



# Ready® Mathematics

2020

to the

2018 Arizona Mathematics  
Standards

Grades 6-8



Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>GRADE 6</b>		
<b>6.RP</b>	<b>Ratio and Proportion</b>	
<b>6.RP.A</b>	<b>Understand ratio concepts and use ratio reasoning to solve problems.</b>	
6.RP.A.1	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.	<b>Lesson 1: Ratios</b>  <b><u>Additional Content</u></b> Lesson 2: <i>Understand</i> Unit Rate
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.)	<b>Lesson 2: <i>Understand</i> Unit Rate</b>
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).	
6.RP.A.3a	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>Lesson 3: Equivalent Ratios</b>  <b><u>Additional Content:</u></b> Lesson 2: <i>Understand</i> Unit Rate; Lesson 5: Solve Problems with Percent

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.	<b>Lesson 4:</b> Solve Problems with Unit Rate  <b>Additional Content:</b> Lesson 2: <i>Understand</i> Unit Rate
6.RP.A.3c	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.	<b>Lesson 5:</b> Solve Problems with Percent
6.RP.A.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	<b>Lesson 4:</b> Solve Problems with Unit Rate
<b>6.NS</b>	<b>The Number System</b>	
<b>6.NS.A</b>	<b>Apply and extend previous understanding of multiplication and division to divide fractions by fractions.</b>	
6.NS.A.1	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. For example, create a story context for $\frac{2}{3} \div \frac{3}{4}$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $\frac{2}{3} \div \frac{3}{4} = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$ . In general, $\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc}$ .	<b>Lesson 6:</b> <i>Understand</i> Division with Fractions <b>Lesson 7:</b> Divide with Fractions

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>6.NS.B</b>	<b>Compute fluently with multi-digit numbers and find common factors and multiples.</b>	
6.NS.B.2	Fluently divide multi-digit numbers using a standard algorithm.	<b>Lesson 8:</b> Divide Multi-Digit Numbers
6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.	<b>Lesson 9:</b> Add and Subtract Decimals <b>Lesson 10:</b> Multiply and Divide Decimals
<b>6.NS.B.4</b>	<b>Use previous understanding of factors to find the greatest common factor and the least common multiple.</b>	
6.NS.B.4a	Find the greatest common factor of two whole numbers less than or equal to 100.	<b>Lesson 11:</b> Common Factors and Multiples
6.NS.B.4b	Find the least common multiple of two whole numbers less than or equal to 12.	<b>Lesson 11:</b> Common Factors and Multiples
6.NS.B.4c	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. For example, express $36 + 8$ as $4(9+2)$ .	<b>Lesson 11:</b> Common Factors and Multiples
<b>6.NS.C</b>	<b>Apply and extend previous understanding of numbers to the system of rational numbers.</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.	<b>Lesson 12:</b> <i>Understand</i> Positive and Negative Numbers <b>Lesson 13:</b> Absolute Value and Ordering Numbers

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>6.NS.C.6</b>	<b>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.</b>	
6.NS.C.6a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself and that 0 is its own opposite.	<b>Lesson 12:</b> <i>Understand</i> Positive and Negative Numbers  <b><u>Additional Content:</u></b> Lesson 13: Absolute Value and Ordering Numbers
6.NS.C.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	<b>Lesson 12:</b> <i>Understand</i> Positive and Negative Numbers <b>Lesson 14:</b> The Coordinate Plane
6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	<b>Lesson 14:</b> The Coordinate Plane  <b><u>Additional Content:</u></b> Lesson 12: <i>Understand</i> Positive and Negative Numbers; Lesson 13: Absolute Value and Ordering Numbers
<b>6.NS.C.7</b>	<b>Understand ordering and absolute value of rational numbers.</b>	
6.NS.C.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line.	<b>Lesson 13:</b> Absolute Value and Ordering  <b><u>Additional Content:</u></b> Lesson 12: <i>Understand</i> Positive and Negative Numbers; Lesson 20: Solving Inequalities

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world context.	<b>Lesson 13:</b> Absolute Value and Ordering  <b><u>Additional Content:</u></b> Lesson 12: <i>Understand</i> Postive and Negative
6.NS.C.7c	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.	<b>Lesson 13:</b> Absolute Value and Ordering  <b><u>Additional Content:</u></b> Lesson 14: The Coordinate Plane
6.NS.C.7d	Distinguish comparisons of absolute value from statements about order in mathematical problems and problems in real-world context.	<b>Lesson 13:</b> Absolute Value and Ordering
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.	<b>Lesson 14:</b> The Coordinate Plane
<b>6.EE</b>	<b>Expressions and Equations</b>	
<b>6.EE.A</b>	<b>Apply and extend previous understanding of arithmetic to algebraic expressions.</b>	
6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.	<b>Lesson 15:</b> Numerical Expressions with Exponents
<b>6.EE.A.2</b>	<b>Write, read, and evaluate algebraic expressions.</b>	
6.EE.A.2a	Write expressions that record operations with numbers and variables.	<b>Lesson 16:</b> Algebraic Expressions

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
6.EE.A.2b	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>Lesson 16:</b> Algebraic Expressions
6.EE.A.2c	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>Lesson 16:</b> Algebraic Expressions
6.EE.A.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$ .	<b>Lesson 17:</b> Equivalent Expressions
6.EE.A.4	Identify when two expressions are equivalent.	<b>Lesson 17:</b> Equivalent Expressions
<b>6.EE.B</b>	<b>Reason about and solve one-variable equations and inequalities.</b>	
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.	<b>Lesson 18:</b> <i>Understand</i> Solutions to Equations <b>Lesson 20:</b> Solving Inequalities <u><b>Additional Content:</b></u> Lesson 19: Solve Equations

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
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.	<b>Lesson 19:</b> Solve Equations  <b>Additional Content:</b> Lesson 16: Algebraic Expressions; Lesson 17: Equivalent Expressions; Lesson 18: <i>Understand</i> Solutions to Equations; Lesson 20: Solving Inequalities; Lesson 21: Dependent and Independent Variables
6.EE.B.7	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.	<b>Lesson 19:</b> Solve Equations
6.EE.B.8	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.	<b>Lesson 20:</b> Solving Inequalities
<b>6.EE.C</b>	<b>Represent and analyze quantitative relationships between dependent and independent variables.</b>	
6.EE.C.9	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.	<b>Lesson 21:</b> Dependent and Independent Variables

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>6.G</b>	<b>Geometry</b>	
<b>6.G.A</b>	<b>Solve mathematical problems and problems in real-world context involving area, surface area, and volume.</b>	
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.	<b>Lesson 22:</b> Area of Polygons  <b>Additional Content:</b> Lesson 24: Nets and Surface Area
6.G.A.2	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 $V = B \cdot h$ , 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.	<b>Lesson 25:</b> Volume
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.	<b>Lesson 23:</b> Polygons in the Coordinate Plane

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
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.	<b>Lesson 24:</b> Nets and Surface Area
<b>6.SP</b>	<b>Statistics and Probability</b>	
<b>6.SP.A</b>	<b>Develop understanding of statistical variability.</b>	
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.	<b>Lesson 26:</b> <i>Understand</i> Statistical Questions
6.SP.A.2	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>Lesson 27:</b> Measures of Center and Variability  <b><u>Additional Content:</u></b> Lesson 29: Analyze Numerical Data
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.	<b>Lesson 27:</b> Measures of Center and Variability  <b><u>Additional Content:</u></b> Lesson 29: Analyze Numerical Data

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>6.SP.B</b>	<b>Summarize and describe distributions.</b>	
6.SP.B.4	Display and interpret numerical data by creating plots on a number line including histograms, dot plots, and box plots.	<b>Lesson 28:</b> Display Data on Dot Plots, Histograms, and Box Plots  <b><u>Additional Content:</u></b> Lesson 29: Analyze Numerical Data
<b>6.SP.B.5</b>	<b>Summarize numerical data sets in relation to their context by:</b>	
6.SP.B.5a	Reporting the number of observations.	<b>Lesson 29:</b> Analyze Numerical Data
6.SP.B.5b	Describing the nature of the attribute under investigation including how it was measured and its units of measurement.	<b>Lesson 29:</b> Analyze Numerical Data
6.SP.B.5c	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.	<b>Lesson 29:</b> Analyze Numerical Data  <b><u>Additional Content:</u></b> Lesson 27: Measures of Center and Variability
6.SP.B.5d	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.	<b>Lesson 29:</b> Analyze Numerical Data

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>GRADE 7</b>		
<b>7.RP</b>	<b>Ratio and Proportion</b>	
<b>7.RP.A</b>	<b>Analyze proportional relationships and use them to solve mathematical problems and problems in real-world context.</b>	
7.RP.A.1	Compute unit rates associated with ratios involving both simple and complex fractions, including ratios of quantities measured in like or different units.	<b>Lesson 9:</b> Ratios Involving Complex Fractions <b>Lesson 22:</b> Scale Drawings
<b>7.RP.A.2</b>	<b>Recognize and represent proportional relationships between quantities.</b>	
7.RP.A.2a	Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).	<b>Lesson 10:</b> <i>Understand</i> Proportional Relationships
7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	<b>Lesson 10:</b> <i>Understand</i> Proportional Relationships
7.RP.A.2c	Represent proportional relationships by equations. For example, if total cost is proportional to the number $n$ of items purchased at a constant price $p$ , the relationship between the total cost and the number of items can be expressed as $t = pn$ .	<b>Lesson 11:</b> Equations for Proportional Relationships  <b><u>Additional Content:</u></b> Lesson 12: Problem Solving with Proportional Relationships; Lesson 13: Proportional Relationships
7.RP.A.2d	Explain what a point $(x, y)$ on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where $r$ is the unit rate.	<b>Lesson 11:</b> Equations for Proportional Relationships

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.RP.A.3	Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).	<b>Lesson 12:</b> Problem Solving with Proportional Relationships <b>Lesson 13:</b> Proportional Relationships  <b><u>Additional Content:</u></b> Lesson 26: <i>Understand</i> Random Samples
<b>7.NS</b>	<b>The Number System</b>	
<b>7.NS.A</b>	<b>Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers except division by zero.</b>	
<b>7.NS.A.1</b>	<b>Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</b>	
7.NS.A.1a	Describe situations in which opposite quantities combine to make 0.	<b>Lesson 1:</b> <i>Understand</i> Addition of Positive and Negative Integers <b>Lesson 7:</b> Add and Subtract Rational Numbers
7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from $p$ , in the positive or negative direction depending on whether $q$ 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 context.	<b>Lesson 1:</b> <i>Understand</i> Addition of Positive and Negative Integers <b>Lesson 7:</b> Add and Subtract Rational Numbers

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$ . 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 context.	<p><b>Lesson 2:</b> <i>Understand</i> Subtraction of Positive Negative Integers</p> <p><b>Lesson 7:</b> Add and Subtract Rational Numbers</p> <p><b>Additional Content:</b> Lesson 3: Add and Subtract Positive and Negative Integers</p>
7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.	<p><b>Lesson 3:</b> Add and Subtract Positive and Negative Integers</p> <p><b>Lesson 7:</b> Add and Subtract Rational Numbers</p> <p><b>Additional Content:</b> Lesson 8: Solve Problems with Rational Numbers; Lesson 20: Area of Composed Figures; Lesson 21: Area and Circumference Figures; Lesson 23: Volume of Solids; Lesson 24: Surface Area of Solids</p>
<b>7.NS.A.2</b>	<b>Multiply and divide integers and other rational numbers.</b>	
7.NS.A.2a	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 $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world context.	<p><b>Lesson 4:</b> Multiply and Divide Positive and Negative Integers</p> <p><b>Lesson 6:</b> Multiply and Divide Rational Numbers</p>

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.NS.A.2b	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 $p$ and $q$ are integers, then $-(p/q) = (-p)/q = p/(-q)$ . Interpret quotients of rational numbers by describing real-world context.	<b>Lesson 4:</b> Multiply and Divide Positive and Negative Integers <b>Lesson 6:</b> Multiply and Divide Rational Numbers
7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.	<b>Lesson 4:</b> Multiply and Divide Positive and Negative Integers <b>Lesson 6:</b> Multiply and Divide Rational Numbers  <b>Additional Content:</b> Lesson 8: Solve Problems with Rational Numbers; Lesson 20; Area of Composed Figures; Lesson 21; Area and Circumference of a Circle; Lesson 24: Surface Area of Solids
7.NS.A.2d	Convert a rational number to decimal form using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats.	<b>Lesson 5:</b> Terminating and Repeating Decimals
7.NS.A.3	Solve mathematical problems and problems in real-world context involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where $a/b \div c/d$ when $a$ , $b$ , $c$ , and $d$ are all integers and $b$ , $c$ , and $d \neq 0$ .	<b>Lesson 8:</b> Solve Problems with Rational Numbers  <b>Additional Content:</b> Lesson 16: Solve Problems with Equations; Lesson 23: Volume of Solids; Lesson 24: Surface Area of Solids

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>7.EE</b>	<b>Expressions and Equations</b>	
<b>7.EE.A</b>	<b>Use properties of operations to generate equivalent expressions.</b>	
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	<b>Lesson 14:</b> Equivalent Linear Expressions  <b><u>Additional Content:</u></b> Lesson 15: Writing Linear Expressions
7.EE.A.2	Rewrite an expression in different forms, and understand the relationship between the different forms and their meanings in a problem context. For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."	<b>Lesson 15:</b> Writing Linear Expressions
<b>7.EE.B</b>	<b>Solve mathematical problems and problems in real-world context using numerical and algebraic expressions and equations.</b>	
7.EE.B.3	Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate and assess the reasonableness of answers. <i>For example, If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50 per hour.</i>	<b>Lesson 8:</b> Solve Problems with Rational Numbers; <b>Lesson 16:</b> Solve Problems with Equations <b>Lesson 17:</b> Solve Problems with Inequalities

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.EE.B.4	Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems.	
7.EE.B.4a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	<b>Lesson 16:</b> Solve Problems with Equations  <b>Additional Content:</b> Lesson 18: Problem Solving with Angles; Lesson 20: Area of Composed Figures; Lesson 21: Area and Circumference of a Circle; Lesson 24: Surface Area of Solids
7.EE.B.4b	Solve word problems leading to inequalities of the form $px + q > r$ or $ps + q < r$ , where $p$ , $q$ , and $r$ are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	<b>Lesson 17:</b> Solve Problems with Inequalities
<b>7.G</b>	<b>Geometry</b>	
<b>7.G.A</b>	<b>Draw, construct, and describe geometrical figures, and describe the relationships between them.</b>	
7.G.A.1	Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	<b>Lesson 22:</b> Scale Drawings

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.G.A.2	Draw geometric shapes with given conditions using a variety of methods. 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>Lesson 19:</b> <i>Understand</i> Conditions for Drawing Triangles
7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures.	<b>Lesson 25:</b> <i>Understand</i> Plane Sections of Prisms and Pyramids
<b>7.G.B</b>	<b>Solve mathematical problems and problems in real-world context involving angle measure, area, surface area, and volume.</b>	
7.G.B.4	Understand and use the formulas for the area and circumference of a circle to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	<b>Lesson 21:</b> Area and Circumference of a Circle
7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure.	<b>Lesson 18:</b> Problem Solving with Angles

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.G.B.6	Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Solve mathematical problems and problems in real-world context involving volume and surface area of three-dimensional objects composed of cubes and right prisms.	<b>Lesson 20:</b> Area of Composed Figures <b>Lesson 23:</b> Volume of Solids <b>Lesson 24:</b> Surface Area of Solids  <u><b>Additional Content:</b></u> Lesson 16: Solve Problems with Equations
<b>7.SP</b>	<b>Statistics and Probability</b>	
<b>7.SP.A</b>	<b>Use random sampling to draw inferences about a population.</b>	
7.SP.A.1	Understand that statistics can be used to gain information about a population by examining a 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.	<b>Lesson 26:</b> <i>Understand</i> Random Samples
7.SP.A.2	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>	<b>Lesson 27:</b> Making Statistical Inferences  <u><b>Additional Content:</b></u> Lesson 26: <i>Understand</i> Random Samples

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>7.SP.B</b>	<b>Draw informal comparative inferences about two populations.</b>	
7.SP.B.3	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>	<b>Lesson 28:</b> Using Mean and Mean Absolute Deviation to Compare Data
7.SP.B.4	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>	<b>Lesson 29:</b> Using Measures of Center and Variability to Compare Data
<b>7.SP.C</b>	<b>Investigate chance processes and develop, use and evaluate probability models.</b>	
7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	<b>Lesson 30:</b> <i>Understand</i> Probability Concepts

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
7.SP.C.6	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.	<b>Lesson 31:</b> Experimental Probability  <b>Additional Content:</b> Lesson 32: Probability Models
<b>7.SP.C.7</b>	<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.</b>	
7.SP.C.7a	Develop 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>Lesson 32:</b> Probability Models
7.SP.C.7b	Develop 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 penny appear to be equally likely based on the observed frequencies?</i>	<b>Lesson 32:</b> Probability Models

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>GRADE 8</b>		
<b>8.NS</b>	<b>The Number System</b>	
<b>8.NS.A</b>	<b>Understand that there are irrational numbers, and approximate them using rational numbers.</b>	
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion. Know that numbers whose decimal expansions do not terminate in zeros or in a repeating sequence of fixed digits are called irrational.	<b>Lesson 3:</b> <i>Understand</i> Rational and Irrational Numbers
8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers. Locate them approximately on a number line diagram, and estimate their values.	<b>Lesson 3:</b> <i>Understand</i> Rational and Irrational Numbers
8.NS.A.3	Understand that given any two distinct rational numbers, $a < b$ , there exist a rational number $c$ and an irrational number $d$ such that $a < c < b$ and $a < d < b$ . Given any two distinct irrational numbers, $a < b$ , there exist a rational number $c$ and an irrational number $d$ such that $a < c < b$ and $a < d < b$ .	<b>Lesson 3:</b> <i>Understand</i> Rational and Irrational Numbers
<b>8.EE</b>	<b>Expressions and Equations</b>	
<b>8.EE.A</b>	<b>Work with radicals and integer exponents.</b>	
8.EE.A.1	Understand and apply the properties of integer exponents to generate equivalent numerical expressions.	<b>Lesson 1:</b> Properties of Integer Exponents  <b><u>Additional Content:</u></b> Lesson 4: Scientific Notation; Lesson 5: Operations and Scientific Notation

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Know that $\sqrt{2}$ is irrational.	
8.EE.A.2a	Evaluate square roots of perfect squares less than or equal to 225.	<b>Lesson 2:</b> Square Roots and Cube Roots
8.EE.A.2b	Evaluate cube roots of perfect cubes less than or equal to 1000.	<b>Lesson 2:</b> Square Roots and Cube Roots
8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and express how many times larger or smaller one is than the other.	<b>Lesson 4:</b> Scientific Notation
8.EE.A.4	Perform operations with numbers expressed in scientific notation including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities.	<b>Lesson 5:</b> Operations and Scientific Notation

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
8.EE.B	<b>Understand the connections between proportional relationships, lines, and linear equations.</b>	
8.EE.B.5	Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i>	<b>Lesson 11:</b> Represent Proportional Relationships  <b>Additional Content:</b> Lesson 8: <i>Understand</i> Linear Functions; Lesson 12: <i>Understand</i> the Slope-Intercept Equation for a Line
8.EE.B.6	Use similar triangles to explain why the slope $m$ is the same between any two distinct points on a non-vertical line in the coordinate plane. Derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at $(0, b)$ .	<b>Lesson 12:</b> <i>Understand</i> the Slope-Intercept Equation for a Line
8.EE.C	<b>Analyze and solve linear equations, inequalities, and pairs of simultaneous linear equations.</b>	
8.EE.C.7	<b>Fluently solve linear equations and inequalities in one variable.</b>	
8.EE.C.7a	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$ , $a = a$ , or $a = b$ results (where $a$ and $b$ are different numbers).	<b>Lesson 14:</b> Solutions of Linear Equations  <b>Additional Content:</b> Lesson 8: <i>Understand</i> Linear Functions

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
8.EE.C.7b	Solve linear equations and inequalities with rational number coefficients, including solutions that require expanding expressions using the distributive property and collecting like terms.	<b>Lesson 13:</b> Solve Linear Equations with Rational Coefficients  <b>Additional Content:</b> Lesson 3: <i>Understand</i> Rational and Irrational Numbers; Lesson 14: Solutions of Linear Equations; Lesson 16: Solve Systems of Equations Algebraically; Lesson 17: Solve Problems Using Systems of Equations
<b>8.EE.C.8</b>	<b>Analyze and solve pairs of simultaneous linear equations.</b>	
8.EE.C.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	<b>Lesson 15:</b> <i>Understand</i> Systems of Equations  <b>Additional Content:</b> Lesson 16: Solve Systems of Equations Algebraically; Lesson 17: Solve Problems Using Systems of Equations
8.EE.C.8b	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations including cases of no solution and infinite number of solutions. Solve simple cases by inspection.	<b>Lesson 16:</b> Solve Systems of Equations Algebraically  <b>Additional Content:</b> Lesson 17: Solve Problems Using Systems of Equations
8.EE.C.8c	Solve mathematical problems and problems in real-world context leading to two linear equations in two variables.	<b>Lesson 17:</b> Solve Problems Using Systems of Equations

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>8.F</b>	<b>Functions</b>	
<b>8.F.A</b>	<b>Define, evaluate, and compare functions.</b>	
8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)	<b>Lesson 6:</b> <i>Understand</i> Functions
8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i>	<b>Lesson 7:</b> Compare Functions  <b><u>Additional Content:</u></b> Lesson 8: <i>Understand</i> Linear Functions; Lesson 9: Analyze Linear Functions
8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function <math>A = s^2</math> giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4), and (3,9) which are not on a straight line</i>	<b>Lesson 8:</b> <i>Understand</i> Linear Functions  <b><u>Additional Content:</u></b> Lesson 9: Analyze Linear Functions

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
<b>8.F.B</b>	<b>Use functions to model relationships between quantities.</b>	
8.F.B.4	Given a description of a situation, generate a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or a graph. Track how the values of the two quantities change together. Interpret the rate of change and initial value of a linear function in terms of the situation it models, its graph, or its table of values.	<b>Lesson 9:</b> Analyze Linear Functions  <b><u>Additional Content:</u></b> Lesson 11: Represent Proportional Relationships; Lesson 12: <i>Understand</i> the Slope-Intercept Equation for a Line; Lesson 15: <i>Understand</i> Systems of Equations; Lesson 30: Solve Problems with Linear Models
8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	<b>Lesson 10:</b> Graphs of Functional Relationships  <b><u>Additional Content:</u></b> Lesson 7: Compare Functions
<b>8.G</b>	<b>Geometry</b>	
<b>8.G.A</b>	<b>Understand congruence and similarity.</b>	
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.	<b>Lesson 18:</b> <i>Understand</i> Properties of Transformations  <b><u>Additional Content:</u></b> Lesson 19: Transformations and Congruence; Lesson 20: Transformations and Similarity

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
8.G.A.2	Understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.	<b>Lesson 19:</b> Transformations and Congruence  <b>Additional Content:</b> Lesson 18: <i>Understand</i> Properties of Transformations; Lesson 20: Transformations and Similarity
8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	<b>Lesson 19:</b> Transformations and Congruence; <b>Lesson 20:</b> Transformations and Similarity
8.G.A.4	Understand that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that demonstrates similarity.	<b>Lesson 20:</b> Transformations and Similarity
8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. <i>For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.</i>	<b>Lesson 21:</b> <i>Understand</i> Angle Relationships <b>Lesson 22:</b> <i>Understand</i> Angle Relationships in Triangles
<b>8.G.B</b>	<b>Understand and apply the Pythagorean Theorem.</b>	
8.G.B.6	Understand the Pythagorean Theorem and its converse.	<b>Lesson 23:</b> <i>Understand</i> the Pythagorean Theorem

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world context and mathematical problems in two and three dimensions.	<b>Lesson 24:</b> Solve Problems Using the Pythagorean Theorem  <b>Additional Content:</b> Lesson 23: <i>Understand</i> the Pythagorean Theorem
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	<b>Lesson 25:</b> Distance in the Coordinate Plane
<b>8.G.C</b>	<b>Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.</b>	
8.G.C.9	Understand and use formulas for volumes of cones, cylinders and spheres and use them to solve real-world context and mathematical problems.	<b>Lesson 26:</b> <i>Understand</i> Volume of Cylinders, Cones, and Spheres <b>Lesson 27:</b> Solve Problems with Cylinders, Cones, and Spheres
<b>8.SP</b>	<b>Statistics and Probability</b>	
<b>8.SP.A</b>	<b>Investigate patterns of association in bivariate data.</b>	
8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	<b>Lesson 28:</b> Scatter Plots
8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	<b>Lesson 29:</b> Scatter Plots and Linear Models  <b>Additional Content:</b> Lesson 30: Solve Problems with Linear Models

Arizona Mathematics Standards Grades 6-8		Ready Mathematics 2020 Lessons Grades 6-8
8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	<b>Lesson 30:</b> Solve Problems with Linear Models
8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	<b>Lesson 31:</b> Categorical Data in Frequency Tables
<b>8.SP.B</b>	<b>Investigate chance processes and develop, use, and evaluate probability models.</b>	
<b>8.SP.B.5</b>	<b>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</b>	
8.SP.B.5a	Understand that the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	Content not covered in Grade 8, please see Grade 7: <b>Lesson 33:</b> Probability of Compound Events
8.SP.B.5b	Represent sample spaces for compound events using organized lists, tables, tree diagrams and other methods. Identify the outcomes in the sample space which compose the event.	Content not covered in Grade 8, please see Grade 7: <b>Lesson 33:</b> Probability of Compound Events
8.SP.B.5c	Design and use a simulation to generate frequencies for compound events.	Content not covered in Grade 8, please see Grade 7: <b>Lesson 33:</b> Probability of Compound Events