks). [1.3.4]  Read and follow directions using a coordinate grid (e.g., on a city street map). [1.3.3]  Organize information on a chart and create a summary of the results to inform a specific audience (e.g., chart all related costs for the purchase of each pet; write a summary explaining the results and the kids possible decisions based on the results).  Construct assorted line and pictographs that include labels, a scale that is not one, and a key. [1.4.5]  Create a chart or display to represent equivalent fractions. [1.1.2]  Symbolically represent parts of a whole or parts of a set with common denominators. [1.1.1]  Use measurements of area to describe and compare objects. [1.2.1]  Describe a location in the first quadrant on a coordinate grid in terms of horizontal and vertical position (e.g., to the right and up, longitude and latitude). [1.3.3]  Describe a trend from a given line plot. [1.4.5]  Describe the rule for a pattern with a single arithmetic operation in the rule. [1.5.2]</p>	<p>Math Message  Student explorations  Games  Work with manipulatives  Modeling  Demonstration  Cross-age tutoring  Discussion  Explain your solution orally and in written form  Write a math story  Journals  Projects</p>	<p>Determine how to collect information for a specific purpose or audience (e.g., to convince a parent or other adult, to demonstrate a need for change, to provide information).  Develop and follow a plan based on the kind of information needed, the purpose, and the audience (e.g., survey, gather data from a chart or graph, read in a text to gather information).  Listen and observe to simulate translations and reflections using objects (e.g., pattern blocks, geo blocks). [1.3.4]  Read and follow directions using a coordinate grid (e.g., on a city street map). [1.3.3]  Organize information on a chart and create a summary of the results to inform a specific audience (e.g., chart all related costs for the purchase of each pet; write a summary explaining the results and the kids possible decisions based on the results).  Construct assorted line and pictographs that include labels, a scale that is not one, and a key. [1.4.5]  Create a chart or display to represent equivalent fractions. [1.1.2]  Symbolically represent parts of a whole or parts of a set with common denominators. [1.1.1]  Use measurements of area to describe and compare objects. [1.2.1]  Describe a location in the first quadrant on a coordinate grid in terms of horizontal and vertical position (e.g., to the right and up, longitude and latitude). [1.3.3]  Describe a trend from a given line plot. [1.4.5]  Describe the rule for a pattern with a single arithmetic operation in the rule. [1.5.2]</p>	<p>4.1.1</p> <p>4.1.2</p> <p>4.2.1</p> <p>4.2.2</p>



Fifth Grade

Fifth Grade	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
<p>Number Sense</p>	<p>Divide decimal numbers by whole numbers with no remainders            Use an algorithm to multiply mixed numbers            Rename numbers written in exponential notation            Understand and apply scientific notation            Round numbers to designated places            Find the quotient and remainder of a whole number divided by a 1-digit whole number            Find the quotient and remainder of a whole number divided by a 2-digit whole number            Make magnitude estimates for quotients of whole and decimal numbers divided by whole numbers            Interpret the remainder in division number stories            Add and subtract fractions with unlike denominators            Find a common denominator            Understand and apply powers of 10            Add and subtract positive and negative numbers            Use an algorithm to multiply fractions            Use an algorithm to subtract mixed numbers with like denominators            Find a percent of a number            Use a divisibility test to determine if a number is divisible by another number            Understand how square numbers and their square roots are related            Find the product of multidigit whole numbers and decimals            Know place value to billions            Understand and apply exponential notation            Order and compare positive and negative numbers            Use an algorithm to add mixed numbers            Order and compare fractions            Draw arrays to model multiplication            Know basic multiplication facts            Identify even and odd numbers            Find the sum and difference of multidigit whole numbers and decimals            Convert among fractions, decimals and percents  <b>Represent mixed numbers, improper fractions, and decimals. Create a model when given a symbolic representation or write the fraction when given a model (e.g., number line). [CU]</b>  <b>Explain the value of a given digit in a decimal to at least the thousandths place. [CU]</b>  <b>Explain how the value of a</b></p>	<p>Math Message            Math Boxes—review problems            Student explorations            Games            Work with manipulatives            Drill and practice—math masters            Modeling            Demonstration            Cross-age tutoring            Direct instruction            Discussion            Explain your solution orally and in written form            Write a math story            Journals            Projects            Minute math</p>	<p>Draw arrays to model multiplication            Know basic multiplication facts            Identify even and odd numbers            Find the sum and difference of multidigit whole numbers and decimals            Identify place value in numbers to billions            Convert among fractions, decimals and percents  <b>Represent mixed numbers, improper fractions, and decimals. Create a model when given a symbolic representation or write the fraction when given a model (e.g., number line). [CU]</b>  <b>Explain the value of a given digit in a decimal to at least the thousandths place. [CU]</b>  <b>Explain how the value of a fraction changes in relationship to the size of the whole (e.g., half a pizza vs. half a cookie). [CU]</b>  <b>Use factors and multiples to rename equivalent fractions. [RL]</b>  <b>Read and write decimals to at least the thousandth place. [CU]</b>  <b>Demonstrate and explain equivalent relationships between decimals and fractions (e.g., \$.50 is equal to ½ a dollar and 50/100 of a dollar) using models. [CU, MC]</b>  <b>Convert between improper fractions and mixed numbers. [MC]</b>  <b>Compare, order, or illustrate whole numbers, decimals, and fractions (denominators of 2, 3, 4, 5, 6, or 10) using concrete models (e.g., number line or shaded grid) or implementing strategies (e.g., like denominators, benchmarks, conversions). [RL, CU]</b>  <b>Determine equivalence among fractions. [RL]</b>  <b>Explain why one fraction is greater than, equal to, or less than another fraction. [CU]</b>  <b>Explain why one decimal number is greater than, equal to, or less than another decimal number. [CU]</b>  <b>Apply the concepts of odd and even numbers to check for divisibility, finding factors and multiples.</b>  <b>Illustrate prime or composite numbers by creating a physical model (e.g., arrays, area models). [CU]</b>  <b>Identify the prime numbers between 1 and 100.</b>  <b>Explain why a whole number</b></p>	<p>1.1.1</p> <p>1.1.2</p> <p>1.1.3</p>

	<p>fraction changes in relationship to the size of the whole (e.g., half a pizza vs. half a cookie). [CU]</p> <p>Use factors and multiples to rename equivalent fractions. [RL]</p> <p>Read and write decimals to at least the thousandth place. [CU]</p> <p>Demonstrate and explain equivalent relationships between decimals and fractions (e.g., \$.50 is equal to <math>\frac{1}{2}</math> a dollar and <math>\frac{50}{100}</math> of a dollar) using models. [CU, MC]</p> <p>Convert between improper fractions and mixed numbers. [MC]</p> <p>Compare, order, or illustrate whole numbers, decimals, and fractions (denominators of 2, 3, 4, 5, 6, or 10) using concrete models (e.g., number line or shaded grid) or implementing strategies (e.g., like denominators, benchmarks, conversions). [RL, CU]</p> <p>Determine equivalence among fractions. [RL]</p> <p>Explain why one fraction is greater than, equal to, or less than another fraction. [CU]</p> <p>Explain why one decimal number is greater than, equal to, or less than another decimal number. [CU]</p> <p>Apply the concepts of odd and even numbers to check for divisibility, finding factors and multiples.</p> <p>Illustrate prime or composite numbers by creating a physical model (e.g., arrays, area models). [CU]</p> <p>Identify the prime numbers between 1 and 100.</p> <p>Explain why a whole number between 1 and 100 is prime or composite. [CU]</p> <p>Explain a method to find the least common multiple (LCM) and greatest common factor (GCF) of two numbers. [CU]</p> <p>Solve problems related to primes, factors, multiples, and composites in a variety of situations (e.g., find a mystery number, find unit pricing, increase or decrease a recipe, find the portions for a group). [SP]</p> <p>Factor a number into its prime factors.</p> <p>Determine whether one number is a factor of another number.</p> <p>Explain the meaning of adding and subtracting fractions and decimals using words, symbols, or other models (e.g., fractions with denominators of 2, 4, 8 or 2, 3, 6, 12 or 5, 10 – highest LCM of</p>		<p>between 1 and 100 is prime or composite. [CU]</p> <p>Explain a method to find the least common multiple (LCM) and greatest common factor (GCF) of two numbers. [CU]</p> <p>Solve problems related to primes, factors, multiples, and composites in a variety of situations (e.g., find a mystery number, find unit pricing, increase or decrease a recipe, find the portions for a group). [SP]</p> <p>Factor a number into its prime factors.</p> <p>Determine whether one number is a factor of another number.</p> <p>Explain the meaning of adding and subtracting fractions and decimals using words, symbols, or other models (e.g., fractions with denominators of 2, 4, 8 or 2, 3, 6, 12 or 5, 10 – highest LCM of 12). [CU]</p> <p>Create a problem situation involving addition or subtraction of non-negative decimals or fractions. [SP, RL, CU, MC]</p> <p>Represent addition and subtraction of decimals through hundredths using models (e.g., with money). [CU]</p> <p>Create or identify a representation of addition or subtraction of non-negative decimals or fractions.</p> <p>Demonstrate the effect of multiplying a whole number by a decimal number. [CU]</p> <p>Add and subtract like-denominator fractions (denominators of 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 20, and 100) and non-negative decimals.</p> <p>Explain a strategy for adding fractions. [CU]</p> <p>Write and solve problem situations to find sums or differences of decimals or like-denominator fractions. [CU, MC]</p> <p>Use calculators to multiply or divide with two decimal numbers in the hundredths and/or thousandths place.</p> <p>Select and justify strategies and appropriate tools from among mental computation, estimation, calculators, manipulatives, and paper and pencil to compute a problem situation. [SP, RL]</p> <p>Use mental arithmetic to add and subtract non-negative decimals and like-denominator fractions.</p> <p>Identify when an approximation is appropriate.</p> <p>Use estimation strategies prior to computation of addition and subtraction of decimals and like-</p>	<p>1.1.5</p> <p>1.1.6</p> <p>1.1.7</p> <p>1.1.8</p>
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	<p>12). [CU]  Create a problem situation involving addition or subtraction of non-negative decimals or fractions. [SP, RL, CU, MC]  Represent addition and subtraction of decimals through hundredths using models (e.g., with money). [CU]  Create or identify a representation of addition or subtraction of non-negative decimals or fractions.  Demonstrate the effect of multiplying a whole number by a decimal number. [CU]  Add and subtract like-denominator fractions (denominators of 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 20, and 100) and non-negative decimals.  Explain a strategy for adding fractions. [CU]  Write and solve problem situations to find sums or differences of decimals or like-denominator fractions. [CU, MC]  Use calculators to multiply or divide with two decimal numbers in the hundredths and/or thousandths place.  Select and justify strategies and appropriate tools from among mental computation, estimation, calculators, manipulatives, and paper and pencil to compute a problem situation. [SP, RL]  Use mental arithmetic to add and subtract non-negative decimals and like-denominator fractions.  Identify when an approximation is appropriate.  Use estimation strategies prior to computation of addition and subtraction of decimals and like-denominator fractions to predict answers. [RL]  Use estimation to determine the reasonableness of answers in situations.  Determine reasonableness of estimated answers for a given situation. [RL]  Demonstrate or explain various strategies used during estimation. [CU]</p>		<p>denominator fractions to predict answers. [RL]  Use estimation to determine the reasonableness of answers in situations.  Determine reasonableness of estimated answers for a given situation. [RL]  Demonstrate or explain various strategies used during estimation. [CU]</p>	
Measurement	<p>Understand the relationship between the volume of pyramids and prisms, and the volume of cones and cylinders  Find the surface area of prisms  Understand how to find the surface area of cylinders  Understand the concept of capacity and how to calculate it  Understand the concept of volume of a figure  Use a formula to find the volume of</p>	<p>Math Message  Math Boxes—review problems  Student explorations  Games  Work with manipulatives  Drill and practice—math masters  Modeling  Demonstration  Cross-age tutoring</p>	<p>Understand the concept of area of a figure  Use formulas to find the areas of polygons and circles  <b>Describe and compare angles in a variety of objects. [CU]</b>  <b>Identify angles in the environment. [MC]</b>  <b>Classify or sort angles as right, acute, or obtuse. [RL, CU]</b>  <b>Identify types of angles in polygons (e.g., right, acute,</b></p>	1.2.1

	<p>prisms Use formulas to find circumference and area of a circle Distinguish between circumference and area of circle problems Estimate the measure of an angle Measure an angle to within 2° Use a formula to find the area of triangles and parallelograms Use formulas to find the volume of prisms and cylinders Solve ratio and rate number stories Understand the concept of area of a figure Use formulas to find the areas of polygons and circles <b>Describe and compare angles in a variety of objects. [CU]</b> <b>Identify angles in the environment. [MC]</b> <b>Classify or sort angles as right, acute, or obtuse. [RL, CU]</b> <b>Identify types of angles in polygons (e.g., right, acute, obtuse). [MC]</b> <b>Explain and provide examples of how angles are formed.</b> <b>Describe an angle in relation to a right angle. [RL]</b> <b>Measure angles to the nearest 5 degrees using a protractor, angle ruler, or other appropriate tool. [RL]</b> <b>Measure angles in assorted polygons and determine the total number of degrees in the polygon. [SP, RL]</b> <b>Explain how degrees are used as measures of angles (e.g., a circle can be divided into 360°).</b> <b>Identify, draw, or demonstrate angles that match or approximate 30°, 45°, 60°, 90°, and 180°. [CU]</b> <b>Explain and give examples of the metric system standard units for capacity, weight, and length. Demonstrate or explain how grams are organized into kilograms. [CU]</b> <b>Demonstrate or explain how millimeters are organized into centimeters and how centimeters are organized into meters. [CU]</b> <b>Demonstrate or explain how milliliters are organized into liters. [CU]</b> <b>Select and use appropriate units for measuring area (e.g., square units) or dimensions. Select and use tools that match the unit (e.g., grid paper, squares, ruler).</b> <b>Explain a method for measuring the area of a rectangle or right triangle (e.g., use the formula for the area of a rectangle or triangle, select grid paper). [CU]</b></p>	<p>Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math</p>	<p><b>obtuse). [MC]</b> <b>Explain and provide examples of how angles are formed.</b> <b>Describe an angle in relation to a right angle. [RL]</b> <b>Measure angles to the nearest 5 degrees using a protractor, angle ruler, or other appropriate tool. [RL]</b> <b>Measure angles in assorted polygons and determine the total number of degrees in the polygon. [SP, RL]</b> <b>Explain how degrees are used as measures of angles (e.g., a circle can be divided into 360°).</b> <b>Identify, draw, or demonstrate angles that match or approximate 30°, 45°, 60°, 90°, and 180°. [CU]</b> <b>Explain and give examples of the metric system standard units for capacity, weight, and length. Demonstrate or explain how grams are organized into kilograms. [CU]</b> <b>Demonstrate or explain how millimeters are organized into centimeters and how centimeters are organized into meters. [CU]</b> <b>Demonstrate or explain how milliliters are organized into liters. [CU]</b> <b>Select and use appropriate units for measuring area (e.g., square units) or dimensions. Select and use tools that match the unit (e.g., grid paper, squares, ruler).</b> <b>Explain a method for measuring the area of a rectangle or right triangle (e.g., use the formula for the area of a rectangle or triangle, select grid paper). [CU]</b> <b>Use measurements of area to describe and compare rectangles or triangles.</b> <b>Solve problems involving measurement of area in rectangle and triangle (e.g., create a design using triangles and rectangles and determine how much paint is needed to cover the area of each of the shapes). [SP]</b> <b>Analyze a measurement situation and determine whether measurement has been done correctly. [RL]</b> <b>Explain how to find the perimeter or area of any rectangle using a rule. [CU]</b> <b>Explain and use formulas to find the perimeter or area of a rectangle. [CU]</b> <b>Explain and use a formula to find the area of a right triangle. [CU]</b> <b>Find and compare all possible rectangles or right triangles with</b></p>	<p>1.2.2</p> <p>1.2.3</p> <p>1.2.4</p> <p>1.2.5</p>
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	<p>Use measurements of area to describe and compare rectangles or triangles.</p> <p>Solve problems involving measurement of area in rectangle and triangle (e.g., create a design using triangles and rectangles and determine how much paint is needed to cover the area of each of the shapes). [SP]</p> <p>Analyze a measurement situation and determine whether measurement has been done correctly. [RL]</p> <p>Explain how to find the perimeter or area of any rectangle using a rule. [CU]</p> <p>Explain and use formulas to find the perimeter or area of a rectangle. [CU]</p> <p>Explain and use a formula to find the area of a right triangle. [CU]</p> <p>Find and compare all possible rectangles or right triangles with whole number dimensions with a given perimeter or area (e.g., a rectangle with an area of 24 square feet could be 1'x24', 2'x12', 3'x8', or 4'x6'). [RL, CU]</p> <p>Explain why formulas are used to find area and/or perimeter. [CU]</p> <p>Identify situations in which estimated measurements are sufficient.</p> <p>Estimate measures of angles and areas in rectangles and triangles. Estimate a measurement using standard or non-standard units (e.g., tiles, square feet, note cards).</p> <p>Use estimation to justify reasonableness of a measurement (e.g., estimate the area of the classroom by using carpet squares). [RL]</p> <p>Determine whether an angle is closest to 30°, 45°, 60°, 90°, or 180°.</p> <p>Explain or identify an appropriate process for estimating area or angle measurement. [CU]</p>		<p>whole number dimensions with a given perimeter or area (e.g., a rectangle with an area of 24 square feet could be 1'x24', 2'x12', 3'x8', or 4'x6'). [RL, CU]</p> <p>Explain why formulas are used to find area and/or perimeter. [CU]</p> <p>Identify situations in which estimated measurements are sufficient.</p> <p>Estimate measures of angles and areas in rectangles and triangles. Estimate a measurement using standard or non-standard units (e.g., tiles, square feet, note cards).</p> <p>Use estimation to justify reasonableness of a measurement (e.g., estimate the area of the classroom by using carpet squares). [RL]</p> <p>Determine whether an angle is closest to 30°, 45°, 60°, 90°, or 180°.</p> <p>Explain or identify an appropriate process for estimating area or angle measurement. [CU]</p>	1.2.6
Geometric Sense	<p>Determine angle measures based on relationships between angles</p> <p>Plot ordered pairs on a one-quadrant coordinate grid</p> <p>Plot ordered pairs on a four-quadrant coordinate grid</p> <p>Identify the base and height of triangles and parallelograms</p> <p>Know the properties of geometric solids</p> <p>Define and create tessellations</p> <p><b>Explain the difference between a regular and irregular polygon.</b> [CU]</p> <p><b>Identify, sort, classify, or explain the properties of angles,</b></p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Work with manipulatives</p> <p>Drill and practice—math masters</p> <p>Modeling</p> <p>Demonstration</p> <p>Cross-age tutoring</p> <p>Direct instruction</p> <p>Discussion</p> <p>Explain your solution orally and in written</p>	<p>Define and create tessellations</p> <p>Know the properties of geometric solids</p> <p><b>Explain the difference between a regular and irregular polygon.</b> [CU]</p> <p><b>Identify, sort, classify, or explain the properties of angles, polygons, or circles based on attributes (e.g., triangles [right, equilateral, isosceles, or scalene], angles [acute, right, obtuse, or straight], or quadrilaterals [squares, rectangles, parallelograms, or trapezoids]).</b> [RL, CU]</p>	1.3.1







	<p>based on a single arithmetic operation between the terms. Determine the operation that changes the elements of one set of numbers into the elements of another set of numbers (e.g., if one set is 1,2,3,... and another set is 5,10, 15 ..., one rule is to multiply each number in the first set by 5 to get the corresponding number in the second set). [RL]          Explain why a given rule fits a pattern based on a single arithmetic operation in the rule. [RL, CU]          Use the rule for a pattern which may include a combination of two arithmetic operations to extend a pattern. [SP, RL]          Solve a problem that uses a pattern of alternating operations (e.g., a frog climbed up 3 feet each day and then slipped down 1 foot each night, how long did it take the frog to reach the top of the building that is 15 feet high?). [SP]          Analyze a pattern to determine a rule with two operations between terms. [RL]          Use a rule to generate a pattern. Express relationships between quantities using “<math>\neq</math>, <math>\leq</math>, or <math>\geq</math>”. Given a number sentence using <math>\neq</math>, <math>\leq</math>, or <math>\geq</math>, identify or write a situation that represents it. [CU, MC]          Given a real-world situation, use <math>=</math>, <math>\neq</math>, <math>\leq</math>, or <math>\geq</math> to describe quantities. [RL, , MC]          Explain inequality and the use of “<math>\neq</math>”, “<math>\leq</math>”, or “<math>\geq</math>”. [CU]          Translate a situation involving one arithmetic operation into algebraic form using equations, tables, and graphs. [CU, MC]          Translate a situation involving two alternating arithmetic operations into algebraic form using equations, tables, and graphs (e.g., a snail crawls up 3 feet each day and slides back 2 feet each night). [CU, MC]          Identify or describe a situation involving one arithmetic operation that may be modeled by a graph. [CU]          Identify or describe a situation involving two alternating arithmetic operations that may be modeled by a graph (e.g., a snail crawls up 3 feet each day and slides back 2 feet each night). [CU]          Evaluate expressions with division using manipulatives, pictures, and symbols.</p>		<p>day and then slipped down 1 foot each night, how long did it take the frog to reach the top of the building that is 15 feet high?). [SP]          Analyze a pattern to determine a rule with two operations between terms. [RL]          Use a rule to generate a pattern. Express relationships between quantities using “<math>\neq</math>, <math>\leq</math>, or <math>\geq</math>”. Given a number sentence using <math>\neq</math>, <math>\leq</math>, or <math>\geq</math>, identify or write a situation that represents it. [CU, MC]          Given a real-world situation, use <math>=</math>, <math>\neq</math>, <math>\leq</math>, or <math>\geq</math> to describe quantities. [RL, , MC]          Explain inequality and the use of “<math>\neq</math>”, “<math>\leq</math>”, or “<math>\geq</math>”. [CU]          Translate a situation involving one arithmetic operation into algebraic form using equations, tables, and graphs. [CU, MC]          Translate a situation involving two alternating arithmetic operations into algebraic form using equations, tables, and graphs (e.g., a snail crawls up 3 feet each day and slides back 2 feet each night). [CU, MC]          Identify or describe a situation involving one arithmetic operation that may be modeled by a graph. [CU]          Identify or describe a situation involving two alternating arithmetic operations that may be modeled by a graph (e.g., a snail crawls up 3 feet each day and slides back 2 feet each night). [CU]          Evaluate expressions with division using manipulatives, pictures, and symbols. Substitute a symbol for a numeric value in an expression (e.g., <math>X = 4</math>, find <math>20 \div X</math>; if <math>\star = 12</math> and <math>\blacktriangledown = 36</math>, what is <math>\blacktriangledown \div \star</math>?). [SP, RL]          Solve for a missing value in an equation involving division (e.g., <math>12 \div \square = 3</math>). [SP, RL]          Describe and compare strategies used to solve an equation with multiplication or division. [SP, RL, CU]</p>	<p>1.5.3</p> <p>1.5.4</p> <p>1.5.5</p> <p>1.5.6</p>
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	<p>Substitute a symbol for a numeric value in an expression (e.g., <math>X = 4</math>, find <math>20 \div X</math>; if <math>\star = 12</math> and <math>\blacktriangledown = 36</math>, what is <math>\blacktriangledown \div \star</math>?). [SP, RL]</p> <p>Solve for a missing value in an equation involving division (e.g., <math>12 \div \square = 3</math>). [SP, RL]</p> <p>Describe and compare strategies used to solve an equation with multiplication or division. [SP, RL, CU]</p>			
Problem Solving	<p>Use strategies/approaches to examine the situation and determine if there is a problem to solve (e.g., draw pictures, ask questions, or paraphrase information provided: 30 students in a class have ten pizzas to divide fairly. Three are sliced in eighths, three are sliced in fourths and four are sliced in halves). Generate questions that would need to be answered in order to solve the problem (e.g., how should the pizzas be sliced? Can we use the slices that have already been made? How many pieces is each student's fair share?).</p> <p>Identify known and unknown information (known: number of students, number of pizzas to share; the ways in which the pizzas have been sliced; unknown: size of each slice, number of equal slices, number of pieces per student).</p> <p>Identify information that is needed or not needed (e.g., needed: number of students, number of pizzas, how pieces have already been cut; not needed: reason for the pizza party).</p> <p>Gather and organize the necessary information or data from the problem (e.g., draw pictures, create a chart or table, or use models to organize information).</p> <p>Determine what tools should be used to construct a solution (e.g., paper and pencil, pictures, physical models).</p> <p>Use strategies to solve problems (e.g., draw pictures, use physical models).</p> <p>Use appropriate tools to solve problems (e.g., paper and pencil, mental math, manipulatives).</p> <p>Recognize when an approach is unproductive and try a new approach.</p>	<p>Math Message</p> <p>Math Boxes—review problems</p> <p>Student explorations</p> <p>Games</p> <p>Work with manipulatives</p> <p>Practice—math masters</p> <p>Modeling</p> <p>Demonstration</p> <p>Discussion</p> <p>Write a math story</p> <p>Journals</p> <p>Projects</p>	<p>Use strategies/approaches to examine the situation and determine if there is a problem to solve (e.g., draw pictures, ask questions, or paraphrase information provided: 30 students in a class have ten pizzas to divide fairly. Three are sliced in eighths, three are sliced in fourths and four are sliced in halves). Generate questions that would need to be answered in order to solve the problem (e.g., how should the pizzas be sliced? Can we use the slices that have already been made? How many pieces is each student's fair share?).</p> <p>Identify known and unknown information (known: number of students, number of pizzas to share; the ways in which the pizzas have been sliced; unknown: size of each slice, number of equal slices, number of pieces per student).</p> <p>Identify information that is needed or not needed (e.g., needed: number of students, number of pizzas, how pieces have already been cut; not needed: reason for the pizza party).</p> <p>Gather and organize the necessary information or data from the problem (e.g., draw pictures, create a chart or table, or use models to organize information).</p> <p>Determine what tools should be used to construct a solution (e.g., paper and pencil, pictures, physical models).</p> <p>Use strategies to solve problems (e.g., draw pictures, use physical models).</p> <p>Use appropriate tools to solve problems (e.g., paper and pencil, mental math, manipulatives).</p> <p>Recognize when an approach is unproductive and try a new approach.</p>	<p>2.1.1</p> <p>2.2.1</p> <p>2.2.2</p>
Reasoning	<p>Break down the research information in order to explain or paraphrase it (e.g., 26 students</p>	<p>Math Boxes—review problems</p> <p>Student explorations</p>	<p>Break down the research information in order to explain or paraphrase it (e.g., 26 students</p>	<p>3.1.1</p>

	<p>need to share ten pizzas equally. The pizzas are already sliced, but not evenly. Using eighths, determine how the pizza can be cut and shared equally).  <b>Make a reasonable prediction based on prior knowledge and investigation of situation (e.g., using mental math, predict how many pieces each student will receive).</b>  <b>Defend prediction with evidence from the situation.</b>  <b>Make inferences (conjectures) using information from the situation or data to support the inference (e.g., all the pizzas were the same size when whole).</b>  <b>Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence.</b>  <b>Describe and compare strategies and tools used (e.g., drawing pizzas, fraction wheels or strips, paper and pencil calculations).</b>  <b>Check for reasonableness of results by using a different strategy or tool to solve the problem (e.g., compare the results from students who used physical models vs. those who used computation).</b>  <b>Provide examples to support results.</b>  <b>Explain how the value of a fraction changes in relationship to the size of the whole (e.g., half a pizza vs. half a cookie). [1.1.1]</b>  <b>Create three-dimensional shapes from two-dimensional figures (e.g., cylinder from two circles and a rectangle) and explain the relationship. [1.3.2]</b></p>	<p>Games  Work with manipulatives  Modeling  Demonstration  Discussion  Explain your solution orally and in written form  Write a math story  Journals  Projects</p>	<p>need to share ten pizzas equally. The pizzas are already sliced, but not evenly. Using eighths, determine how the pizza can be cut and shared equally).  <b>Make a reasonable prediction based on prior knowledge and investigation of situation (e.g., using mental math, predict how many pieces each student will receive).</b>  <b>Defend prediction with evidence from the situation.</b>  <b>Make inferences (conjectures) using information from the situation or data to support the inference (e.g., all the pizzas were the same size when whole).</b>  <b>Draw conclusions from displays, texts, or oral discussions and justify those conclusions with logical reasoning or other evidence.</b>  <b>Describe and compare strategies and tools used (e.g., drawing pizzas, fraction wheels or strips, paper and pencil calculations).</b>  <b>Check for reasonableness of results by using a different strategy or tool to solve the problem (e.g., compare the results from students who used physical models vs. those who used computation).</b>  <b>Provide examples to support results.</b>  <b>Explain how the value of a fraction changes in relationship to the size of the whole (e.g., half a pizza vs. half a cookie). [1.1.1]</b>  <b>Create three-dimensional shapes from two-dimensional figures (e.g., cylinder from two circles and a rectangle) and explain the relationship. [1.3.2]</b></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><b>Determine how to collect information for a specific purpose or audience (e.g., to convince a parent or other adult, to demonstrate a need for change, to provide information).</b>  <b>Develop and follow a plan based on the kind of information needed, the purpose, and the audience (e.g., survey, gather data from a chart or graph, read in a text to gather information).</b>  <b>Ask the same question using different data collection methods that result in other points of view being supported. [1.4.3]</b>  <b>Explain how different data collection methods affect the nature of the data set with a given question (e.g., phone survey, person-to-person survey, internet</b></p>	<p>Student explorations  Games  Work with manipulatives  Modeling  Demonstration  Cross-age tutoring  Discussion  Explain your solution orally and in written form  Write a math story  Journals  Projects</p>	<p><b>Determine how to collect information for a specific purpose or audience (e.g., to convince a parent or other adult, to demonstrate a need for change, to provide information).</b>  <b>Develop and follow a plan based on the kind of information needed, the purpose, and the audience (e.g., survey, gather data from a chart or graph, read in a text to gather information).</b>  <b>Ask the same question using different data collection methods that result in other points of view being supported. [1.4.3]</b>  <b>Explain how different data collection methods affect the nature of the data set with a given question (e.g., phone survey, person-to-person survey, internet</b></p>	<p>4.1.1</p>

	<p>search). [1.4.3]  <b>After reading a text, generate questions and develop a survey (e.g., to determine how many students agree or disagree with the author).</b>  <b>Identify and use data from text passages, histograms, stem-and-leaf plots, and circle graphs.</b>  [1.4.5]  <b>Determine the best method for organizing and representing information for a specific purpose (e.g., a physical model or a calculation to inform the teacher how many pieces of pizza each student should receive).</b>  <b>Represent and interpret all possible outcomes of experiments (e.g., an organized list, a table, a tree diagram, or a sample space).</b> [1.4.2]  <b>Construct assorted graphs including histograms, pictographs, and stem-and leaf-plots that include labels, appropriate scale, and key.</b> [1.4.5]  <b>Explain the value of a given digit in a decimal to at least the thousandths place.</b> [1.1.1]  <b>Describe a procedure for measuring an angle.</b>  <b>Describe relationships between angle measures (e.g., two <math>30^\circ</math> angles have the same total measure as one <math>60^\circ</math> angle).</b> [1.2.2]  <b>Draw and label a design that includes a given set of attributes.</b>  [1.3.2]  <b>Explain how to find the mean of a set of data and explain the significance of the mean.</b> [1.4.4]  <b>Given an expression or equation, identify or write a situation that represents it.</b> [1.5.3]</p>		<p>search). [1.4.3]  <b>After reading a text, generate questions and develop a survey (e.g., to determine how many students agree or disagree with the author).</b>  <b>Identify and use data from text passages, histograms, stem-and-leaf plots, and circle graphs.</b>  [1.4.5]  <b>Determine the best method for organizing and representing information for a specific purpose (e.g., a physical model or a calculation to inform the teacher how many pieces of pizza each student should receive).</b>  <b>Represent and interpret all possible outcomes of experiments (e.g., an organized list, a table, a tree diagram, or a sample space).</b> [1.4.2]  <b>Construct assorted graphs including histograms, pictographs, and stem-and leaf-plots that include labels, appropriate scale, and key.</b> [1.4.5]  <b>Explain the value of a given digit in a decimal to at least the thousandths place.</b> [1.1.1]  <b>Describe a procedure for measuring an angle.</b>  <b>Describe relationships between angle measures (e.g., two <math>30^\circ</math> angles have the same total measure as one <math>60^\circ</math> angle).</b> [1.2.2]  <b>Draw and label a design that includes a given set of attributes.</b>  [1.3.2]  <b>Explain how to find the mean of a set of data and explain the significance of the mean.</b> [1.4.4]  <b>Given an expression or equation, identify or write a situation that represents it.</b> [1.5.3]</p>	<p>4.1.2</p> <p>4.2.1</p> <p>4.2.2</p>
Connections	<p><b>Explain why angle measure does not change when the size of the circle or length of the sides of the angle change.</b> [1.2.3]  <b>Interpret skew, clusters, and gaps in given one-variable data displays.</b> [1.4.5]  <b>Translate a situation involving one arithmetic operation into algebraic form using equations, tables, and graphs.</b>  <b>Judge the appropriateness of inferences made from a set of data and support the judgment.</b>  [1.4.6]  <b>Use factors and multiples to rename equivalent fractions.</b>  [1.1.1]  <b>Determine equivalence among fractions.</b> [1.1.2]  <b>Graphically represent the same</b></p>	<p>Math Message  Math Boxes—review problems  Student explorations  Games  Work with manipulatives  Modeling  Demonstration  Discussion  Explain your solution orally and in written form  Write a math story  Journals  Projects</p>	<p><b>Explain why angle measure does not change when the size of the circle or length of the sides of the angle change.</b> [1.2.3]  <b>Interpret skew, clusters, and gaps in given one-variable data displays.</b> [1.4.5]  <b>Translate a situation involving one arithmetic operation into algebraic form using equations, tables, and graphs.</b>  <b>Judge the appropriateness of inferences made from a set of data and support the judgment.</b>  [1.4.6]  <b>Use factors and multiples to rename equivalent fractions.</b>  [1.1.1]  <b>Determine equivalence among fractions.</b> [1.1.2]  <b>Graphically represent the same</b></p>	<p>5.1.1</p> <p>5.1.2</p>

	<p>data in two different ways. Find the mean from a given set of data using objects, pictures, or formulas. Interpret skew, clusters, and gaps in given one-variable data displays. Use estimation strategies and identify the reasonableness of answers. [1.1.8] Recognize the contributions to the development of mathematics by women, men, and various cultures (e.g., what is the history of probability theory?). Identify angles in the environment (e.g., in architecture, furniture, nature). [1.2.1] Identify types of angles in polygons on a plane and in the environment. [1.2.1] Solve problems involving angle measurements in real life situations (e.g., determine if a piece of tile will fit in a corner by measuring the angle). [1.2.3] Determine whether a situation needs a precise measurement or an estimated measurement. [1.2.6] Explain a series of transformations in art, architecture, or nature. [1.3.4]</p>		<p>data in two different ways. Find the mean from a given set of data using objects, pictures, or formulas. Interpret skew, clusters, and gaps in given one-variable data displays. Use estimation strategies and identify the reasonableness of answers. [1.1.8] Recognize the contributions to the development of mathematics by women, men, and various cultures (e.g., what is the history of probability theory?). Identify angles in the environment (e.g., in architecture, furniture, nature). [1.2.1] Identify types of angles in polygons on a plane and in the environment. [1.2.1] Solve problems involving angle measurements in real life situations (e.g., determine if a piece of tile will fit in a corner by measuring the angle). [1.2.3] Determine whether a situation needs a precise measurement or an estimated measurement. [1.2.6] Explain a series of transformations in art, architecture, or nature. [1.3.4]</p>	<p>5.2.1</p> <p>5.2.2</p> <p>5.3.1</p>
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## 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, 8<sup>th</sup> 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, 9<sup>th</sup> grade)

*Algebra 2*, Prentice Hall, 2004

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

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