



# Glendale Elementary School District

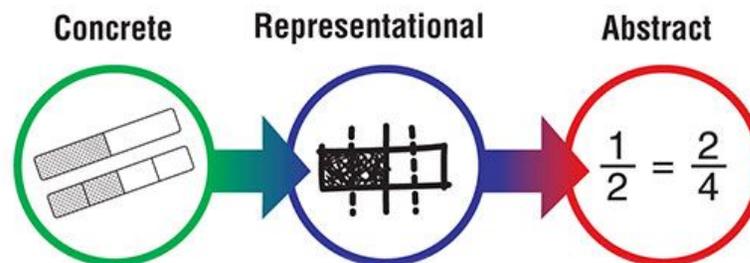
## Mathematics Pacing Guide

### 2020-2021

## 6<sup>th</sup> Grade

### By the end of sixth grade, students will be able to...

- **Develop competency of division of whole numbers and fractions and extend the notion of number to the system of rational numbers.**
  - Students develop fluency with division of whole numbers and extend their understanding to division of fractions. Students extend their previous understandings of number and the ordering of numbers to the system of rational numbers, which includes integers and negative fractions with denominators of 2, 3, 4, 5, 10. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.
- **Develop understanding of ratio and rate and use multiplicative reasoning to solve ratio and rate problems.**
  - Students use multiplicative reasoning to solve ratio and rate problems. This extends their knowledge of multiplication, division, and fractions as the foundation for proportional reasoning that begins in 7th grade. Students utilize multiple types of representations to demonstrate their understanding of the relationship between two quantities represented in a ratio or rate.
- **Develop understanding of expressions, equations and inequalities.**
  - Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple onestep equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as  $3x = y$ ) to describe relationships between quantities.
- **Fluently divide multi-digit numbers using a standard algorithm.**
- **Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.**
- **Write, read, and evaluate algebraic expressions.**



**Arizona Mathematics Standards (adopted December 2016)****What the Arizona Mathematics Standards Are**

The Arizona Mathematics Standards define the knowledge, understanding, and skills that need to be taught and learned so all students are ready to succeed in credit-bearing, college-entry courses and/or in the workplace. The Arizona Mathematics Standards are the foundation to guide the construction and evaluation of mathematics programs in Arizona K-12 schools and the broader Arizona community.

- Focused in coherent progressions across grades K-12
- Aligned with college and workforce expectations
- Inclusive of rigorous content and applications of knowledge through higher-order thinking
- Research- and evidence-based

**Understanding in Mathematics**

When a student understands a mathematical concept, they move fluidly between the concrete and abstract. There is evidence they are able to make sense of and justify mathematical connections. Evidence of understanding includes connections among:

- Verbal or written reasoning
- Pictorial representations
- Real-world application
- Procedures/Computation

Grade 6 AzM2 Math Blueprint 2016 Standards		
Reporting Category	Min.	Max.
Ratios & Proportions	19%	23%
Expressions & Equations	29%	33%
Geometry and Statistics & Probability	15%	19%
<i>Geometry</i>	6%	15%
<i>Statistics and Probability</i>	6%	11%
The Number System	28%	32%

Within a test, approximately 70% of the assessment will be on major content within that grade or course.

Percentage of Points by Depth of Knowledge Level	
DOK 1	10% - 20%
DOK 2	60% - 70%
DOK 3	12% - 30%

**Comprehensive Mathematics Block (90 minutes)**

Students are developing fluency in representation, connections, reasoning & proof, problem solving, and communication of mathematics. Math Attitude is developed and reinforced in every lesson, ensuring that students make sense of mathematics and persevere.				
<b>FLUENCY (15 minutes)</b> <i>Purpose: Students increase flexibility, efficiency, and accuracy in computation and procedures. Conceptual understanding and strategies are the foundations on which fluency is built.</i>		<b>Teacher Actions</b>	<b>Student Actions</b>	<b>Resources Utilized</b>
		<ul style="list-style-type: none"> <li>Model mental math strategies</li> <li>Think aloud math strategies</li> <li>Question using a variety of DOK levels</li> <li>Explicitly teach appropriate mathematical strategies and formulas</li> <li>Provide feedback on progress</li> </ul>	<ul style="list-style-type: none"> <li>Utilize mental math strategies</li> <li>Write out strategies to show procedural knowledge</li> <li>Answer a variety of DOK 1-4 questions</li> <li>Share mathematical strategies and thinking</li> <li>Use feedback to set goals for improvement</li> </ul>	<ul style="list-style-type: none"> <li>Number Talks</li> <li>Socratic Seminar</li> <li>Turnaround Problem (answer given, students come up with the question)</li> </ul>
<b>WHOLE GROUP INSTRUCTION (25 minutes)</b>	<b>Conceptual Understanding</b> <i>Purpose: Students develop mathematical understanding (Instructional Continuum).</i>	<ul style="list-style-type: none"> <li>Explicitly teach academic vocabulary</li> <li>Explicitly model the thinking and strategy used</li> <li>Guide students through practicing the use of the strategy and offer specific feedback</li> <li>Guide students through independent practice with appropriate tools</li> <li>Ask a variety of DOK 1-4 questions throughout instruction</li> </ul>	<ul style="list-style-type: none"> <li>Use strategies to learn the academic vocabulary and use it in discussions</li> <li>Utilize the appropriate strategy to solve the problem</li> <li>Use feedback to redirect actions as needed</li> <li>Practice the strategies and skills using the appropriate tools</li> <li>Answer a variety of DOK 1-4 questions</li> <li>Utilize strategies to check for reasonableness of solution (i.e. UPS-Check)</li> </ul>	<ul style="list-style-type: none"> <li>Go Math! (K-5)</li> <li>Holt Math (6-8)</li> <li>Mathematical Practice standards (as appropriate for lesson)</li> </ul>
	<b>Problem Solving</b> <i>Purpose: Students utilize mathematical knowledge to solve real-life problems and investigate mathematics.</i>	<ul style="list-style-type: none"> <li>Pose problem/situation</li> <li>Scaffold independent practice with think-alouds</li> <li>Label strategies used</li> </ul>	<ul style="list-style-type: none"> <li>Read and understand the problem/situation</li> <li>Utilize knowledge of appropriate strategies and skills to determine next steps</li> <li>Label strategies used</li> <li>Utilize strategies to check for reasonableness of solution (i.e. UPS-Check)</li> </ul>	<ul style="list-style-type: none"> <li>Go Math! (K-5)</li> <li>Holt Math (6-8)</li> <li>Van de Walle</li> </ul>
<b>SMALL GROUP INSTRUCTION (40 minutes)</b> <i>Purpose: Students practice mathematical skills, concepts and/or strategies with strategic support or with enrichment.</i>		<ul style="list-style-type: none"> <li>Identify skill gaps of students using ongoing assessments</li> <li>Prompt and reinforce mathematical behaviors</li> <li>Model math strategies and the flexibility to choose between strategies</li> <li>Create groups by Skill, Concept, or Strategy</li> </ul>	<ul style="list-style-type: none"> <li>Practice foundational math skills</li> <li>Monitor comprehension and select strategies to increase understanding</li> <li>Extend grade level understanding and link to upcoming standards</li> </ul>	<ul style="list-style-type: none"> <li>Go Math! supplements</li> <li>Holt Math supplements</li> <li>Van de Walle</li> <li>Do the Math</li> <li>Do the Math Now</li> </ul>
<b>COGNITIVE CLOSURE (10 minutes)</b> <i>Purpose: Students cognitively process learning in order to focus on what was learned, whether it made sense, and if it had meaning.</i>		<ul style="list-style-type: none"> <li>Summarize and synthesize the learning process and skills obtained</li> <li>Connect the concepts, skills, or strategies to a real world application</li> <li>Connect the concepts, skills, or strategies to other learning through transfer</li> <li>Give an End-of-Lesson Assessment (i.e. Exit Ticket, Journal-Writing, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Summarize and synthesize the learning process and skills obtained</li> <li>Reflect on the learning process and connect the learning to a real world application</li> <li>Complete an End-of-Lesson Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Exit tickets</li> <li>Math Journals</li> <li>Common Formative Assessments</li> </ul>

## Year-Long Standards Overview

<b>Mathematical Practices – To be embedded into every lesson</b>			
1. Make sense of problems and persevere in solving them.	5. Use appropriate tools strategically.	<b>Key:</b> <span style="color: red;">➡ Grade-Level Guaranteed Standards</span> <span style="color: green;">Essential Standards</span> <span style="color: blue;">Supporting Standards</span> <span style="color: blue;">Prerequisite Understanding</span>	
2. Reason abstractly and quantitatively.	6. Attend to precision.		
3. Construct viable arguments and critique the reasoning of others.	7. Look for and make use of structure.		
4. Model with mathematics.	8. Look for and express regularity in repeated reasoning.		
<b>Yearlong Fluency Standards – To be taught and revisited continually throughout the year</b>			
<span style="color: green;">➡ 6.NS.B.2 - Fluently divide multi-digit numbers using the standard algorithm.</span> <span style="color: green;">➡ 6.NS.B.3 - Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</span> <span style="color: green;">➡ 6.EE.A.2 - Write, read, and evaluate algebraic expressions.</span>			
Quarter 1	Quarter 2	Quarter 3	Quarter 4
<u><b>Operations and Equations with Positive Whole Numbers and Decimals</b></u> <span style="color: red;">➡ 6.NS.B.2</span> <span style="color: red;">➡ 6.NS.B.3</span> 6.EE.A.1 <span style="color: red;">➡ 6.EE.A.2</span> 6.EE.B.6  <u><b>GCF, LCM and Dividing Fractions</b></u> 6.NS.B.4 6.NS.A.1  <u><b>Ratios and Proportions</b></u> 6.RP.A.1 6.RP.A.2 <span style="color: red;">➡ 6.RP.A.3 (3a, 3d)</span>	<u><b>Applying Rational Number Sense and Solving Equations</b></u> 6.NS.C.5 <span style="color: red;">➡ 6.EE.B.7</span> 6.EE.B.5 6.NS.C.6 6.NS.C.7 (7a, 7b) <span style="color: green;">6.EE.B.8</span> 6.G.A.1  <u><b>Properties of Equivalence and Equivalent Expressions</b></u> <span style="color: red;">➡ 6.EE.A.3</span> 6.EE.A.4  <u><b>Revisit and Embed Fluency Standards:</b></u> <span style="color: red;">➡ 6.NS.B.2</span> <span style="color: red;">➡ 6.NS.B.3</span> <span style="color: red;">➡ 6.EE.A.2</span>	<u><b>Absolute Value</b></u> 6.NS.C.7 (7c, 7d) 6.NS.C.8  <u><b>Equations, Formulas, and Ratios in Real-World Applications</b></u> 6.G.A.4 6.G.A.3 <span style="color: green;">6.EE.C.9</span> <span style="color: red;">➡ 6.RP.A.3 (3b, 3c)</span> 6.G.A.2 6.SP.A.2  <u><b>Revisit and Embed Fluency Standards:</b></u> <span style="color: red;">➡ 6.NS.B.2</span> <span style="color: red;">➡ 6.NS.B.3</span> <span style="color: red;">➡ 6.EE.A.2</span>	<u><b>Statistics and Probability</b></u> 6.SP.A.1 <span style="color: green;">6.SP.A.2</span> (continue from Q3) 6.SP.A.3 6.SP.B.4 6.SP.B.5  <u><b>Solving Equation and Properties of Equivalence</b></u> <span style="color: red;">➡ 6.EE.B.7</span> <span style="color: red;">➡ 6.EE.A.3</span>  <u><b>Revisit and Embed Fluency Standards:</b></u> <span style="color: red;">➡ 6.NS.B.2</span> <span style="color: red;">➡ 6.NS.B.3</span> <span style="color: red;">➡ 6.EE.A.2</span>  Use any remaining time in the year to reteach standards to which students did not reach mastery and to pre-teach 7th grade concepts through project-based learning activities.

Quarter 1			
Arizona State Standards	GESD Suggested Learning Targets (○) AzM2 Sample Task Demands (★)	Curricular Resource Mathematical Practices	Vocabulary
<b>The recommended order of lessons from the Holt book for First Quarter are:</b> 1-2, 3-2, Lab Pg. 102, 3-3, Lab Pg. 110, 3-4, 3-5, 3-6, 3-7, 3-8, 1-3, Lab Pg. 20, 1-4, 2-1, 2-2, 2-3, Lab Pg. 58, 2-4, 2-5, 2-6, 2-7, 2-8, 4-2, 4-3, 5-1 Lab Pg. 216, Lab Pg. 218, 5-6, 7-1, Lab Pg. 300, 7-4, 7-2, Extension Pg. 298, 8-1, 8-2			
<b>Operations and Equations with Positive Whole Numbers and Decimals</b> <b>By the end of this unit of study, students will be able to compute fluently with multi-digit numbers and fractions, find common factors and common multiples evaluate expressions with exponents, variables, and real-world contexts.</b>			
<b>➡6.NS.B.2</b> <b>Fluently divide multi-digit numbers using the standard algorithm.</b>	○ Fluently divide multi-digit numbers using the standard algorithm with efficiency, flexibility, and accuracy ★ Calculate the quotient of 2 numbers	Holt: 1-2 Mathematical Practices: 2, 7, 8 Flipbook: Pg. 16	<a href="#">Dividend, Divisor, Quotient</a>
<b>➡6.NS.B.3</b> <b>Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</b>	○ Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation with efficiency, flexibility, and accuracy ★ Perform calculations involving all 4 operations	Holt: 3-2, Lab Pg. 102, 3-3, Lab Pg. 110, 3-4, 3-5, 3-6, 3-7, 3-8 Mathematical Practices: 2, 7, 8 Flipbook: Pg. 18	<a href="#">Estimate, Compatible numbers, Sum, Difference, Product, Quotient, Terminating decimal</a>
6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.	○ Write and evaluate numerical expressions involving whole number exponents. For example $3^4=3 \times 3 \times 3 \times 3=81$ ○ Solve order of operation problems that contain exponents. For example $3+2^2-(2+3)=2$ ★ Evaluate numeric expressions involving whole number exponents ★ Create expressions using whole number exponents	Holt: 1-3, Lab Pg. 20, 1-4 Mathematical Practices: 2 Flipbook: Pg. 32	<a href="#">Exponent, Base of an exponent, Order of Operations, Numerical expression, Simplify</a>

<p><b>6.EE.A.2</b>  <b>Write, read, and evaluate algebraic expressions.</b>  <b>a. Write expressions that record operations with numbers and variables.</b>  <b>b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity.</b>  <b>c. Evaluate expressions given specific values of their variables. Include expressions that arise from formulas used to solve mathematical problems and problems in real-world context. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).</b></p>	<ul style="list-style-type: none"> <li>o Use numbers and variables to represent desired operations</li> <li>o Identify parts of an expression using mathematical terms. (sum, term, product, factor, quotient, and coefficient) and that each part of an expression is a single entity, even if not a monomial</li> <li>o Translate between written phrases and algebraic expressions</li> <li>o Substitute specific values for variables and evaluate algebraic expressions including those that arise from real-world problems</li> <li>o Apply order of operations when there are no parentheses for expressions that include whole number exponents</li> <li>★ Identify parts of an expression using mathematical terms</li> <li>★ Evaluate given expressions, including real-world formulas, with variables by substituting numeric values</li> <li>★ Create, and also possibly evaluate, expressions with variables by analyzing the context</li> </ul>	<p>Holt: 2-1, 2-2, 2-3, Lab Pg. 58  Mathematical Practices: 1, 2, 3, 4, 6  Flipbook: Pg. 34</p>	<p>Variable, Coefficient, Constant, Algebraic expression, Evaluate, Sum, Term, Product, Factor, Quotient</p>
<p>6.EE.B.6  Use variables to represent numbers and write expressions when solving mathematical problems and problems in real-world context; understand that a variable can represent an unknown number or any number in a specified set.</p>	<ul style="list-style-type: none"> <li>o Explain that a variable can represent an unknown number or, depending at the purpose at hand, any number in a specified set</li> <li>★ Construct an expression that represents a situation</li> <li>★ Explain or choose what a variable in an expression represents in a real world context</li> </ul>	<p>Holt: 2-4, 2-5, 2-6, 2-7, 2-8  Mathematical Practices: 2, 4, 7  Flipbook: Pg. 41</p>	<p>Variable, Equation, Solution</p>
<p><b>GCF, LCM, and Dividing Fractions</b></p> <p><b>By the end of this unit of study, students will understand ratio concepts and use ratio reasoning to solve problems.</b></p>			
<p><b>6.NS.B.4</b>  <b>Use previous understanding of factors to find the greatest common factor and the least common multiple.</b>  <b>a. Find the greatest common factor of two whole numbers less than or equal to 100.</b>  <b>b. Find the least common multiple of two whole numbers less than or equal to 12.</b>  <b>c. Use the Distributive Property to express a sum of two whole numbers 1 to 100 with a</b></p>	<ul style="list-style-type: none"> <li>o Fluently identify the factors of two whole numbers less than or equal to 100 and determine the greatest common factor</li> <li>o Fluently identify the multiples of two whole numbers less than or equal to 12 and determine the least common multiple</li> <li>o Apply the distributive property to rewrite addition problems by factoring out the greatest common factor</li> </ul>	<p>Holt: 4-2, 4-3, 5-1  Mathematical Practices: 7  Flipbook: Pg. 19</p>	<p>Factor, Prime factorization, Greatest common factor, Least common multiple</p>

<p>common factor as a multiple of a sum of two whole numbers with no common factor.</p> <p><i>Example: express <math>36 + 8</math> as <math>4(9+2)</math>.</i></p>	<ul style="list-style-type: none"> <li>★ Identify the Greatest Common Factor (GCF) or Least Common Multiple (LCM) of two numbers given.</li> <li>★ Identify equivalent expressions that express the same sum.</li> </ul>		
<p><b>6.NS.A.1</b> Interpret and compute quotients of fractions to solve mathematical problems and problems in real-world context involving division of fractions by fractions using visual fraction models and equations to represent the problem. <i>For example, create a story context for <math>2/3 \div 3/4</math> and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that <math>2/3 \div 3/4 = 8/9</math> because <math>3/4</math> of <math>8/9</math> is <math>2/3</math>. In general, <math>a/b \div c/d = ad/bc</math>.</i></p>	<ul style="list-style-type: none"> <li>o Compare quotients of fractions divided by fractions including mixed numbers</li> <li>o Interpret quotients of fractions</li> <li>o Solve word problems involving division of fractions by fractions</li> <li>★ Calculate the quotient of two fractions or a non-unit fraction and whole number</li> <li>★ Use context cues from a story to represent or calculate the quotient of two fractions or a non-unit fraction and whole number</li> </ul>	<p>Holt: Lab Pg. 216, Lab Pg. 218, 5-6 Mathematical Practices: 1, 2, 3, 4, 7, 8 Flipbook: Pg. 13</p> <p><i>Supplement with</i> <i>Engage NY Module 2 Lessons 1 -8</i></p>	<p>Least common denominator, Reciprocal, Multiplicative inverse, <a href="#">Mixed number</a>, <a href="#">Improper fraction</a>, <a href="#">Quotient</a></p>
<p><b>Ratios and Proportions</b></p> <p><b>By the end of this unit of study, students will be able to compare quantities and reason with ratios and proportions.</b></p>			
<p><b>6.RP.A.1</b> Understand the concept of a ratio as comparing two quantities multiplicatively or joining/composing the two quantities in a way that preserves a multiplicative relationship. Use ratio language to describe a ratio relationship between two quantities.</p> <p><i>For example, "There were <math>2/3</math> as many men as women at the concert."</i></p>	<ul style="list-style-type: none"> <li>o Write ratio notation (<math>a:b</math>, <math>a/b</math>, <math>a</math> to <math>b</math>)</li> <li>o Explain why order matters when writing a ratio and that ratios can be simplified</li> <li>o Recognize that ratios compare two quantities (the quantities do not have to be the same unit of measure) and that ratios appear in a variety of different contexts: part to whole, part to part, and rates</li> <li>o Generalize that all ratios relate two quantities or given measures within a given situation in a multiplicative relationship</li> <li>o Analyze your context to determine which type of ratio is represented</li> <li>★ Recognize correct ratio notation (<math>1:2</math>, <math>1</math> to <math>2</math>, <math>1/2</math>) for a given ratio relationship - items should focus on notation, meaning that all options should contain the same numbers</li> <li>★ Represent a ratio relationship described in situational contexts or shown in tape diagrams, double number line diagrams, or graphics, etc. using ratio notation or descriptions</li> <li>★ Distinguish between part-to-part and part-to-whole ratio relationships described in</li> </ul>	<p>Holt: 7-1 Mathematical Practices: 2, 6 Flipbook: Pg. 5</p> <p><i>Supplement with</i> <i>Teaching Student-Centered Mathematics Van de Walle Pgs. 226-230</i> <i>Connected Mathematics "Comparing and Scaling" Investigations 3 &amp; 4</i> <i>Engage NY Module 1 Lessons 3 - 8</i></p>	<p>Ratio, Equivalent ratios, Proportion, Part-to-part, Part-to-whole, Ratio notation</p>

	situational contexts or shown in tape diagrams, double number line diagrams, or graphics, etc. using ratio notation or descriptions		
<p>6.RP.A.2</p> <p>Understand the concept of a unit rate <math>a/b</math> associated with a ratio <math>a : b</math> with <math>b \neq 0</math>, and use rate language (e.g., for every, for each, for each 1, per) in the context of a ratio relationship.</p> <p><i>For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."</i></p> <p><i>Note: Expectations for unit rates in this grade are limited to non-complex fractions.</i></p>	<ul style="list-style-type: none"> <li>o Identify and calculate a unit rate</li> <li>o Use appropriate math terminology as related to rate</li> <li>o Analyze a relationship between a ratio <math>a:b</math> and a unit rate <math>a/b</math> where <math>b</math> does not equal 0</li> <li>★ Identify unit rates</li> <li>★ Find the unit rate given a ratio or ratio relationship expressed as a tape diagram or double number line diagram</li> <li>★ Solve word problems where the solution is in terms of a unit rate</li> </ul>	<p>Holt: Lab Pg. 300, 7-4</p> <p>Mathematical Practices: 2, 6</p> <p>Flipbook: Pg. 8</p>	Rate, Unit rate
<p>➡6.RP.A.3</p> <p>Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).</p> <p>a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.</p> <p>b. Solve unit rate problems including those involving unit pricing and constant speed.</p> <p>c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means <math>30/100</math> times the quantity). Solve percent problems with the unknown in all positions of the equation.</p> <p>d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</p>	<ul style="list-style-type: none"> <li>o Make a tape diagram, double number line, or table of equivalent ratios using whole numbers</li> <li>o Compare proportional quantities using tape diagrams, double number lines, or tables to find missing values in the table</li> <li>o Explain why a percent is a ratio of a number to 100 and find the percent of a number as a rate per 100</li> <li>o Apply ratio reasoning to convert measurement units in real-world and mathematical problems by multiplying or dividing (customary and metric units)</li> <li>★ Generate tables of equivalent ratios (a,b)</li> <li>★ Plot ordered pairs of equivalent ratios (a)</li> <li>★ Solve a unit rate problem by finding a missing quantity based on that unit rate (b)</li> <li>★ Given a unit rate, add to a set to create an equivalent ratio</li> <li>★ Find a total quantity from a given quantity that is a percent of the whole (c)</li> <li>★ Apply a unit rate as a conversion factor to transform units when multiplying or dividing quantities (d)</li> </ul>	<p>Holt: 7-2, Extension Pg. 298, 8-1, 8-2</p> <p>Mathematical Practices: 1, 2, 4</p> <p>Flipbook: Pg. 19</p>	Proportion, Percent, <a href="#">Tape diagram/Bar Model</a> , Double number line diagram, Data table, <a href="#">Metric system</a> , <a href="#">Customary system</a> , Absolute value, Distance

	★ Given two criteria based on unit rates (part-to-part and/or part-to-whole), create a set of objects that satisfies both criteria		
<b>Quarter 2</b>			
<b>Arizona State Standards</b>	<b>GESD Suggested Learning Targets (○) AzM2 Sample Task Demands (★)</b>	<b>Curricular Resource Mathematical Practices</b>	<b>Vocabulary</b>
<b>The recommended order of lessons from the Holt book for Second Quarter are:</b> 9-1, 2-5, 2-6, 2-7, 2-8, 5-4, 5-7, 7-3, Extension Pg. 400, 9-3, 4-7, 9-2, 10-4, 8-3, Lab Pg. 354, 8-4, Lab Pg. 360, 8-5, 1-5, 4-3			
<b>Fluency Standards to Revisit</b>			
➡ <b>6.NS.B.2</b> Fluently divide multi-digit numbers using the standard algorithm.			
➡ <b>6.NS.B.3</b> Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.			
➡ <b>6.EE.A.2</b> Write, read, and evaluate algebraic expressions.			
<b>Applying Rational Numbers Sense and Solving Equations</b>			
<b>By the end of this unit of study, students will be able to compute fluently with multi-digit numbers and fractions, and find common factors and common multiples (extend to all rational numbers), evaluate expressions and inequalities with exponents, variables, and real-world contexts, and work with area and surface area of 2-D and 3-D shapes.</b>			
6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world context, explaining the meaning of 0 in each situation.	<ul style="list-style-type: none"> <li>○ Identify an integer and its opposite</li> <li>○ Explain where 0 fits in on a number line</li> <li>○ Use integers to represent quantities in real-world situations (above and below sea level, etc.)</li> <li>★ Identify a rational number which represents a given situation</li> <li>★ Interpret a rational number in terms of a context</li> </ul>	Holt: 9-1 Mathematical Practices: 1, 2, 4 Flipbook: Pg. 22  <i>Supplement with <u>Teaching Student-Centered Mathematics</u> Van de Walle Pgs. 205-210 <u>Connected Mathematics</u> Accentuate the Negative" Investigations 1 &amp; 5</i>	Positive number, Negative number, Opposite, Integer, Absolute value, Rational number
➡ <b>6.EE.B.7</b> <b>Solve mathematical problems and problems in real-world context by writing and solving equations of the form <math>x + p = q</math>, <math>x - p = q</math>, <math>px = q</math>, and <math>x/p = q</math> for cases in which <math>p</math>, <math>q</math> and <math>x</math> are all non-negative rational numbers.</b>	<ul style="list-style-type: none"> <li>○ Define inverse operation</li> <li>○ Know how inverse operations can be used in solving one variable equations</li> <li>○ Apply rules of the form <math>x + p = q</math>, <math>x - p = q</math>, <math>px = q</math>, and <math>x/p = q</math> for cases in which <math>p</math>, <math>q</math>, and <math>x</math> are all rational numbers to solve real-world and mathematical problems with only one unknown quantity</li> <li>○ Develop a rule for solving one and two-step equations using the inverse operations with all rational coefficients</li> <li>○ Solve and write equations for real-world mathematical problems containing one unknown</li> <li>★ Solve one-step linear equations</li> </ul>	Holt: 2-5, 2-6, 2-7, 2-8, 5-4, 5-7 Mathematical Practices: 1, 2, 3, 4, 7 Flipbook: Pg. 42	Inverse operation, Constant, Variable, Solution, Equation

	<ul style="list-style-type: none"> <li>★ Given a simple context, write and/or solve one step linear equations</li> <li>★ Write and/or solve one step linear equations where the given information can be simplified to a form given in the standard</li> </ul>		
<p>6.EE.B.5 Understand solving an equation or inequality as a process of reasoning to find the value(s) of the variables that make that equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p>	<ul style="list-style-type: none"> <li>o Explain why solving an inequality is a process of answering, "Which values from a specified set, if any, make the equation or inequality true?"</li> <li>o Use substitution to determine whether a given number in a specified set makes an inequality true (<math>x+3</math> greater than or equal to 5)</li> <li>★ Choose which value(s) satisfy an inequality</li> <li>★ Choose a set of numbers which contains only solutions to an inequality</li> <li>★ Determine the value of an expression that makes the equation true</li> </ul>	<p>Mathematical Practices: 1, 2, 4, 7 Flipbook: Pg. 39</p> <p><i>Supplement with Teaching Student-Centered Mathematics Van de Walle Pgs. 278-285 Engage NY Module 4 Lesson 33</i></p>	Inequality, Substitution
<p>6.NS.C.6 Understand a rational number can be represented as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.</p> <p>a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself and that 0 is its own opposite.</p> <p>b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</p> <p>c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.</p>	<ul style="list-style-type: none"> <li>o Identify a rational number as a point on the number line and the location of 0 on a number line in relation to positive and negative numbers</li> <li>o Explain opposite signs of numbers as locations on opposite sides of 0 on a number line</li> <li>o Find and position integers and other rational numbers on a horizontal or vertical number line, diagram, and coordinate plane</li> <li>o Reason that the opposite of the opposite of a number, is the number itself</li> <li>o Explain how the signs of both numbers in an ordered pair indicate which quadrants of the coordinate plane the ordered pair will be located in</li> <li>o Reason that when only the x-values in sets of ordered pairs are opposites, it creates a reflection over the y-axis and that the y-value reflects over the x-axis</li> <li>o Reason that when two ordered pairs differ only by the signs, the locations of the points are related by reflections across both axis</li> <li>★ Locate rational numbers on the number line</li> <li>★ Plot points on the coordinate plan</li> <li>★ Identify the opposite of a number, including the opposite of a negative number</li> </ul>	<p>Holt: 7-3, Extension Pg. 400, 9-3 Mathematical Practices: 2, 4 Flipbook: Pg. 23</p>	<p>Coordinate plane, Axis/Axes, y-axis, x-axis, Quadrant, Origin, Coordinates, x-coordinate, y-coordinate, Ordered pair</p>

<p>6.NS.C.7 Understand <b>ordering</b> and absolute value of rational numbers.</p> <p>a. Interpret statements of inequality as statements about the relative position of two numbers on a number line.</p> <p>b. Write, interpret, and explain statements of order for rational numbers in real-world context.</p> <p>c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in real-world context.</p> <p>d. Distinguish comparisons of absolute value from statements about order in mathematical problems and problems in real-world context.</p>	<ul style="list-style-type: none"> <li>o Order rational numbers on a number line</li> <li>o Interpret statements of inequality as statements about relative position of the two numbers on a number line diagram</li> <li>★ Compare integers in terms of relative locations on the number line</li> <li>★ Compare values of rational numbers in a context</li> <li>★ Order rational numbers</li> <li>★ <del>Compare integers and absolute value of integers in terms of relative locations on the number line</del></li> <li>★ <del>Distinguish between order and magnitude of rational numbers</del></li> <li>★ <del>Compare integers and/or absolute values of integers for abstract values represented by variables</del></li> </ul>	<p>Holt: 4-7, 9-2 Mathematical Practices: 1, 2, 3 Flipbook: Pg. 25</p>	<p>Positive number, Negative number, Opposite, Integer, Rational number</p>
<p>➡ <b>6.EE.B.8</b> <b>Write an inequality of the form <math>x &gt; c</math>, <math>x &lt; c</math>, <math>x \geq c</math>, or <math>x \leq c</math> to represent a constraint or condition to solve mathematical problems and problems in real-world context. Recognize that inequalities have infinitely many solutions; represent solutions of such inequalities on number lines.</b></p>	<ul style="list-style-type: none"> <li>o Identify the constraint or condition in a real-world or mathematical problem in order to set up an inequality</li> <li>o Explain why inequalities of the form <math>x &gt; c</math>, <math>x &lt; c</math>, <math>x \geq c</math>, or <math>x \leq c</math> have infinitely many solutions</li> <li>o Represent solutions to inequalities of the <math>x &gt; c</math>, <math>x &lt; c</math>, <math>x \geq c</math>, or <math>x \leq c</math> with infinitely many solutions on a number line diagrams (also add less than or equal to and greater than or equal to)</li> <li>★ Write an inequality that represents a constraint or condition in a mathematical problem</li> <li>★ Relate a graph to an inequality or a description</li> <li>★ Represent a constraint or condition in a real-world or mathematical problem on a number line</li> <li>★ Write an inequality that represents a constraint or condition in a real-world problem</li> </ul>	<p>Holt: 10-4 Mathematical Practices: 1, 2, 3, 4, 7 Flipbook: Pg. 44</p> <p><i>Supplement with</i> <i>Engage NY Module 4 Lesson 34</i></p>	<p>Inequality, Algebraic inequality, Solution set, Compound inequality, <a href="#">Solution</a></p>
<p>6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques to solve mathematical problems and problems in real-world context.</p>	<ul style="list-style-type: none"> <li>o Compose and decompose polygons into triangles and rectangles</li> <li>o Compare the area of a triangle to the area of a composed rectangle</li> <li>o Discuss, develop, and justify formulas for triangles and parallelograms</li> <li>o Apply techniques of composing or decomposing to find the area of triangles, special</li> </ul>	<p>Holt: 8-3, Lab Pg. 354, 8-4, Lab Pg. 360, 8-5 Mathematical Practices: 1, 2, 3, 4, 5, 6, 7, 8 Flipbook: Pg. 48</p>	<p><a href="#">Area</a>, <a href="#">Quadrilateral</a>, <a href="#">Polygon</a>, <a href="#">Compose</a>, <a href="#">Decompose</a>, Base of a polygon</p>

	<p>quadrilaterals, and polygons to solve mathematical and real-world problems.</p> <ul style="list-style-type: none"> <li>★ Find the area of a shape (by composing/decomposing)</li> <li>★ Create an expression with an unknown to model the area of a shape as a composition/decomposition of rectangles and/or right triangles</li> </ul>		
<b>Properties of Equivalence and Equivalent Expressions</b>			
<b>By the end of this unit of study, students will be able to evaluate expressions and inequalities with exponents, variables, and real-world contexts.</b>			
<p>➔ <b>6.EE.A.3</b> Apply the properties of operations to generate equivalent expressions.</p> <p><i>For example, apply the Distributive Property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>.</i></p>	<ul style="list-style-type: none"> <li>o Generate equivalent expressions using the properties of operations (emphasize Distributive Property)</li> <li>o Combining like terms with variables and positive and negative coefficients (operations exponents, positive and negative constants)</li> <li>★ Given an expression, construct an equivalent expression</li> </ul>	<p>Holt: 1-5 Mathematical Practices: 2, 3, 4, 6, 7 Flipbook: Pg. 36</p> <p><i>Supplement with <u>About Teaching Mathematics A K-8 Resource 3rd Edition Marilyn Burns Pgs. 144-156</u> <u>Engage NY Module 4 Lessons 11-12</u></i></p>	<p>Like terms, Coefficient, Constant, <b>Distributive Property</b>, <b>Inverse operations</b>, Equivalent expressions</p>
<p>6.EE.A.4 Identify when two expressions are equivalent.</p> <p><i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number regardless of which number <math>y</math> stands for.</i></p>	<ul style="list-style-type: none"> <li>o Be able to explain why expressions are not equivalent</li> <li>★ Identify which expressions are equivalent</li> <li>★ Determine that two expressions are equivalent by substitution</li> </ul>	<p>Holt: 4-3 Mathematical Practices: 2, 3, 4, 6, 7 Flipbook: Pg. 37</p>	
<b>Quarter 3</b>			
<b>Arizona State Standards</b>	<b>GESD Suggested Learning Targets (○) AzM2 Sample Task Demands (★)</b>	<b>Curricular Resource Mathematical Practices</b>	<b>Vocabulary</b>
<b>The recommended order of lessons from the Holt book for Third Quarter are: 4-7, 9-2, 9-5, Lab Pg. 372, 8-7, 9-3, 9-4, 9-5, 10-1, 10-2, Extension Pg. 440, 10-3, 7-5, 7-7, 7-8, 10-3, Lab Pg. 366, 8-6</b>			
<b>Fluency Standards to Revisit and Embed</b>			
➔ <b>6.NS.B.2</b> Fluently divide multi-digit numbers using the standard algorithm.			
➔ <b>6.NS.B.3</b> Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.			
➔ <b>6.EE.A.2</b> Write, read, and evaluate algebraic expressions.			
<b>Absolute Value</b>			
<b>By the end of this unit of study, students will be able to compute fluently with multi-digit numbers and fractions, and find common factors and common multiples, extend to all rational numbers, and evaluate equivalent algebraic expressions.</b>			
<p>6.NS.C.7 Understand <b>ordering</b> and absolute value of rational numbers.</p>	<ul style="list-style-type: none"> <li>o Identify absolute values of rational numbers</li> <li>o Distinguish comparisons of absolute value from statements about order and apply to real-world contexts</li> </ul>	<p>Holt: 4-7, 9-2 Mathematical Practices: 1, 2, 3 Flipbook: Pg. 25</p>	<p>Positive number, Negative number, Opposite, Integer, Absolute value, Absolute</p>

<p>a. Interpret statements of inequality as statements about the relative position of two numbers on a number line.</p> <p>b. Write, interpret, and explain statements of order for rational numbers in real-world context.</p> <p>c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in real-world context.</p> <p>d. Distinguish comparisons of absolute value from statements about order in mathematical problems and problems in real-world context.</p>	<ul style="list-style-type: none"> <li>o Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation</li> <li>o Calculate absolute value</li> <li>★ <del>Compare integers in terms of relative locations on the number line</del></li> <li>★ <del>Compare values of rational numbers in a context</del></li> <li>★ <del>Order rational numbers</del></li> <li>★ Compare integers and absolute value of integers in terms of relative locations on the number line</li> <li>★ Distinguish between order and magnitude of rational numbers</li> <li>★ Compare integers and/or absolute values of integers for abstract values represented by variables</li> </ul>		Magnitude, Rational number
<p>6.NS.C.8</p> <p>Solve mathematical problems and problems in real-world context by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.</p>	<ul style="list-style-type: none"> <li>o Calculate absolute value</li> <li>o Graph points in all four quadrants of the coordinate plane</li> <li>o Solve real-world problems by graphing points in all four quadrants of a coordinate plane</li> <li>o Given only coordinates, calculate the distances between two points with the same first coordinated or the same second coordinate using absolute value</li> <li>★ Identify the location of a point that is a specified distance from another point</li> <li>★ Calculate the distance between two points</li> <li>★ Solve problems related to location and distance in the coordinate plane</li> </ul>	<p>Holt: 9-5</p> <p>Mathematical Practices: 1, 2, 4, 5, 7</p> <p>Flipbook: Pg. Pg. 29</p>	Absolute Value, Distance
<p><b>Equations, Formulas, and Ratios in Real-World Application</b></p> <p><b>By the end of this unit of study, students will be able to work with polygons on a coordinate plane, volume of 3-D shapes, graphing independent and dependent variables on a coordinate plane, and rate in real-world contexts utilizing tables and graphs on a coordinate plane.</b></p>			
<p>6.G.A.4</p> <p>Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques to solve mathematical problems and problems in real-world context</p>	<ul style="list-style-type: none"> <li>o Explain how three dimensional figures can be represented by nets</li> <li>o Represent three dimensional figures by using nets made up of rectangles and triangles</li> <li>o Apply knowledge of calculating the area of rectangles and triangles to a net and combine the areas for each shape into one answer</li> </ul>	<p>Holt: Lab Pg. 372, 8-7</p> <p>Mathematical Practices: 1, 2, 3, 4, 5, 6, 7, 8</p> <p>Flipbook: Pg. Pg. 55</p>	Surface area, Net, <a href="#">Pyramid</a> , <a href="#">Prism</a> , Dimension

	<p>representing the surface area of a three dimensional shape</p> <ul style="list-style-type: none"> <li>o Solve real-world and mathematical problems involving surface area involving nets</li> <li>★ Match net(s) to 3-D figure(s)</li> <li>★ Identify the set of shapes that can be arranged to form a net of a given 3-D figure</li> <li>★ Find the surface area of a 3-D figure given its net</li> <li>★ Draw a net of a given 3-D figure.</li> <li>★ Create an expression with one unknown to model the surface area of a solid</li> <li>★ Given the surface area, net, and all but one dimension of a 3-D figure, determine the unknown dimension</li> </ul>		
<p><b>6.G.A.3</b> Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques to solve mathematical problems and problems in a real-world context.</p>	<ul style="list-style-type: none"> <li>o Draw polygons in the coordinate plane and use coordinates (with the same x-coordinate or the same y-coordinate) to find the length of a side of a polygon</li> <li>o Apply the technique of using coordinates to find the length of a side of a polygon drawn in the coordinate plane to solve real-world and mathematical problems</li> <li>★ Draw a polygon on the coordinate plane given the coordinates that represent each of its vertices</li> <li>★ Find the side length or perimeter of a polygon whose sides are parallel to the axes and its vertices are given as ordered pairs</li> <li>★ Identify the visual shape that is created if a set of given points would be plotted on a coordinate plane</li> <li>★ Compose a polygon when given some of its vertices and the name of the polygon</li> <li>★ Compose a polygon when given some of its vertices and other constraints which require strategic planning (such as perimeter, side lengths, area)</li> </ul>	<p>Holt: 9-3, 9-4, 9-5 Mathematical Practices: 1, 2, 4, 5, 7 Flipbook: Pg. Pg. 53</p>	<p><a href="#">Perimeter, Polygon, Quadrilateral</a></p>
<p><b>6.EE.C.9</b> Use variables to represent two quantities that change in relationship to one another to solve mathematical problems and problems in real-world context. Write an equation to express</p>	<ul style="list-style-type: none"> <li>o Define independent and dependent variables and use variables to represent two quantities in a real-world problem that change in relationship to one another</li> </ul>	<p>Holt: 10-1, 10-2, Extension Pg. 440, 10-3 Mathematical Practices: 1, 2, 3, 4, 7, 8 Flipbook: Pg. Pg. 45</p>	<p>Independent variable (input), Dependent variable (output), Rate of change</p>

<p>one quantity (the dependent variable) in terms of the other quantity (the independent variable). Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.</p>	<ul style="list-style-type: none"> <li>o Write an equation to express one quantity (dependent) in terms of the other quantity (independent)</li> <li>o Analyze the relationship between the dependent and independent variable using tables and graphs</li> <li>o Relate the data in a graph and table to the corresponding equation</li> <li>★ Identify or model the relationship between an independent and a dependent variable by constructing or referring to a graph or a table, or by reviewing an equation</li> <li>★ Construct an equation that represents the relationship between the independent and dependent variables in a context or from a graph or table</li> </ul>		
<p>➡6.RP.A.3 Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).</p> <p>a. <del>Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.</del></p> <p>b. Solve unit rate problems including those involving unit pricing and constant speed.</p> <p>c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity). Solve percent problems with the unknown in all positions of the equation.</p> <p>d. <del>Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</del></p>	<ul style="list-style-type: none"> <li>o Make a tape diagram, double number line, or table of equivalent ratios using whole numbers</li> <li>o Compare proportional quantities using tape diagrams, double number lines, or tables to find missing values in the table</li> <li>o Explain why a percent is a ratio of a number to 100 and find the percent of a number as a rate per 100</li> <li>o Apply ratio reasoning to convert measurement units in real-world and mathematical problems by multiplying or dividing (customary and metric units)</li> <li>★ Generate tables of equivalent ratios (a,b)</li> <li>★ <del>Plot ordered pairs of equivalent ratios (a)</del></li> <li>★ Solve a unit rate problem by finding a missing quantity based on that unit rate (b)</li> <li>★ Given a unit rate, add to a set to create an equivalent ratio</li> <li>★ Find a total quantity from a given quantity that is a percent of the whole (c)</li> <li>★ <del>Apply a unit rate as a conversion factor to transform units when multiplying or dividing quantities (d)</del></li> <li>★ Given two criteria based on unit rates (part-to-part and/or part-to-whole), create a set of objects that satisfies both criteria</li> </ul>	<p>Holt: 7-5, 7-7, 7-8, 10-3 Mathematical Practices: 1, 2, 4 Flipbook: Pg. Pg. 9</p>	<p>Proportion, Percent, <a href="#">Tape diagram/Bar Model</a>, Double number line diagram, Data table, <a href="#">Metric system</a>, <a href="#">Customary system</a>, Absolute value Distance</p>

<p><b>6.G.A.2</b> Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Understand and use the formulas <math>V = l \cdot w \cdot h</math> and <math>V = B \cdot h</math> (where <math>B</math> is the area of the base; <math>l \cdot w</math>) to find volumes of right rectangular prisms with fractional edge lengths in problems and problems in real-world context.</p> <p><i>*Note: 6.G.A.2 does not pertain to cylinders. This is introduced in 8th grade.</i></p>	<ul style="list-style-type: none"> <li>o Model the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of appropriate unit fractional edge lengths</li> <li>o Apply volume formulas for right rectangular prisms to solve real-world and mathematical problems involving rectangular prisms with fractional edge lengths (mathematical example: given volume use formula to find a missing dimension i.e. using fractional dimensions)</li> <li>★ Find the volume of a right rectangular prism given its fractional dimensions</li> <li>★ Find the volume of a right rectangular prism when the number of unit cubes packed in it and their unit fraction edge length is given</li> <li>★ Find the edge lengths (and volume) of a rectangular prism given the number of unit cubes packed in the prism and their fractional edge length.</li> </ul>	<p>Holt: Lab Pg. 366, 8-6 Mathematical Practices: 1, 2, 3, 4, 5, 6, 7, 8 Flipbook: Pg. Pg. 51</p>	<p>Volume, Base (of a solid figure), Edge</p>
<p><b>6.SP.A.2</b> (introduce statistical concepts as they apply to real-world concepts in G, EE, and RP standards) Understand that a set of data collected to answer a statistical question has a distribution whose general characteristics can be described by its center, spread, and overall shape.</p>	<ul style="list-style-type: none"> <li>o Explain how a set of data has a distribution</li> <li>o Describe a set of data by its center and by its spread and overall shape</li> <li>★ Identify features, such as symmetry, clusters, peaks, and gaps, or common shapes and patterns of a set of data or data display</li> <li>★ Interpret features, such as symmetry, clusters, peaks, and gaps, or common shapes and patterns of a set of data or data display</li> </ul>	<p>Mathematical Practices: 2, 4, 5, 6, 7 Flipbook: Pg. Pg. 59</p> <p><i>Supplement with <u>Teaching Student-Centered Mathematics</u> Van de Walle Pgs. 369-376</i></p>	
<b>Quarter 4</b>			
<b>Arizona State Standards</b>	<b>GESD Suggested Learning Targets (O) AzM2 Sample Task Demands (★)</b>	<b>Curricular Resource Mathematical Practices</b>	<b>Vocabulary</b>
<p>The recommended order of lessons from the Holt book for Fourth Quarter are: Lab Pg. 245, 6-1, 6-2, 6-3, 6-4, Extension Pg. 264, Lab Pg. 266, 6-5 Review Lessons: 2-5, 2-6, 2-7, 2-8, 5-4, 5-7, 1-5</p>			
<b>Fluency Standards to Revisit and Embed</b>			
<p>➡ <b>6.NS.B.2</b> Fluently divide multi-digit numbers using the standard algorithm.</p>			
<p>➡ <b>6.NS.B.3</b> Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p>			
<p>➡ <b>6.EE.A.2</b> Write, read, and evaluate algebraic expressions.</p>			
<b>Statistics and Probability</b>			
<p>By the end of this unit of study, students will be able to analyze data sets to answer questions and display this data.</p>			

<p>6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for variability in the answers. <i>For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.</i></p>	<ul style="list-style-type: none"> <li>o Pose a statistical question (examples vs. non-examples)</li> <li>o Explain how data can have variability</li> <li>★ Recognize whether questions are statistical in nature</li> </ul>	<p>Holt: Lab Pg. 245 Mathematical Practices: 1, 3, 6 Flipbook: Pg. 57</p> <p><i>Supplement with <u>Teaching Student-Centered Mathematics</u> Van de Walle Pgs. 369-379</i></p>	<p>Statistics, Statistical variability, Statistical question</p>
<p><b>6.SP.A.2</b> (continue from Quarter 3) <b>Understand that a set of data collected to answer a statistical question has a distribution whose general characteristics can be described by its center, spread, and overall shape.</b></p>	<ul style="list-style-type: none"> <li>o Explain how a set of data has a distribution</li> <li>o Describe a set of data by its center and by its spread and overall shape</li> <li>★ Identify features, such as symmetry, clusters, peaks, and gaps, or common shapes and patterns of a set of data or data display</li> <li>★ Interpret features, such as symmetry, clusters, peaks, and gaps, or common shapes and patterns of a set of data or data display</li> </ul>	<p>Mathematical Practices: 2, 4, 5, 6, 7 Flipbook: Pg. 59</p> <p><i>Supplement with <u>Teaching Student-Centered Mathematics</u> Van de Walle Pgs. 369-398</i></p>	<p>Mean, Median, Mode, Range, Outlier, Spread</p>
<p>6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation uses a single number to describe the spread of the data set.</p>	<ul style="list-style-type: none"> <li>o Explain measures of central tendency and measures of variances for a data set</li> <li>o Calculate measures of central tendency for a data set, summarize the data with a single number</li> <li>o Calculate measures of variation for a data set, describe how its values vary with a single number</li> <li>★ Distinguish between situations where data is summarized by its measure of center (mean or median) or its variation (range, interquartile range, mean absolute deviation) (Context is allowed)</li> <li>★ Apply understanding of the qualitative properties of measures of center and/or variation (Context is required)</li> </ul>	<p>Holt: 6-1, 6-2, 6-3 Mathematical Practices: 2, 4, 5, 6, 7 Flipbook: Pg. 61</p>	<p>Variation, Measure of center/ Measure of central tendency, Measure of variability, Dot plot</p>
<p>6.SP.B.4 Display and interpret numerical data by creating plots on a number line including histograms, dot plots, and box plots.</p>	<ul style="list-style-type: none"> <li>o Create a dot plot, histogram, stem and leaf, and box plot to display a set of numerical data</li> <li>o Identify the components of dot plots, histograms, and box plots</li> <li>o Analyze a set of data to determine its variance</li> <li>o Find the median quartile and interquartile range of a set of data</li> </ul>	<p>Holt: 6-4 Mathematical Practices: 2, 4, 5, 6, 7 Flipbook: Pg. 62</p>	<p><a href="#">Frequency table</a>, Box plot (box and whisker plot), Quartile, Interquartile range, Lower quartile, Lower extreme, Upper quartile, Upper extreme, Line plot, Histogram, <a href="#">Interval</a>, Frequency</p>

	<ul style="list-style-type: none"> <li>★ Identify the graph(s) for a given set of data</li> <li>★ Determine the best and/or appropriate type(s) of graph(s) to display data sets</li> <li>★ Create number lines, dot plots, histograms, and/or box plots to display given data</li> </ul>		distribution, Central tendency (measure of), Skewed distribution, Normal distribution
<p>6.SP.B.5 Summarize numerical data sets in relation to their context by:</p> <p>a. Reporting the number of observations.</p> <p>b. Describing the nature of the attribute under investigation including how it was measured and its units of measurement.</p> <p>c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</p> <p>d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.</p>	<ul style="list-style-type: none"> <li>o Organize and display data in tables and graphs and describe the data being collected including how well it was measured and its unit of measurement</li> <li>o Calculate quantities measures of center and variance and choose the appropriate measure of central tendency to represent the data</li> <li>o Identify outliers and determine the effect of outliers on quantities measures on a set of data</li> <li>o Analyze the shape of the data distribution and the context in which the data were gathered to choose the appropriate measures of central tendency/variability and justify why this measure is appropriate in terms of the context</li> <li>o Report the number of observations in the data set or display</li> <li>★ Identify measures of center and variability from a given graph</li> <li>★ Identify the center/spread of data set</li> <li>★ Identify the number of observations from a data set</li> <li>★ Solve problems involving measures of center and spread</li> <li>★ Describe overall pattern of a data set including clusters, peaks, and gaps in distributions, within a context</li> <li>★ Create or complete data sets given certain attributes and information about spread of data and/or measure of center</li> <li>★ Draw conclusions about a data set and select the most appropriate measure to answer a question</li> </ul>	<p>Holt: Extension Pg. 264, Lab Pg. 266, 6-5</p> <p>Mathematical Practices: 2, 3, 4, 5, 6, 7</p> <p>Flipbook: Pg. 66</p>	Data analysis, Summarize, Categorize
<p><b>Solving Equations and Properties of Equivalence</b></p> <p><b>By the end of this unit of study, students will be able to use their knowledge of equations and equivalency to solve problems.</b></p>			

<p>➡<b>6.EE.B.7</b>  <b>Solve mathematical problems and problems in real-world context by writing and solving equations of the form <math>x + p = q</math>, <math>x - p = q</math>, <math>px = q</math>, and <math>x/p = q</math> for cases in which <math>p</math>, <math>q</math> and <math>x</math> are all non-negative rational numbers.</b></p>	<ul style="list-style-type: none"> <li>o Define inverse operation</li> <li>o Know how inverse operations can be used in solving one variable equations</li> <li>o Apply rules of the form <math>x + p = q</math>, <math>x - p = q</math>, <math>px = q</math>, and <math>x/p = q</math> for cases in which <math>p</math>, <math>q</math>, and <math>x</math> are all rational numbers to solve real-world and mathematical problems with only one unknown quantity</li> <li>o Develop a rule for solving one and two-step equations using the inverse operations with all rational coefficients</li> <li>o Solve and write equations for real-world mathematical problems containing one unknown <ul style="list-style-type: none"> <li>★ Determine the value of an expression that makes the equation true</li> <li>★ Given a simple context, write and/or solve one step linear equations</li> <li>★ Write and/or solve one step linear equations where the given information can be simplified to a form given in the standard</li> </ul> </li> </ul>	<p>Holt: 2-5, 2-6, 2-7, 2-8, 5-4, 5-7  Mathematical Practices: 1, 2, 3, 4, 7  Flipbook: Pg. 42</p>	<p>Inverse operation, Constant, Variable, Solution, Equation</p>
<p>➡<b>6.EE.A.3</b>  <b>Apply the properties of operations to generate equivalent expressions.</b></p> <p><i>For example, apply the Distributive Property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>.</i></p>	<ul style="list-style-type: none"> <li>o Generate equivalent expressions using the properties of operations (emphasize Distributive Property)</li> <li>o Combining like terms with variables and positive and negative coefficients (operations exponents, positive and negative constants)</li> <li>★ Given an expression, construct an equivalent expression</li> </ul>	<p>Holt: 1-5  Mathematical Practices: 2, 3, 4, 6, 7  Flipbook: Pg. 36</p> <p><i>Supplement with</i>  <u><i>About Teaching Mathematics A K-8 Resource 3rd Edition Marilyn Burns Pgs. 144-156</i></u>  <u><i>Engage NY Module 4 Lessons 11-12</i></u></p>	<p>Like terms, Coefficient, Constant, Distributive Property, Inverse operations, Equivalent expressions</p>

Quarter Taught				Essential Standards(➡Grade Level Guaranteed Standards)
1	2	3	4	Ratios and Proportions (RP):
X				<b>6.RP.A.1</b> – Understand the concept of a ratio as comparing two quantities multiplicatively or joining/composing the two quantities in a way that preserves a multiplicative relationship. Use ratio language to describe a ratio relationship between two quantities.
X		X		➡ <b>6.RP.A.3</b> – Use ratio and rate reasoning to solve mathematical problems and problems in real-world context (e.g., by reasoning about data collected from measurements, tables of equivalent ratios, tape diagrams, double number line diagrams, or equations). a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity). Solve percent problems with the unknown in all positions of the equation. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
				The Number System (NS):
X				<b>6.NS.A.1</b> – Interpret and compute quotients of fractions to solve mathematical problems and problems in real-world context involving division of fractions by fractions using visual fraction models and equations to represent the problem.
X	X	X	X	➡ <b>6.NS.B.2</b> – Fluently divide multi-digit numbers using the standard algorithm.
X	X	X	X	➡ <b>6.NS.B.3</b> – Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.
X				<b>6.NS.B.4</b> – Use previous understanding of factors to find the greatest common factor and the least common multiple. a. Find the greatest common factor of two whole numbers less than or equal to 100. b. Find the least common multiple of two whole numbers less than or equal to 12. c. Use the Distributive Property to express a sum of two whole numbers 1 to 100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
				Expressions and Equations (EE):
X	X	X	X	➡ <b>6.EE.A.2</b> – Write, read, and evaluate algebraic expressions. a. Write expressions that record operations with numbers and variables. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity. c. Evaluate expressions given specific values of their variables. Include expressions that arise from formulas used to solve mathematical problems and problems in real-world context. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
	X		X	➡ <b>6.EE.A.3</b> – Apply the properties of operations to generate equivalent expressions.
	X		X	➡ <b>6.EE.B.7</b> – Solve mathematical problems and problems in real-world context by writing and solving equations of the form $x + p = q$ , $x - p = q$ , $px = q$ , and $x/p = q$ for cases in which $p$ , $q$ and $x$ are all non-negative rational numbers.
	X			<b>6.EE.B.8</b> – Write an inequality of the form $x > c$ , $x < c$ , $x \geq c$ , or $x \leq c$ to represent a constraint or condition to solve mathematical problems and problems in real-world context. Recognize that inequalities have infinitely many solutions; represent solutions of such inequalities on number lines.
		X		<b>6.EE.C.9</b> – Use variables to represent two quantities that change in relationship to one another to solve mathematical problems and problems in real-world context. Write an equation to express one quantity (the dependent variable) in terms of the other quantity (the independent variable). Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
				Geometry (G):
		X		<b>6.G.A.2</b> – Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Understand and use the formula $V = B \times h$ , where in this case, $B$ is the area of the base ( $B = l \times w$ ) to find volumes of right rectangular prisms with fractional edge lengths in mathematical problems and problems in real-world context.
				Statistics and Probability (SP):
		X	X	<b>6.SP.A.2</b> – Understand that a set of data collected to answer a statistical question has a distribution whose general characteristics can be described by its center, spread, and overall shape.

Quarter Taught				Supporting Standards
1	2	3	4	Ratios and Proportions (RP):
X				6.RP.A.2 – Understand the concept of a unit rate $a/b$ associated with a ratio $a : b$ with $b \neq 0$ , and use rate language (e.g., for every, for each, for each 1, per) in the context of a ratio relationship. (Complex fraction notation is not an expectation for unit rates in this grade level.)
				The Number System (NS):
	X			6.NS.C.5 – Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world context, explaining the meaning of 0 in each situation.
	X			6.NS.C.6 – Understand a rational number can be represented as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
	X	X		6.NS.C.7 – Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line. b. Write, interpret, and explain statements of order for rational numbers in real-world context. c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in real-world context. d. Distinguish comparisons of absolute value from statements about order in mathematical problems and problems in real-world context.
		X		6.NS.C.8 – Solve mathematical problems and problems in real-world context by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
				Expressions and Equations (EE):
X				6.EE.A.1 – Write and evaluate numerical expressions involving whole-number exponents.
	X			6.EE.A.4 – Identify when two expressions are equivalent.
	X			6.EE.B.5 – Understand solving an equation or inequality as a process of reasoning to find the value(s) of the variables that make that equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
X				6.EE.B.6 – Use variables to represent numbers and write expressions when solving mathematical problems and problems in real-world context; understand that a variable can represent an unknown number or any number in a specified set.
				Geometry (G):
	X			6.G.A.1 – Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques to solve mathematical problems and problems in real-world context.
		X		6.G.A.3 – Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques to solve mathematical problems and problems in a real-world context.
		X		6.G.A.4 – Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques to solve mathematical problems and problems in real-world context.
				Statistics and Probability (SP):
			X	6.SP.A.1 – Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for variability in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
			X	6.SP.A.3 – Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation uses a single number to describe the spread of the data set.
			X	6.SP.B.4 – Display and interpret numerical data by creating plots on a number line including histograms, dot plots, and box plots.
			X	6.SP.B.5 – Summarize numerical data sets in relation to their context by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.