BPS Accelerated 7th Grade Math Planning Guide

Mathematical Practice Standards: Vehicle for All Content

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

UNIT 7.1: THE NUMBER SYSTEM

GO MATH! MODULE 7.1: ADDING & SUBTRACTING INTEGERS

7.NS.1, 7.NS.3, 7.EE.3

Lesson 1.1: Adding Integers with the Same Sign 7.NS.1, 7.NS.1b, 7.NS.1d
Lesson 1.2: Adding Integers with Different Signs 7.NS.1, 7.NS.1b
Lesson 1.3: Subtracting Integers 7.NS.1, 7.NS.1c
Lesson 1.4: Applying Addition and Subtraction of Integers 7.NS.1, 7.NS.1d, 7.NS.3, 7.EE.3

Montana Seventh Grade Standards for Mathematics

7.NS.1: 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.

7.NS.1b: Understand $p + q$ as the number located a distance of $|q|$ 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 contexts.

7.NS.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 contexts.

7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.3: Solve real-world and mathematical problems from a variety of cultural contexts, including those of Montana American Indians, involving the four operations with rational numbers. NOTE: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *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. If you want to place a towel bar 9 ¾ inches long in the center of a door that is 27 ½ 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.*

GO MATH! MODULE 7.2: MULTIPLYING & DIVIDING INTEGERS

7.NS.2, 7.NS.3, 7.EE.3

Lesson 2.1: Multiplying Integers 7.NS.2, 7.NS.2a
Lesson 2.2: Dividing Integers 7.NS.2, 7.NS.2b, 7.NS.3
Lesson 2.3: Applying Integer Operations 7.NS.2a, 7.NS.2c, 7.NS.3, 7.EE.3

Montana Seventh Grade Standards for Mathematics

7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

7.NS.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 contexts.

7.NS.2b: Understand the 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 contexts.

7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers.

7.NS.3: Solve real-world and mathematical problems from a variety of cultural contexts, including those of Montana American Indians, involving the four operations with rational numbers. NOTE: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *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. If you want to place a towel bar 9 ¾ inches long in the center of a door that is 27 ½ 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.*

GO MATH! MODULE 7.3: RATIONAL NUMBERS

7.NS.1, 7.NS.2, 7.NS.3, 7.EE.3

Lesson 3.1: Rational Numbers & Decimals 7.NS.2b, 7.NS.2d
Lesson 3.2: Adding Rational Numbers 7.NS.1a, 7.NS.1b, 7.NS.1d, 7.NS.3
Lesson 3.3: Subtracting Rational Numbers 7.NS.1, 7.NS.1c

Lesson 3.4: Multiplying Rational Numbers 7.NS.2, 7.NS.2a, 7.NS.2c
Lesson 3.5: Dividing Rational Numbers 7.NS.2, 7.NS.2b, 7.NS.2c
Lesson 3.6: Applying Rational Number Operations 7.NS.3, 7.EE.3

Montana Seventh Grade Standards for Mathematics

7.NS.1: 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.

7.NS.1a: Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*

7.NS.1b: Understand $p + q$ as the number located a distance of $|q|$ 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 contexts.

7.NS.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 contexts.

7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

7.NS.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 contexts.

7.NS.2b: Understand the 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 contexts.

7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers.

7.NS.2d: 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.

7.NS.3: Solve real-world and mathematical problems from a variety of cultural contexts, including those of Montana American Indians, involving the four operations with rational numbers. NOTE: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *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. If you want to place a towel bar 9 ¾ inches long in the center of a door that is 27 ½ 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.*

UNIT 7.2: RATIOS & PROPORTIONAL RELATIONSHIPS

GO MATH! MODULE 7.4: RATES & PROPORTIONALITY

7.RP.1, 7.RP.2

Lesson 4.1: Rates 7.RP.1
Lesson 4.2: Constant Rates of Change 7.RP.2, 7.RP.2a, 7.RP.2b, 7.RP.2c
Lesson 4.3: Proportional Relationships & Graphs 7.RP.2a, 7.RP.2b, 7.RP.2c, 7.RP.2d

Montana Seventh Grade Standards for Mathematics

7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. *For example, if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction (½)(¼) miles per hour, equivalently 2 miles per hour.*

7.RP.2: Recognize and represent proportional relationships between quantities.

7.RP.2a: Describe 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.

7.RP.2b: Identify the constant or proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

7.RP.2c: Represent proportional relationships by equations. *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.*

7.RP.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.

GO MATH! MODULE 7.5: PROPORTIONS & PERCENT

7.RP.3, 7.EE.2, 7.EE.3

Lesson 5.1: Percent Increase & Decrease 7.RP.3
Lesson 5.2: Rewriting Percent Expressions 7.RP.3, 7.EE.2, 7.EE.3
Lesson 5.3: Applications of Percent 7.RP.3, 7.EE.3

Montana Seventh Grade Standards for Mathematics

7.RP.3: Use proportional relationships to solve multi-step ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

7.EE.2: 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. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*

7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will bake and additions 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 ¾ inches long in the center of a door that is 27 ½ 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.*

UNIT 7.3: EXPRESSIONS, EQUATIONS, & INEQUALITIES

GO MATH! MODULE 7.6: EXPRESSIONS & EQUATIONS

7.EE.1, 7.EE.2, 7.EE.4

Lesson 6.1: Algebraic Expressions 7.EE.1, 7.EE.2
Lesson 6.2: One-Step Equations with Rational Coefficients 7.EE.4
Lesson 6.3: Writing Two-Step Equations 7.EE.4
Lesson 6.4: Solving Two-Step Equations 7.EE.4, 7.EE.4a

Montana Seventh Grade Standards for Mathematics

7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.2: 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. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*

7.EE.4: Use variables to represent quantities in a real-world or mathematical problems, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

7.EE.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. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*

UNIT 8.1: REAL NUMBERS, EXPONENTS, & SCIENTIFIC NOTATION

GO MATH! MODULE 8.1: REAL NUMBERS

8.NS.1, 8.NS.2, 8EE.2

Lesson 1.1: Rational & Irrational Numbers 8.NS.1, 8.NS.2, 8.EE.2
Lesson 1.2: Sets of Real Numbers 8.NS.1
Lesson 1.3: Ordering Real Numbers 8.NS.2

Montana Eighth Grade Standards for Mathematics

8.NS.1: Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.

8.NS.2: Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

8.EE.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. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

GO MATH! MODULE 8.2: EXPONENTS & SCIENTIFIC NOTATION

8.EE.1, 8.EE.3, 8.EE.4

Lesson 2.1: Integer Exponents 8.EE.1
Lesson 2.2: Scientific Notation with Positive Powers of 10 8.EE.3
Lesson 2.3: Scientific Notation with Negative Powers of 10 8.EE.3
Lesson 2.4: Operations with Scientific Notation 8.EE.4

Montana Eighth Grade Standards for Mathematics

8.EE.1: Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.*

8.EE.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 to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*

8.EE.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 (e.g. use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

UNIT 8.2: PROPORTIONAL & NONPROPORTIONAL RELATIONSHIPS & FUNCTIONS

GO MATH! MODULE 8.3: PROPORTIONAL RELATIONSHIPS

8.EE.5, 8.EE.6, 8.F.2, 8.F.4

Lesson 3.1: Representing Proportional Relationships 8.EE.6, 8.F.4
Lesson 3.2: Rate of Change & Slope 8.F.4
Lesson 3.3: Interpreting the Unit Rate as Slope 8.EE.5, 8.F.2, 8.F.4

Montana Eighth Grade Standards for Mathematics

8.EE.5: Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

8.EE.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 $y = mx + b$ for a line intercepting the vertical axis at *b*.

8.F.2: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

8.F.4: Construct 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 form two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

GO MATH! MODULE 8.4: NONPROPORTIONAL RELATIONSHIPS

8.EE.6, 8.F.2, 8.F.3, 8.F.4

Lesson 4.1: Representing LInear Nonproportional Relationships 8.F.3
Lesson 4.2: Determining Slope and y-intercept 8EE.6, 8.F.4
Lesson 4.3: Graphing Linear Nonproportional Relationships using Slope and y-intercept 8.F.3, 8.F.4
Lesson 4.4: Proportional and Nonproportional Situations 8.F.2, 8.F.3, 8.F.4

Montana Eighth Grade Standards for Mathematics

8.EE.6: Use similar triangles to explain why the slope *m* is the same between any two distinct point on a non-vertical line in the coordinate plane; derive the equation $y = mx + b$ for a line intercepting the vertical axis at *b*.

8.F.2: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

8.F.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. *For example, the function $A = s^2$ 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.*

8.F.4: Construct 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 form two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

End of 2nd Quarter

GO MATH! MODULE 8.5: WRITING LINEAR EQUATIONS

8.F.4, 8.SP.1, 8.SP.2, 8.SP.3
Lesson 5.1: Writing Linear Equations from Situations & Graphs 8.F.4 **Lesson 5.2:** Writing Linear Equations from a Table 8.F.4 **Lesson 5.3:** Linear Relationships & Bivariate Data 8.SP.1, 8.SP.2, 8.SP.3
Montana Eighth Grade Standards for Mathematics
8.F.4: Construct 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 from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
8.SP.1: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
8.SP.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.
8.SP.3: Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
GO MATH! MODULE 8.6: FUNCTIONS
8.EE.5, 8.F.1, 8.F.2, 8.F.3, 8.F.4, 8.F.5
Lesson 6.1: Identifying and Representing Functions 8.F.1 **Lesson 6.2:** Describing Functions 8.F.1, 8.F.3 **Lesson 6.3:** Comparing Functions 8.EE.5, 8.F.2, 8.F.4 **Lesson 6.4:** Analyzing Graphs 8.F.5
Montana Eighth Grade Standards for Mathematics
8.EE.5: Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
8.F.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. (Note: Function notation is not required in Grade 8).
8.F.2: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

8.F.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. *For example, the function $A = s^2$ 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.*

8.F.4: Construct 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 from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

8.F.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.

UNIT 8.3: SOLVING EQUATIONS & SYSTEMS OF EQUATIONS

GO MATH! MODULE 8.7: SOLVING LINEAR EQUATIONS

8.EE.7

Lesson 7.1: Equations with the Variable on Both Sides 8.EE.7, 8.EE.7b
Lesson 7.2: Equations with Rational Numbers 8.EE.7, 8.EE.7b
Lesson 7.3: Equations with the Distributive Property 8.EE.7b
Lesson 7.4: Equations with Many Solutions or No Solution 8.EE.7a

Montana Eighth Grade Standards for Mathematics

8.EE.7: Solve linear equations in one variable.

8.EE.7a: Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. 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).

8.EE.7b: Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

GO MATH! MODULE 8.8: SOLVING SYSTEMS OF LINEAR EQUATIONS

8.EE.8

Lesson 8.1: Solving Systems of Linear Equations by Graphing 8.EE.8a, 8.EE.8c
Lesson 8.2: Solving Systems by Substitution 8.EE.8b, 8.EE.8c
Lesson 8.3: Solving Systems by Elimination 8.EE.8b, 8.EE.8c
Lesson 8.4: Solving Systems by Elimination with Multiplication 8.EE.8b, 8.EE.8c
Lesson 8.5: Solving Special Systems 8.EE.8b, 8.EE.8c

Montana Eighth Grade Standards for Mathematics

8.EE.8: Analyze and solve pairs of simultaneous linear equations.

8.EE.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.

8.EE.8b: Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.*

8.EE.8c: Solve real-world and mathematical problems from a variety of cultural contexts, including those of Montana American Indians, leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

UNIT 8.4: TRANSFORMATIONAL GEOMETRY

GO MATH! MODULE 8.9: TRANSFORMATIONS and CONGRUENCE

8.G.1, 8.G.2, 8.G.3

Lesson 9.1: Properties of Translations 8.G.1, 8.G.3
Lesson 9.2: Properties of Reflections 8.G.1, 8.G.3
Lesson 9.3: Properties of Rotations 8.G.1, 8.G.3
Lesson 9.4: Algebraic Representations of Transformations 8.G.3
Lesson 9.5: Congruent Figures 8.G.2

Montana Eighth Grade Standards for Mathematics

8.G.1: Verify experimentally the properties of rotations, reflections, and translations from a variety of cultural contexts, including those of Montana American Indians.

8.G.1a: Lines are taken to lines, and line segments to line segments of the same length.

8.G.1b: Angles are taken to angles of the same measure.

8.G.1c: Parallel lines are taken to parallel lines.

8.G.2: Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

8.G.3: Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures from a variety of cultural contexts, including those of Montana American Indians, using coordinates.

GO MATH! MODULE 8.10: TRANSFORMATIONS and SIMILARITY

8.G.3, 8.G.4

Lesson 10.1: Properties of Dilations 8.G.3, 8.G4
Lesson 10.2: Algebraic Representations of Dilations 8.G.3
Lesson 10.3: Similar Figures 8.G.4

Montana Eighth Grade Standards for Mathematics

8.G.3: Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures from a variety of cultural contexts, including those of Montana American Indians, using coordinates.

8.G.4: Understand that a two-dimensional figure is similar to another if the second can be obtained fro the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

UNIT 8.5: MEASUREMENT GEOMETRY

GO MATH! MODULE 8.11: ANGLE RELATIONSHIPS IN PARALLEL LINES & TRIANGLES

8.EE.6, 8.EE.7, 8.G.5

Lesson 11.1: Parallel Lines Cut by a Transversal 8.G.5
Lesson 11.2: Angle Theorems for Triangles 8.EE.7, 8.EE.7b, 8.G.5
Lesson 11.3: Angle-Angle Similarity 8.EE.6, 8.EE.7, 8.G.5

Montana Eighth Grade Standards for Mathematics

8.EE.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 $y = mx + b$ for a line intercepting the vertical axis at *b*.

8.EE.7: Solve linear equations in one variable.

8.EE.7b: Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

8.G.5: Use formal arguments to establish facts about the angle sum and exterior angles of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *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.*

GO MATH! MODULE 8.12: THE PYTHAGOREAN THEOREM

8.G.6, 8.G.7, 8.G.8

Lesson 12.1: The Pythagorean Theorem 8.G.6, 8.G.7
Lesson 12.2: Converse of the Pythagorean Theorem 8.G.6
Lesson 12.3: Distance Between Two Points 8.G.8

Montana Eighth Grade Standards for Mathematics

8.G.6: Explain a proof of the Pythagorean Theorem and its converse.

8.G.7: Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. *For example, determine the unknown height of a Plains Indian tipi when given the side length and radius.*

8.G.8: Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

GO MATH! MODULE 8.13: VOLUME

8.G.9

Lesson 13.1: Volume of Cylinders 8.G.9
Lesson 13.2: Volume of Cones 8.G.9
Lesson 13.3: Volume of Spheres 8.G.9

Montana Eighth Grade Standards for Mathematics

8.G.9: Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

UNIT 8.6: STATISTICS

GO MATH! MODULE 8.14: SCATTER PLOTS

8.SP.1 8.SP.2, 8.SP.3

Lesson 14.1: Scatter Plots & Association 8.SP.1
Lesson 14.2: Trend Lines & Predictions 8.SP.1, 8.SP.2, 8.SP.3

Montana Eighth Grade Standards for Mathematics

8.SP.1: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

8.SP.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.
8.SP.3: Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
GO MATH! MODULE 8.15: TWO-WAY TABLES
8.SP.4
Lesson 15.1: Two-Way Frequency Tables 8.SP.4 **Lesson 15.2:** Two-Way Relative Frequency Tables 8.SP.4
Montana Eighth Grade Standards for Mathematics
8.SP.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, including data from Montana American Indians, sources 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. *For example, collect data from students in your class whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*
End of 4th Quarter