

Ganado Unified School District

Pre-Algebra

PACING Guide SY 2018-2019

Timeline & Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
Fall Semester Chapter 1 The Language of Algebra Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014 and ALEKS, an online Pre-Algebra learning program	<p>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 $d \neq 0$.</p> <p>7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>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. <i>For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."</i></p> <p>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</p>	How can you use numbers and symbols to represent mathematical ideas?	<ul style="list-style-type: none"> • Use the four-step plan to solve problems. • Solve multi-step problems. • Translate verbal phrases into numerical expressions. • Use the order of operations to evaluate expressions. • Translate verbal phrases into algebraic expressions. • Evaluate expressions containing variables. • Identify and use properties of addition and multiplication. • Use properties to simplify algebraic expressions. • Use problem-solving strategies to solve nonroutine problems. • Select an appropriate strategy. • Use ordered pairs to locate points. • Use graphs to represent relations. • Use multiple representations to represent relations. • Translate among different verbal, tabular, graphical, and 	four-step plan, numerical expression, evaluate, order of operations, algebra, variable, algebraic expressions, defining a variable, Substitution Property of Equality, properties, Commutative Property, Associative Property, counterexample, simplify, deductive reasoning, look for a pattern, guess-check-and revise, make a table, work backward, coordinate system, coordinate plane, y-axis, origin, x-axis, ordered pair, x-coordinate, y-coordinate,

	<p>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></p> <p>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.</p> <p>a. 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.</p> <p>b. Solve word problems leading to inequalities of the form $px+q > r$ or $px+q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.</p> <p>7.RP.A.2.a Recognize and represent proportional relationships between quantities. 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>7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p>		<p>algebraic representations of relations.</p>	<p>graph, relation, domain, range, equation</p>
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	<p>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.</p> <p>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></p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 			
<p>Chapter 2</p> <p>Operations with Integers</p> <p>Textbook: McGraw Hill's Math Accelerated, a</p>	<p>7.NS.A.1 Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.A.1.a. Describe situations in which opposite quantities combine to make 0.</p> <p>7.NS.A.1.b. Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on</p>	<p>What happens when you add, subtract, multiply, and divide integers?</p>	<ul style="list-style-type: none"> • Compare and order integers. • Find the absolute value of an integer. • Add two integers • Add more than two integers. • Subtract integers. • Find distance on the number line. • Multiply integers. 	<p>negative number, positive number, integer, opposites, coordinate, inequality, absolute value, additive inverse, inductive reasoning,</p>

<p>Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>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.</p> <p>7.NS.A.1.c. 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> <p>7.NS.A.1.d. Apply properties of operations as strategies to add and subtract rational numbers.</p> <p>7.NS.A.2 Multiply and divide integers and other rational numbers.</p> <p>7.NS.A.2.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 $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world context.</p> <p>7.NS.A.2.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 p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world context.</p> <p>7.NS.A.2.c. Apply properties of operations as strategies to multiply and divide rational numbers.</p>		<ul style="list-style-type: none"> ● Simplify algebraic expressions. ● Divide integers. ● Find the mean (average) of a set of data. ● Graph points on a coordinate plane. ● Graph algebraic relationships. 	<p>quadrants</p>
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	<p>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 $d \neq 0$.</p> <p>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></p>			
<p>Chapter 3</p> <p>Operations with Rational Numbers</p> <p>Textbook: McGraw Hill’s Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra</p>	<p>7.NS.A.1 Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.A.1.d Apply properties of operations as strategies to add and subtract rational numbers.</p> <p>7.NS.A.2 Multiply and divide integers and other rational numbers.</p> <p>7.NS.A.2.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 $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of</p>	<p>What happens when you add, subtract, multiply, and divide rational numbers?</p> 	<ul style="list-style-type: none"> ● Write fractions as terminating or repeating decimals? ● Compare fractions and decimals. ● Write rational numbers as fractions. ● Identify and classify rational numbers. ● Multiply positive and negative fractions. ● Evaluate algebraic expressions with fractions. ● Divide positive and negative fractions using multiplicative inverses. ● Divide algebraic fractions. ● Add rational numbers with 	<p>repeating decimal, terminating decimal, bar notation, rational numbers, multiplicative inverse, reciprocal, like fractions, unlike fractions</p>

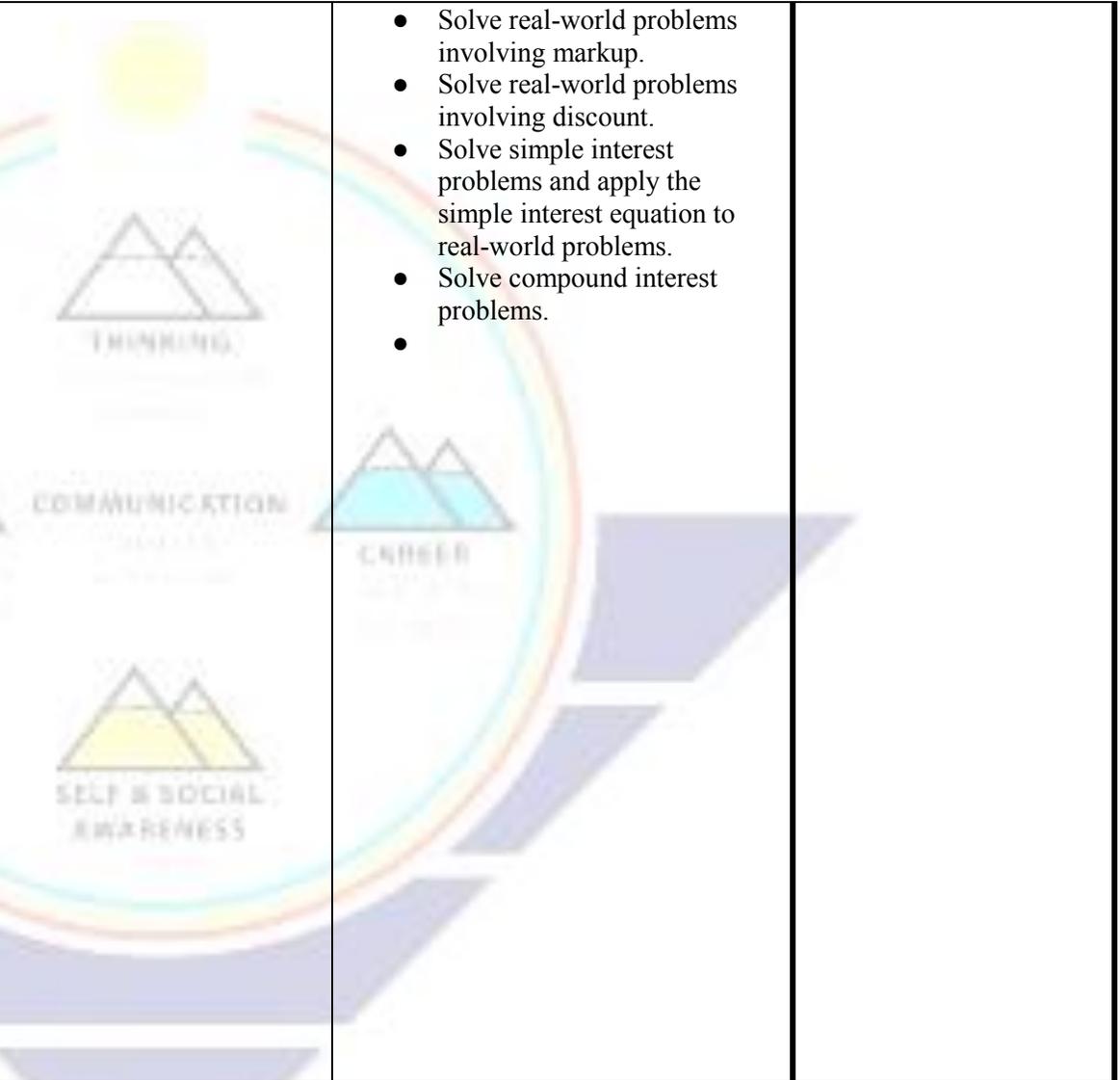
<p>learning program</p>	<p>rational numbers by describing real-world context.</p> <p>7.NS.A.2.c Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>7.NS.A.2.d Convert a rational number to decimal form using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats.</p> <p>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 $d \neq 0$.</p> <p>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></p> <p>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.</p>		<p>common denominators.</p> <ul style="list-style-type: none"> ● Subtract rational numbers with common denominators. ● Add unlike fractions. ● Subtract unlike fractions. 	
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	<p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 			
<p>Chapter 4</p> <p>Powers and Roots</p> <p>Textbook: McGraw Hill’s Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>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.</p> <p>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.</p> <p>8.EE.A.1 Understand and apply the properties of integer exponents to generate equivalent numerical expressions.</p> <p>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.</p> <ol style="list-style-type: none"> a. Evaluate square roots of perfect squares less than or equal to 225. b. Evaluate cube roots of perfect cubes less than or equal to 1000. 	<p>Why is it useful to write numbers in different ways?</p> 	<ul style="list-style-type: none"> • Write expressions using exponents. • Evaluate expressions containing exponents. • Write expressions using negative exponents. • Evaluate numerical expressions containing negative exponents. • Multiply monomials. • Divide monomials. • Express numbers in standard form and in scientific notation. • Compare and order numbers written in scientific notation. • Multiply and divide numbers in scientific notation. • Add and subtract numbers in scientific notation. • Find square roots. • Find cube roots. • Identify and compare numbers in the real number system. • Solve equations by finding square roots or cube roots. 	<p>exponent, power, base, negative exponent, monomial, standard form, scientific notation, square root, perfect square, radical sign, cube root, perfect cube, irrational number, real numbers</p>

	<p>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.</p> <p>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.</p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 			
<p>Chapter 5</p> <p>Ratio, Proportion, and Similar Figures</p> <p>Textbook: McGraw Hill's Math Accelerated, a</p>	<p>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.</p> <p>7.RP.2 Recognize and represent proportional relationships between quantities.</p> <p>7.RP.A.2.a Decide whether two quantities are in a proportional relationship (e.g., by</p>	<p>How can you identify and represent proportional relationships?</p>	<ul style="list-style-type: none"> • Write ratios as fractions in simplest form. • Simplify ratios involving measurements. • Find unit rates. • Compare and use unit rates to solve problems. • Simplify complex fractions. • Find unit rates. • Covert rates using dimensional analysis. 	<p>ratio, rate, unit rate, complex fraction, dimensional analysis, proportional, constant of proportionality, nonproportional, proportion, cross product,</p>

<p>Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>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>7.RP.A.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>7.RP.2.c Represent proportional relationships by equations. <i>For example, if total cost t 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 $t = pn$.</i></p> <p>7.RP.2.d 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.</p> <p>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).</p> <p>7.NS.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 $d \neq 0$.</p> <p>7.G.A.1 Solve problems involving scale drawings of geometric figures, such as</p>		<ul style="list-style-type: none"> ● Convert between systems of measurement. ● Identify proportional and nonproportional relationships in tables. ● Describe a proportional relational relationship using an equation. ● Identify proportional relationships. ● Analyze proportional relationships. ● Use cross products to solve proportions. ● Use the constant of proportionality to solve proportions. ● Use scale drawings. ● Construct scale drawings. ● Find missing measures of similar figures. ● Use scale factors to solve problems. ● Solve problems involving indirect measurement using shadow reckoning. ● Solve problems using surveying methods. 	<p>scale drawing, scale, scale factor, similar figures, congruent, corresponding parts, indirect measurement</p>
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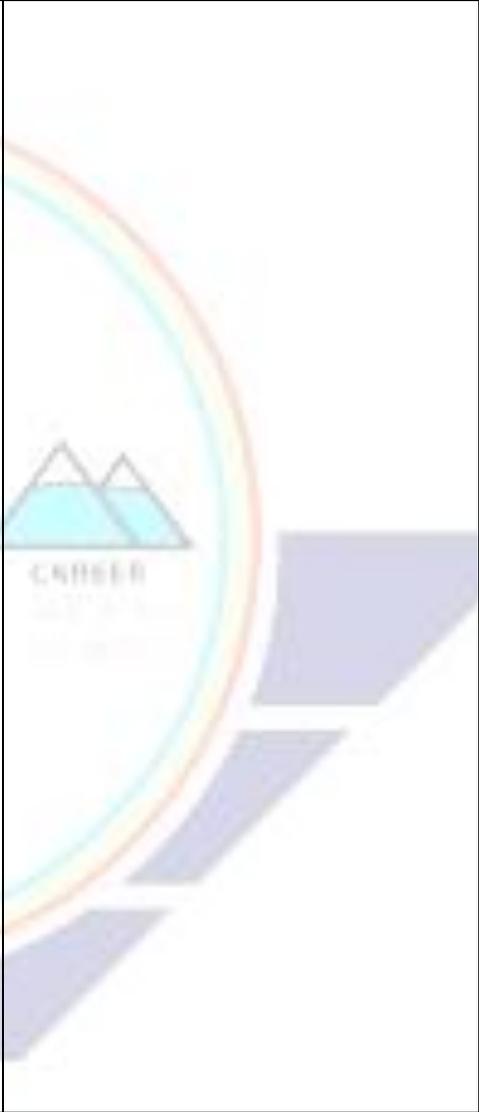
	<p>computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p> <p>8.EE.B.5 Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i></p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 			
<p>Spring Semester</p> <p>Chapter 6</p> <p>Percents</p> <p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p>	<p>7.RP.A.2 Recognize and represent proportional relationships between quantities.</p> <p>7.RP.A.2.c Represent proportional relationships by equations. <i>For example, if total cost t 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 $t = pn$.</i></p> <p>7.RP.A.3 Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax,</p>	<p>How can you use proportional relationships to solve real-world percent problems?</p>	<ul style="list-style-type: none"> ● Use the percent proportion to solve problems. ● Apply the percent proportion to real-world problems. ● Compute mentally with percents. ● Estimate with percents. ● Solve percent problems using percent equations. ● Solve real-world problems involving taxes. ● Find percent of increase and decrease. ● Find percent error. 	<p>percent proportion, percent equation, percent of change, percent of decrease, percent error, markup, selling price, discount, interest, simple interest, principal, compound interest</p>

<p>and ALEKS, an online Pre-Algebra learning program</p>	<p>markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).</p> <p>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. <i>For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."</i></p> <p>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></p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 		<ul style="list-style-type: none"> • Solve real-world problems involving markup. • Solve real-world problems involving discount. • Solve simple interest problems and apply the simple interest equation to real-world problems. • Solve compound interest problems. • 	
<p>Chapter 7</p> <p>Algebraic Expressions</p>	<p>7.NS.A.2 Multiply and divide integers and other rational numbers.</p>	<p>Why are algebraic rules useful?</p>	<ul style="list-style-type: none"> • Use the Distributive Property to write equivalent numerical expressions. • Use the Distributive Property 	<p>equivalent expressions, Distributive Property, term, coefficient,</p>

<p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>7.NS.A.2.c Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>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. <i>For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."</i></p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 		<p>to write equivalent algebraic expressions.</p> <ul style="list-style-type: none"> ● Identify parts of an algebraic expression. ● Use the Distributive Property to simplify algebraic expressions. ● Add linear expressions. ● Find perimeter by adding linear expressions. ● Subtract linear expressions. ● Solve real-world problems by subtracting linear expressions. ● Find the greatest common factor of two monomials. ● Use properties to factor linear expressions. 	<p>like terms, constant, simplest form, simplifying the expressions, linear expression, factor, factored form</p>
<p>Chapter 8</p> <p>Equations and Inequalities</p> <p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p>	<p>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</p> <p>7.EE.B.4.a 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,</p>	<p>How are equations and inequalities used to describe and solve multi-step problems?</p>	<ul style="list-style-type: none"> ● Solve equations by using the Division Property of Equality. ● Solve equations by using the Multiplication Property of Equality. ● Solve two-step equations. ● Solve real-world problems involving two-step equations. ● Write two-step equations. ● Solve verbal problems by writing and solving two-step 	<p>solution, inverse operations, equivalent equations, two-step equations, null or empty set, identity</p>

<p>and ALEKS, an online Pre-Algebra learning program</p>	<p>identifying the sequence of the operations used in each approach</p> <p>7.EE.B.4.b Solve word problems leading to inequalities of the form $px+q > r$ or $px+q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.</p> <p>8.EE.C.7 Fluently solve linear equations and inequalities in one variable.</p> <p>8.EE.C.7.a 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).</p> <p>8.EE.C.7.b Solve linear equations and inequalities with rational number coefficients, including solutions that require expanding expressions using the distributive property and collecting like terms.</p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 7. Look for and make use of structure. 		<p>equations.</p> <ul style="list-style-type: none"> • Solve equations of the form $p(x+q)=r$. • Solve verbal problems by writing and solving equations of the form $p(x+q)=r$. • Solve equations with variables on each side. • Write inequalities. • Graph inequalities on a number line. • Solve inequalities by using the Addition and Subtraction Properties of Inequality. • Solve inequalities by multiplying or dividing by a positive or negative number. • Solving multi-step equations. • Solve multi-step inequalities. 	
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<p>Chapter 9</p> <p>Linear Functions</p> <p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>7.RP.A.2 Recognize and represent proportional relationships between quantities.</p> <p>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).</p> <p>7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>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.</p> <p>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.</p> <p>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></p> <p>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</p>	<p>How are linear functions used to model proportional relationships?</p> 	<ul style="list-style-type: none"> ● Determine whether a relation is a function. ● Write a function using function notation. ● Solve linear functions with two variables. ● Graph linear functions using ordered pairs. ● Identify direct variation. ● Use direct variation to solve problems. ● Determine slopes and y-intercepts of lines. ● Graph linear equations using the slope and y-intercepts. ● Solve systems of linear equations by graphing. ● Determine the number of solutions of a system of linear equations. ● Solve a system of equations algebraically. ● Interpret the meaning of the solutions of a system of equations. 	<p>function, independent variable, dependent variable, vertical line test, function rule, function notation, linear equation, linear function, function table, x-intercept, y-intercept, direct variation, constant of variation, slope-intercept form, system of equations, substitution</p>
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	<p>equation $y = mx + b$ for a line intercepting the vertical axis at $(0, b)$.</p> <p>8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.</p> <p>8.EE.C.8.a 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.</p> <p>8.EE.C.8.b 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.</p> <p>8.EE.C.8.c Solve mathematical problems and problems in real-world context leading to two linear equations in two variables.</p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 			
<p>Chapter 10</p> <p>Statistics and Probability</p>	<p>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</p>	<p>How are statistics used to draw inferences about and compare populations?</p>	<ul style="list-style-type: none"> • Use the mean, median, and more of measures of center. • Choose an appropriate measure of center and 	<p>statistics, measures of center, measures of variability, range,</p>

<p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>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>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></p> <p>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></p> <p>7.SP.C.5 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</p>		<p>recognize measures of statistics.</p> <ul style="list-style-type: none"> ● Find measures of variability. ● Use measures of variability to interpret and analyze data. ● Find the mean absolute deviation of a set of data. ● Compare the mean absolute deviations for two data sets. ● Compare to populations using the measures of center and variability. ● Compare two populations when only one is symmetric. ● Identify various sampling techniques. ● Determine the validity of a sample and predict the actions of a larger group. ● Find the probability of simple events. ● Find the probability of the complement of an event. ● Find and compare experimental and theoretical probabilities. ● Predict the actions of a larger group. ● Find the number of outcomes for an event. ● Find the probability of a compound event. 	<p>quartiles, first quartile, third quartile, interquartile range, outlier, mean absolute deviation, \box plot, double box plot, sample, population, unbiased sample, random, simple random sample, stratified random sample, systematic random sample, biased sample, convenience sample, voluntary response sample, outcome, simple event, probability, sample space, complement, uniform probability model, theoretical probability, experimental probability, compound event, tree diagram</p>
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frequency given the probability. *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.*

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. *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.*

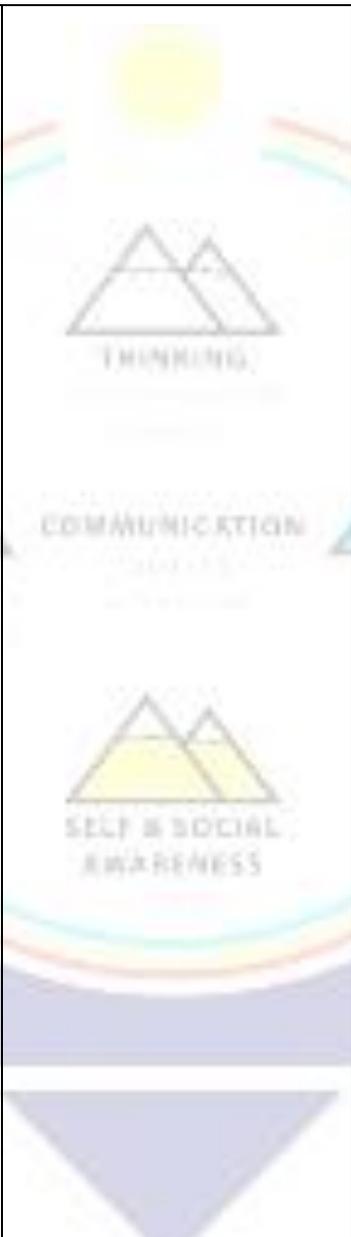
7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies. If the agreement is not good, explain possible sources of the discrepancy.

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. *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.*

7.SP.C.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *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*



	<p><i>the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?</i></p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 			
<p>Chapter 11</p> <p>Congruence, Similarity, and Transformations</p> <p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>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.</p> <p>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.</p> <p>8.G.1 8.G.1a 8.G.1b 8.G.1c</p> <p>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,</p>	<p>How can you determine congruence and similarity?</p> 	<ul style="list-style-type: none"> • Examine relationships between pairs of angles. • Examine relationships of angles formed by parallel lines and a transversal. • Find the missing angle measure of a triangle. • Classify a triangle by its angles and by its sides. • Classify polygons. • Determine the sum of the measures of the interior angles of a polygon. • Define and identify transformations. • Draw translations and reflections on a coordinate plane. • Define, identify, and draw rotations. • Determine if a figure has rotational symmetry. • Identify congruency by using 	<p>vertical angles, adjacent angles, complementary angles, supplementary angles, perpendicular lines, parallel lines, transversal, alternate interior angles, alternate exterior angles, corresponding angles, line segment, triangle, vertex, interior angle, exterior angle, congruent, polygon, diagonal, regular polygon, tessellation, transformation, image, congruent,</p>

	<p>describe a sequence that demonstrates congruence.</p> <p>8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p> <p>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.</p> <p>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></p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 		<p>transformations.</p> <ul style="list-style-type: none"> ● Identify transformations. ● Use a series of transformations to identify similar figures. ● Use a scale factor to create similar figures. 	<p>translation, reflection, line of reflection, rotation, center of rotation, rotational symmetry</p>
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<p>Chapter 12</p> <p>Volume and Surface Area</p> <p>Textbook: McGraw Hill's Math Accelerated, a Pre-Algebra Program, 2014</p> <p>and ALEKS, an online Pre-Algebra learning program</p>	<p>7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures.</p> <p>7.G.A.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.</p> <p>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.</p> <p>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.</p> <p>Mathematical Practices</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 	<p>How are two-dimensional figures used to solve problems involving three-dimensional figures?</p>	<ul style="list-style-type: none"> ● Find the circumference of circles. ● Solve problems involving circumference. ● Find areas of circles. ● Use areas of circles to solve problems. ● Find the area of composite figures. ● Solve problems involving the area of composite figures. ● Identify three-dimensional figures. ● Describe and draw vertical, horizontal, and angled cross sections of three-dimensional figures. ● Find volumes of prisms. ● Find volumes of composite figures. ● Find the volumes of circular cylinders. ● Find the volumes of composite figures involving circular cylinders. ● Find the volumes of pyramids and cones. ● Find the volumes of spheres. ● Find lateral area and surface area of prisms. ● Find surface area of real-world objects shaped like prisms. ● Find lateral and surface areas of cylinders. ● Compare surface areas of cylinders. ● Find lateral and surface areas 	<p>circle, center, diameter, radius, circumference, pi, composite figure, plane, solids, polyhedron, edge, vertex, face, skew lines, prism, bases, cylinder, cone, cross section, volume, sphere, lateral faces, lateral area, surface area, regular pyramid, slant height, regular pyramid, slant height</p>
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