

**Matanuska-Susitna Borough School District  
7<sup>th</sup> Grade Math Standards**

**MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR GRADE 7**

Students should spend the large majority of their time on the major work of the grade (■) Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade. Please click on link for reference website: [Student Achievement Partners \(SAP\)](#)

<b>Key:</b>	<b>■ Major Clusters</b>	<b>□ Supporting Clusters</b>	<b>○ Additional Clusters</b>	
7.RP.A	■			Analyze proportional relationships and use them to solve real-world and mathematical problems.
7.NS.A	■			Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
7.EE.A	■			Use properties of operations to generate equivalent expressions.
7.EE.B	■			Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
7.G.A			○	Draw, construct and describe geometrical figures and describe the relationships between them.
7.G.B			○	Solve real-life and mathematical problems involving angle measurement, area, surface area, and volume.
7.SP.A		□		Use random sampling to draw inferences about a population.
7.SP.B			○	Draw informal comparative inferences about two populations.
7.SP.C		□		Investigate change processes and develop, use, and evaluate probability models.

**1<sup>st</sup> Semester**

**2<sup>nd</sup> Semester**

**Ready Classroom Standards/Lessons Alignment Coming Soon**

**Matanuska-Susitna Borough School District**  
**7<sup>th</sup> Grade Ready Classroom Textbook to Curriculum Map Alignment for State of Alaska Standards**

**The Number System**

Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

Clusters	State of Alaska Standards	Ready Classroom Lessons	Additional Resources
<p><b>Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</b></p>	<p><b>7.NS.1</b> Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>a. Show that a number and its opposite have a sum of 0 (additive inverses). Describe situations in which opposite quantities combine to make 0. <i>For example: A hydrogen atom has 0 charge because its two constituents are oppositely charged.</i></p> <p>b. Understand <math>p+q</math> as the number located a distance <math> q </math> from <math>p</math>, in the positive or negative direction depending on whether <math>q</math> is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>c. Understand subtraction of rational numbers as adding the additive inverse, <math>p - q = p + (-q)</math>. Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world contexts.</p> <p>d. Apply properties of operations as strategies to add and subtract rational numbers.</p>	<p><b>7.NS.1</b>  <b>Lesson 7:</b> Understand Addition with Negative Integers  <b>Lesson 8:</b> Add with Negative Numbers  <b>Lesson 9:</b> Understand Subtraction with Negative Integers  <b>Lesson 10:</b> Add and Subtract Positive and Negative Numbers</p> <p><b>Math in Action:</b> 203-216</p> <p><b>Additional Content:</b>  Lesson 14: Use the Four Operations with Negative Numbers</p> <p><b>7.NS.1 a</b>  <b>Lesson 7:</b> Understand Addition with Negative Integers  <b>Additional Content:</b>  Lesson 8: Add with Negative Numbers; Lesson 10: Add and Subtract Positive and Negative Numbers</p> <p><b>7.NS.1 b</b>  <b>Lesson 7</b>  <b>Additional Content:</b>  Lesson 8: Add with Negative Numbers; Lesson 10: Add and Subtract Positive and Negative Numbers</p> <p><b>7.NS.1 c</b>  <b>Lesson 9:</b> Understand Subtraction with Negative Integers  <b>Additional Content:</b>  Lesson 10: Add and Subtract Positive and Negative Numbers</p>	<p><b>7.NS.1</b>  <b>Illustrative Mathematics</b>  Comparing Freezing Points  Operations on the number line  Distances on the Number Line 2  Rounding and Subtracting Distances Between Houses  Differences and Distances  Differences of Integers</p> <p><b>Mathematics Assessment Project</b>  A11: Division (TASK)  E03: A Day Out (TASK)  E11: Taxi Cabs (TASK)</p>

		<p><b>7.NS.1 d</b>  <b>Lesson 8:</b> Add with Negative Numbers  <u><b>Additional Content:</b></u>  Lesson 9: Understand Subtraction with Negative Integers;  Lesson 15: Write Equivalent Expressions Involving Rational Numbers; Lesson 17: Understand Multi- Step Equations</p>	
	<p><b>7.NS.2</b> Apply and extend previous understanding of multiplication and division and of fractions to multiply and divide rational numbers and use equivalent representations.</p> <p>a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as <math>(-1)(-1) = 1</math> and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If <math>p</math> and <math>q</math> are integers, then <math>-(p/q) = (-p)/q = p/(-q)</math>. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>c. Apply and name properties of operations used as strategies to multiply and divide rational numbers.</p> <p>d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p> <p>e. Convert between equivalent fractions, decimals, or percent.</p>	<p><b>7.NS.2</b>  <b>Lesson 11:</b> Understand Multiplication with Negative Integers  <b>Lesson 12:</b> Multiply and Divide with Negative Numbers  <b>Lesson 13:</b> Express Rational Numbers as Terminating or Repeating Decimals</p> <p><b>Math in Action:</b> 291-304</p> <p><u><b>Additional Content:</b></u>  Lesson 30: Understand Probability</p> <p><b>7.NS.2 a</b>  <b>Lesson 11:</b> Understand Multiplication with Negative  <u><b>Additional Content:</b></u>  Lesson 12: Multiply and Divide with Negative Numbers</p> <p><b>7.NS.2 b</b>  <b>Lesson 12:</b> Multiply and Divide with Negative Numbers  <u><b>Additional Content:</b></u>  Lesson 11: Understand Multiplication with Negative Integers</p> <p><b>7.NS.2 c</b>  <b>Lesson 12</b>  <u><b>Additional Content:</b></u>  Lesson 14: Use the Four Operations with Negative Numbers; Lesson 15: Write Equivalent Expressions Involving Rational Numbers; Lesson 17: Understand Multi- Step Equations</p> <p><b>7.NS.2 d</b>  <b>Lesson 13:</b> Express Rational Numbers as Terminating or Repeating Decimals  <u><b>Additional Content:</b></u>  Lesson 30: Understand Probability</p>	<p><b>7.NS.2</b>  <b>Illustrative Mathematics</b>  Distributive Property of Multiplication  Equivalent fractions approach to non-repeating decimal  Repeating decimal as approximation  Decimal Expansions of Fraction</p> <p><b>Inside Mathematics</b>  Cat food (7.NS.2, 7.RP1-3)</p>

		<p><b>7.NS.2 e</b>  <b>Lesson 20:</b> Solve Problems Involving Percents  <b>Lesson 21:</b> Solve Problems Involving Percent Change and Percent Error  <b>Lesson 23:</b> Reason About Random Samples</p> <p><b>Math in Action:</b> 403-416</p> <p><i>For related content, see:</i>  <b>Grade 6:</b>  <b>Lesson 17:</b> Understand Percents  <b>Lesson 18:</b> Use Percents to Solve Problems</p> <p><b>Grade 5:</b>  <b>Lesson 8:</b> Read and Write Decimals</p>	
	<p><b>7.NS.3</b> Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) <i>For example: Use models, explanations, number lines, real life situations, describing or illustrating the effect of arithmetic operations on rational numbers (fractions, decimals).</i></p>	<p><b>7.NS.3</b>  <b>Lesson 14:</b> Use the Four Operations with Negative Numbers</p> <p><b>Math in Action:</b> 291-304</p> <p><b>Additional Content:</b>  Lesson 15: Write Equivalent Expressions Involving Rational Numbers; Lesson 20: Solve Problems Involving Percents; Lesson 21: Solve Problems Involving Percent Change and Percent Error; Lesson 24: Compare Populations; Lesson 25: Solve Problems Involving Area and Surface Area; Lesson 26: Solve Problems Involving Volume</p>	<p><b>7.NS.3</b>  <b>Illustrative Mathematics</b>  Sharing prize Money  <b>Inside mathematics</b>  Cereal (7.NS.2-3, 7.RP1-3)  <b>Mathematics</b>  <b>Assessment Project</b>  Using Positive and Negative Numbers in Context FAL (7.NS.1 and 3)  Increasing and Decreasing Quantities by a Percent FAL (7.RP)</p>

### Ratios and Proportional Relationships

Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

Clusters	State of Alaska Standards	Ready Classroom Lessons	Additional Resources
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<p><b>Analyze proportional relationships and use them to solve real-world and mathematical problems.</b></p>	<p><b>7.RP.1</b> Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example: If a person walks <math>\frac{1}{2}</math> mile in each <math>\frac{1}{4}</math> hour, compute the unit rate as the complex fraction <math>\frac{1/2}{1/4}</math> miles per hour, equivalently 2 miles per hour or apply a given scale factor to find missing dimensions of similar figures.</i></p>	<p><b>7.RP.1</b>  <b>Lesson 2:</b> Find Unit Rates Involving Ratios of Fractions</p> <p><b>Math in Action:</b> 119-132</p> <p><b>Additional Content:</b>  Lesson 4: Represent Proportional Relationships  Lesson 5: Solve Proportional Relationship Problems</p>	<p><b>7.RP.1</b>  <b>Illustrative Mathematics</b>  Track Practice  Molly’s Run  Cooking with the Whole Cup  Assessment Variation</p>
	<p><b>7.RP.2</b> Recognize and represent proportional relationships between quantities. Make basic inferences or logical predictions from proportional relationships.</p> <p>a. Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).</p> <p>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships in real world situations.</p> <p>c. Represent proportional relationships by equations and multiple representations such as tables, graphs, diagrams, sequences, and contextual situations. <i>For example, if total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</i></p> <p>d. Understand the concept of unit rate and show it on a coordinate plane. Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</p>	<p><b>7.RP.2</b>  <b>Lesson 3:</b> Understand Proportional Relationships  <b>Lesson 4:</b> Represent Proportional Relationships  <b>Lesson 5:</b> Solve Proportional Relationship Problems</p> <p><b>Additional Content:</b>  Lesson 1: Solve Problems Involving Scale  Lesson 6: Solve Area and Circumference Problems Involving Circles</p> <p><b>7.RP.2 a</b>  <b>Lesson 4:</b> Represent Proportional Relationships  <b>Math in Action:</b> 119-132  <b>Additional Content:</b>  Lesson 5: Solve Proportional Relationship Problems</p> <p><b>7.RP.2 b</b>  <b>Lesson 3:</b> Understand Proportional Relationships  <b>Lesson 4:</b> Represent Proportional Relationships  <b>Lesson 5:</b> Solve Proportional Relationship Problems</p> <p><b>Additional Content:</b>  Lesson 1: Solve Problems Involving Scale</p> <p><b>7.RP.2 c</b>  <b>Lesson 3:</b> Understand Proportional Relationships</p> <p><b>Additional Content:</b>  Lesson 4: Represent Proportional Relationships  Lesson 5: Solve Proportional Relationship Problems</p> <p><b>7.RP.2 d</b>  <b>Lesson 4:</b> Represent Proportional Relationships</p>	<p><b>7.RP.2</b>  <b>Illustrative Mathematics</b>  Music Companies  Variation 1 Art Class  Buying Coffee  Robot Races  Sore Throats  <b>Mathematics</b>  <b>Assessment Project</b>  Proportion and Non-proportion  Situations FAL  E05: Ice Cream (TASK)</p>

		<b>Math in Action:</b> 119-132	
	<b>7.RP.3</b> Use proportional relationships to solve multistep ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i>	<b>7.RP.3</b> <b>Lesson 5:</b> Solve Proportional Relationship Problems <b>Lesson 20:</b> Solve Problems Involving Percents <b>Lesson 21:</b> Solve Problems Involving Percent Change and Percent Error  <b>Math in Action:</b> 119-132; 525-538  <u><b>Additional Content:</b></u> Lesson 23: Reason About Random Samples; Lesson 24: Compare Populations; Lesson 31: Lesson 31: Solve Problems Involving Experimental Probability	<b>7.RP.3</b> <b>Mathematics Assessment Project</b> Modeling: A Race_FAL <b>7.RP.1 - 3</b> <b>Inside Mathematics</b> Lawn mowing Mixing paints Photographs

### Expressions and Equations

Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percentages as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, division including expanding linear expressions with rational coefficient, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

Clusters	State of Alaska Standards	Ready Classroom Lessons	Additional Resources
<b>Use properties of operations to generate equivalent expressions.</b>	<b>7.EE.1</b> Apply properties of operations as strategies to add, subtract, factor, and expand and simplify linear expressions with rational coefficients.	<b>7.EE.1</b> <b>Lesson 15:</b> Write Equivalent Expressions Involving Rational Numbers  <b>Math in Action:</b> 403-416  <u><b>Additional Content:</b></u> Lesson 16: Understand Reasons for Rewriting Expressions; Lesson 17: Understand Multi-Step Equations; Lesson 18: Write and Solve Multi-Step Equations; Lesson 19: Write and Solve Inequalities	<b>7.EE.1</b> <b>Illustrative Mathematics</b> Miles to Kilometers Equivalent Expressions? Writing Expressions <b>Mathematics Assessment Project</b> A12: Facing (TASK)
	<b>7.EE.2</b> Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example: <math>a + 0.05a = 1.05a</math> means that “increase by 5%” is the same as “multiply by 1.05.”</i>	<b>7.EE.2</b> <b>Lesson 16:</b> Understand Reasons for Rewriting Expressions  <b>Math in Action:</b> 403-416	<b>7.EE.2</b> <b>Illustrative Mathematics</b> Ticket to Ride <b>Inside Mathematics</b> The Wheel Shop

		<p><b>Additional Content:</b> Lesson 6: Solve Area and Circumference Problems Involving Circles; Lesson 15: Write Equivalent Expressions Involving Rational Numbers; Lesson 20: Solve Problems Involving Percents; Lesson 25: Solve Problems Involving Area and Surface Area; Lesson 26: Solve Problems Involving Volume</p>	
<p><b>7.EE.3</b> Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form and assess the reasonableness of answers using mental computation and estimation strategies. <i>For example: If a woman making \$25 an hour gets a 10% raise, she will make an addition 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. if you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</i></p>	<p><b>7.EE.3</b> <b>Lesson 13:</b> Express Rational Numbers as Terminating or Repeating Decimals <b>Lesson 14:</b> Use the Four Operations with Negative Numbers</p> <p><b>Math in Action:</b> 291-304</p> <p><b>Additional Content:</b> Lesson 7: Understand Addition with Negative Integers; Lesson 8: Add with Negative Numbers; Lesson 9: Understand Subtraction with Negative Integers; Lesson 10: Add and Subtract Positive and Negative Numbers; Lesson 11: Understand Multiplication with Negative Integers; Lesson 12: Multiply and Divide with Negative Numbers; Lesson 18: Write and Solve Multi-Step Equations; Lesson 19: Write and Solve Inequalities; Lesson 20: Solve Problems Involving Percents; Lesson 21: Solve Problems Involving Percent Change and Percent Error; Lesson 24: Compare Populations; Lesson 25: Solve Problems Involving Area and Surface Area; Lesson 26: Solve Problems Involving Volume; Lesson 28: Find Unknown Angle Measures</p>	<p><b>7.EE.3</b> <b>Illustrative mathematics</b> Shrinking Discounted Books Anna in D.C. (+7.RP) Who is the better batter?</p>	
<p><b>7.EE.4.</b> Use variables to represent quantities in a real-world or mathematical problem and construct multi-step equations and inequalities to solve problems by reasoning about the quantities.</p> <p>a. Solve word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math> where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers. <i>For example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i></p> <p>b. Solve word problems leading to inequalities of the form <math>px + q &gt; r</math> or <math>px + q &lt; r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. <i>For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you</i></p>	<p><b>7.EE.4</b> <b>Lesson 17:</b> Understand Multi-Step Equations <b>Lesson 18:</b> Write and Solve Multi-Step Equations <b>Lesson 19:</b> Write and Solve Inequalities</p> <p><b>Math in Action:</b> 403-416</p> <p><b>Additional Content:</b> Lesson 1: Solve Problems Involving Scale; Lesson 5: Solve Proportional Relationship Problems; Lesson 16: Understand Reasons for Rewriting Expressions; Lesson 25: Solve Problems Involving Area and Surface Area; Lesson 26: Solve Problems Involving Volume; Lesson 28: Find Unknown Angle Measures</p>	<p><b>7.EE.4</b> <b>Illustrative Mathematics</b> Guess My Number Fishing Adventures 1 Gotham City Taxis Bookstore Account Sports Equipment Set <b>Inside Mathematics</b> Toy trains <b>Mathematics Assessment Project</b> Steps to Solving Equations FAL Modeling: Hot or cold FAL</p>	

	want your pay to be at least \$100. Write an inequality for the number of sales you need to make and describe the solutions.	<b>7.EE.4 a</b> <b>Lesson 18:</b> Write and Solve Multi-Step Equations  <b>7.EE.4 b</b> <b>Lesson 19:</b> Write and Solve Inequalities <u><b>Additional Content:</b></u> Lesson 29: Draw Plane Figures with Given Conditions	
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### Geometry, Statistics and Probability

Students solve problems involving the area and circumference of a circle and surface area of three-dimensional objects. Students reason about relations among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Students build on their work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences. They end the units working on probability.

Clusters	State of Alaska Standards	Ready Classroom Lessons	Additional Resources
<b>Additional Area:</b> <b>Draw, construct, and describe geometrical figures and describe the relationships between them.</b>	7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing, and reproducing a scale drawing at a different scale.	<b>7.G.1</b> <b>Lesson 1:</b> Solve Problems Involving Scale  <u><b>Additional Content:</b></u> Lesson 2: Find Unit Rates Involving Ratios of Fractions; Lesson 29: Draw Plane Figures with Given Conditions	<b>7.G.1</b> <b>Illustrative Mathematics</b> Floor Plan Map Distance
	7.G.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes including polygons and circles with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	<b>7.G.2</b> <b>Lesson 29:</b> Draw Plane Figures with Given Conditions  <b>Math in Action:</b> 657-670	<b>7.G.3</b> <b>Illustrative Mathematics</b> Cube Ninjas!
	7.G.3 Describe the two-dimensional figures, i.e., cross-section, that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	<b>7.G.3</b> <b>Lesson 27:</b> Describe Plane Sections of Three-Dimensional Figures	<b>7.G.1 - 3</b> <b>Mathematics</b> <b>Assessment Project</b> Describing Quadrilaterals FAL
<b>Supporting Area:</b> <b>Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</b>	7.G.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	<b>7.G.4</b> <b>Lesson 6:</b> Solve Area and Circumference Problems Involving Circles  <b>Math in Action:</b> 119-132  <u><b>Additional Content:</b></u> Lesson 25: Solve Problems Involving Area and Surface Area; Lesson 26: Solve Problems Involving Volume	<b>7.G.4</b> <b>Illustrative Mathematics</b> Eight Circles Designs Stained Glass



	<p><b>7.G.5</b> Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.</p>	<p><b>7.G.5</b> <b>Lesson 28:</b> Find Unknown Angle Measures <b>Math in Action:</b> 657-670</p>	
	<p><b>7.G.6</b> Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p>	<p><b>7.G.6</b> <b>Lesson 25:</b> Solve Problems Involving Area and Surface Area <b>Lesson 26:</b> Solve Problems Involving Volume <b>Math in Action:</b> 657-670  <b><u>Additional Content:</u></b> Lesson 6: Solve Area and Circumference Problems Involving Circles; Lesson 15: Write Equivalent Expressions Involving Rational Numbers; Lesson 16: Understand Reasons for Rewriting Expressions</p>	<p><b>7.G.6</b> <b>Illustrative Mathematics</b> 7.RP and 7.G Sand Under the Swing Set</p>
<p><b>Supporting Area:</b> <b>Use random sampling to draw inferences about a population.</b></p>	<p><b>7.SP.1.</b> Understand that statistics can be used to gain information about a population by examining a reasonably sized sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p>	<p><b>7.SP.1</b> <b>Lesson 22:</b> Understand Random Sampling <b>Math in Action:</b> 525-534  <b><u>Additional Content:</u></b> Lesson 23: Reason About Random Samples Lesson 24: Compare Populations</p>	<p><b>7.SP.1</b> <b>Illustrative Mathematics</b> Mr. Brigg’s Class Likes Math</p>
	<p><b>7.SP.2.</b> Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. <i>For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</i></p>	<p><b>7.SP.2</b> <b>Lesson 23:</b> Reason About Random Samples <b>Math in Action:</b> 525-534  <b><u>Additional Content:</u></b> Lesson 22: Understand Random Sampling</p>	<p><b>7.SP.2</b> <b>Illustrative Mathematics</b> Valentine Marbles <b>Mathematics Assessment Project</b> Estimating: Counting Trees FAL</p>
<p><b>Additional Area:</b> <b>Draw informal comparative inferences about two populations.</b></p>	<p><b>7.SP.3.</b> Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. <i>For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</i></p>	<p><b>7.SP.3</b> <b>Lesson 24:</b> Compare Populations <b>Math in Action:</b> 525-534</p>	<p><b>7.SP.3 - 4</b> <b>Illustrative Mathematics</b> 7.SP.3, 4-Offensive Linemen 7.SP.3, 4-College Athletes</p>

	<p><b>7.SP.4.</b> Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. <i>For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</i></p>	<p><b>7.SP.4</b>  <b>Lesson 24:</b> Compare Populations  <b>Math in Action:</b> 525-534</p>	<p><b>7.SP.3 - 4</b>  <b>Mathematics</b>  <b>Assessment Project</b>  7.SP.3 - 4-Comparing Data FAL</p>
<p><b>Supporting Area:</b>  <b>Investigate chance processes and develop, use, and evaluate probability models.</b></p>	<p><b>7.SP.5.</b> Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p>	<p><b>7.SP.5</b>  <b>Lesson 30:</b> Understand Probability  <b>Math in Action:</b> 757-770  <u><b>Additional Content:</b></u>  Lesson 31: Solve Problems Involving Experimental Probability; Lesson 32: Solve Problems Involving Probability Models; Lesson 33: Solve Problems Involving Compound Events</p>	
	<p><b>7.SP.6.</b> Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. <i>For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.</i></p>	<p><b>7.SP.6</b>  <b>Lesson 30:</b> Understand Probability  <b>Math in Action:</b> 757-770  <u><b>Additional Content:</b></u>  Lesson 31: Solve Problems Involving Experimental Probability; Lesson 32: Solve Problems Involving Probability Models; Lesson 33: Solve Problems Involving Compound Events</p>	<p><b>7.SP.6</b>  <b>Illustrative Mathematics</b>  7.SP.6 Tossing Cylinders  7.SP.6 Heads or Tails  7.SP.7a How Many Buttons?  7.SP.6 - 7 Rolling Dice</p>
	<p><b>7.SP.7.</b> Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.  a. Design a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events. <i>For example: If a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</i>  b. Design a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. <i>For example: Find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning</i></p>	<p><b>7.SP.7</b>  <b>Lesson 30:</b> Understand Probability  <b>Math in Action:</b> 757-770  <u><b>Additional Content:</b></u>  Lesson 31: Solve Problems Involving Experimental Probability; Lesson 32: Solve Problems Involving Probability Models; Lesson 33: Solve Problems Involving Compound Events    <b>7.SP.7 a</b>  <b>Lesson 30:</b> Understand Probability  <b>Math in Action:</b> 757-770  <u><b>Additional Content:</b></u></p>	

	<p><i>penny appear to be equally likely based on the observed frequencies?</i></p>	<p>Lesson 31: Solve Problems Involving Experimental Probability; Lesson 32: Solve Problems Involving Probability Models; Lesson 33: Solve Problems Involving Compound Events</p> <p><b>7.SP.7 b</b>  <b>Lesson 31:</b> Solve Problems Involving Experimental Probability  <b>Lesson 32:</b> Solve Problems Involving Probability Models</p>	
	<p><b>7. SP.8.</b> Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>b. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c. Design and use a simulation to generate frequencies for compound events. <i>For example: Use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?</i></p>	<p><b>7.SP.8</b>  <b>Lesson 33:</b> Solve Problems Involving Compound Events</p> <p><b>Math in Action:</b> 757-770</p> <p><b>7.SP.8 a</b>  <b>Lesson 33:</b> Solve Problems Involving Compound Events</p> <p><b>7.SP.8 b</b>  <b>Lesson 33:</b> Solve Problems Involving Compound Events</p> <p><b>Math in Action:</b> 757-770</p> <p><b>7.SP.8 c</b>  <b>Lesson 33:</b> Solve Problems Involving Compound Events</p> <p><b>Math in Action:</b> 757-770</p>	<p><b>7.SP.8</b>  <b>Illustrative Mathematics</b>  7.SP.8 Waiting Times  7.SP.8 Rolling Twice  7.SP.8 Red, Green, or Blue?</p> <p><b>Mathematics Assessment Project</b>  7.SP.5 - 8  Evaluating Statements About Probability FAL  Probability Games FAL</p>