Wyoming Mathematics

# Grade 6

Adopted 2021

## Standards for Mathematical Practice

1. **Make sense of problems and persevere in solving them.** MP.1
2. **Reason abstractly and quantitatively.** MP.2
3. **Construct viable arguments and critique the reasoning of others.** MP.3
4. **Model with mathematics.** MP.4
5. **Use appropriate tools strategically.** MP.5
6. **Attend to precision.** MP.6
7. **Look for and make use of structure.** MP.7
8. **Look for and express regularity in repeated reasoning.** MP.8

**Geometry**

**H. Solve real-world and mathematical problems involving area, surface area, and volume.** 6.G.H

1. Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. 6.G.H.1

Ad. Find a missing dimension given the area of a triangle or a special quadrilateral and all but one dimension. 6.G.H.1.AD

P. Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. 6.G.H.1.P

B. Find area of right triangles, other triangles, squares, and rectangles using their respective formulas or strategies. 6.G.H.1.B

BeB. May be able to decompose a polygon into right triangles and rectangles. 6.G.H.1.BEB

2. Find the volume of a right rectangular prism with fractional edge lengths in the context of solving real-world and mathematical problems by applying the formulas V = (l)(w)(h) and V = (B)(h), and label with appropriate units. 6.G.H.2

Ad. Find a missing dimension when given the volume of a right rectangular prism with at least one fractional edge length. 6.G.H.2.AD

P. Find the volume of a right rectangular prism with fractional edge lengths in the context of solving real-world and mathematical problems by applying the formulas V = (l)(w)(h) and V = (B)(h), and label with appropriate units. 6.G.H.2.P

Ba. Find the volume of a right rectangular prism with one fractional edge length in the context of solving real-world and mathematical problems by applying the formulas V = (l)(w)(h) and V = (B)(h), and label with appropriate units. 6.G.H.2.BA

BeB. May be able to find the volume of a right rectangular prism with whole number edge lengths. 6.G.H.2.BEB

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 in the context of solving real-world and mathematical problems. 6.G.H.3

Ad. Create and graph a polygon with a given perimeter, area, or dimensions on a coordinate plane; justify the solution by listing ordered pairs and dimensions of the polygon. 6.G.H.3.AD

P. 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 in the context of solving real-world and mathematical problems including perimeter and area. 6.G.H.3.P

Ba. Draw a right triangle or a rectangle 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 in the context of mathematical problems involving area. 6.G.H.3.BA

BeB. May be able to use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate when given a rectangle in the coordinate plane with coordinates for the vertices. Apply these techniques in the context of mathematical problems involving area. 6.G.H.3.BEB

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 in the context of solving real-world and mathematical problems. 6.G.H.4

Ad. The Advanced student is able to:<ul><li>Create nets with different dimensions that represent right rectangular prisms with the same surface area. OR</li><li>Compare nets with a fixed volume to determine maximum or minimum surface area.</li></ul> 6.G.H.4.AD

P. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of right triangular prisms, right rectangular prisms, and right rectangular pyramids (given lateral height) in the context of solving real-world and mathematical problems. 6.G.H.4.P

B. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of right rectangular prisms. 6.G.H.4.B

BeB. May be able to identify the net of a right prism. 6.G.H.4.BEB

**Ratios And Proportional Relationships**

**A. Understand ratio concepts and use ratio reasoning to solve problems.** 6.RP.A

1. Students use repeated reasoning to understand algorithms and make generalizations about patterns. They construct examples and models that confirm their generalization. They develop short cuts and check for reasonableness of answers. Students ask questions such as, "How would we verify that?" and "How is this similar to patterns with whole numbers?" 6.RP.A.1

Ad. In addition to Proficient, the Advanced student is able to manipulate and make connections between different representations for ratio relationships. 6.RP.A.1.AD

P. Interpret a ratio relationship between two quantities, including part-to-part and part-to-whole. 6.RP.A.1.P

Ba. Write a ratio relationship between two quantities. 6.RP.A.1.BA

BeB. May be able to identify a ratio using a mathematical or verbal representation. 6.RP.A.1.BEB

2. Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship. 6.RP.A.2

Ad. Interpret a unit rate from a visual representation using unit rate language. 6.RP.A.2.AD

P. Write a unit rate to compare two quantities using rational numbers and use unit rate language to describe two quantities in the context of a ratio relationship. 6.RP.A.2.P

Ba. Write a unit rate to compare two quantities using whole numbers. 6.RP.A.2.BA

BeB. May be able to identify unit rates. 6.RP.A.2.BEB

3. Use ratio and rate reasoning to solve real-world and mathematical problems. 6.RP.A.3

A. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. 6.RP.A.3.A

B. Solve unit rate problems including those involving unit pricing and constant speed. 6.RP.A.3.B

C. Understand that a percentage is a rate per 100 and use this to solve problems involving wholes, parts, and percentages. 6.RP.A.3.C

D. Use ratio reasoning to convert measurement units; convert units appropriately when multiplying or dividing quantities. 6.RP.A.3.D

A. Extend ratio and rate reasoning beyond what is displayed in a table or graph. 6.RP.A.3.AD.A

B. Solve unit rate problems that require determining a unit rate with a positive rational numerator and whole number denominator. 6.RP.A.3.AD.B

C. In mathematical and real-world contexts solve two-step problems involving wholes, parts, and percentages. 6.RP.A.3.AD.C

D. Use ratio reasoning to convert measurement units and transform units appropriately when multiplying and dividing in two-step problems. 6.RP.A.3.AD.D

A. Make tables of equivalent ratios relating quantities with whole number measurements and plot the pairs of values on the coordinate plane. Use tables to compare ratios. 6.RP.A.3.P.A

B. Solve unit rate problems with whole number measurements including those involving unit pricing and constant speed. 6.RP.A.3.P.B

C. In mathematical and real-world contexts solve one-step problems involving wholes, parts, and percentages. 6.RP.A.3.P.C

D. Use ratio reasoning to convert measurement units and to transform units appropriately when multiplying or dividing quantities in one-step problems. 6.RP.A.3.P.D

A. Make a table of equivalent ratios relating quantities with whole number measurements. 6.RP.A.3.BA.A

B. Solve unit rate problems given the unit rate with whole number measurements. 6.RP.A.3.BA.B

C. Solve one-step problems involving wholes, parts, or percentages. 6.RP.A.3.BA.C

D. Use ratio reasoning in a one-step problem to convert measurement units within the same system. 6.RP.A.3.BA.D

A. Find missing values in a table. 6.RP.A.3.BEB.A

B. Identify unit rate with whole number measurements. 6.RP.A.3.BEB.B

C. Identify the percent of a quantity as a rate per hundred. 6.RP.A.3.BEB.C

D. Identify ratio relationships using measurement units within the same system. 6.RP.A.3.BEB.D

**The Number System**

**B. Apply and extend previous understandings of multiplication and division to divide fractions by fractions.** 6.NS.B

1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions by using visual fraction models and equations to represent the problem. 6.NS.B.1

Ad. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions by using visual fraction models and equations to represent the problem in a real-world context. 6.NS.B.1.AD

P. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions by using visual fraction models and equations to represent the problem. 6.NS.B.1.P

Ba. Compute quotients of a fraction by a unit fraction. Students solve problems in mathematical contexts involving division of a fraction by a unit fraction. 6.NS.B.1.BA

BeB. May be able to solve problems in mathematical contexts involving division of a whole number by a unit fraction. 6.NS.B.1.BEB

2. Divide multi-digit numbers using efficient and generalizable procedures including, but not limited to the standard algorithm. 6.NS.B.2

Ad. Divide multi-digit numbers with fractional remainders using efficient and generalizable procedures including, but not limited to the standard algorithm and explain the reasonableness of the result. 6.NS.B.2.AD

P. Divide multi-digit numbers using efficient and generalizable procedures including, but not limited to the standard algorithm. 6.NS.B.2.P

Ba. Divide three-digit or four-digit dividends by two-digit divisors resulting in no remainder using efficient and generalizable procedures including, but not limited to the standard algorithm. 6.NS.B.2.BA

BeB. May be able to divide two-digit dividends by one-digit divisors resulting in no remainder using efficient and generalizable procedures, including, but not limited to the standard algorithm. 6.NS.B.2.BEB

C. **Compute fluently with multi-digit numbers and find common factors and multiples.** 6.NS.C

3. Add, subtract, multiply, and divide manageable multi-digit decimals using efficient and generalizable procedures including, but not limited to the standard algorithm for each operation. 6.NS.C.3

Ad. Add, subtract, multiply, and divide multi-digit decimals using efficient and generalizable procedures including, but not limited to the standard algorithm for each operation and explain the reasonableness of the answer. 6.NS.C.3.AD

P. Add, subtract, multiply, and divide multi-digit decimals using efficient and generalizable procedures including, but not limited to the standard algorithm for each operation. 6.NS.C.3.P

Ba. Add, subtract, multiply, and divide decimals to tenths using efficient and generalizable procedures including, but not limited to the standard algorithm for each operation. 6.NS.C.3.BA

BeB. May be able to add, subtract, multiply, or divide decimals to tenths using efficient and generalizable procedures including, but not limited to the standard algorithm for each operation. 6.NS.C.3.BEB

4. Find common factors and multiples using two whole numbers. 6.NS.C.4

A. Find the greatest common factor of two whole numbers less than or equal to 100. 6.NS.C.4.A

B. Find the least common multiple of two whole numbers less than or equal to 12. 6.NS.C.4.B

C. Use the Distributive Property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. 6.NS.C.4.C

Ad. In addition to Proficient, the Advanced student is able to find common factors and multiples using two whole numbers. 6.NS.C.4.A.AD

A. Find the greatest common factor of multiple whole numbers less than or equal to 100. 6.NS.C.4.AD.A

B. Find the least common multiple of three whole numbers less than or equal to 12. 6.NS.C.4.AD.B

C. Explain why two given expressions written in factored and distributed form are equivalent using appropriate mathematical language. 6.NS.C.4.AD.C

P. Find common factors and multiples using two whole numbers. 6.NS.C.4.P

A. Find the greatest common factor of two whole numbers less than or equal to 100. 6.NS.C.4.P.A

B. Find the least common multiple of two whole numbers less than or equal to 12. 6.NS.C.4.P.B

C. Use the Distributive Property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. 6.NS.C.4.P.C

Ba. Find common factors and multiples using two whole numbers. 6.NS.C.4.BA

A. Find the greatest common factor of two whole numbers less than or equal to 24. 6.NS.C.4.B.B.A

B. Find the least common multiple of two prime numbers less than or equal to 12. 6.NS.C.4.B.B.B

C. Use the Distributive Property to express a sum of two whole numbers 1–24 with a common factor as a multiple of a sum of two whole numbers with no common factor. 6.NS.C.4.B.B.C

BeB. May be able to find common factors and multiples using two whole numbers. 6.NS.C.4.BEB

A. Given a visual model, identify the greatest common factor of two whole numbers less than or equal to 24. 6.NS.C.4.BEB.A

B. Given multiples, identify the least common multiple of two whole numbers less than or equal to 12. 6.NS.C.4.BEB.B

C. Given the common factors, use the Distributive Property to express a sum of two whole numbers 1–24 with a common factor as a multiple of a sum of two whole numbers with no common factor. 6.NS.C.4.BEB.C

**D. Apply and extend previous understandings of numbers to the system of rational numbers.** 6.NS.D

5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values and use them to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. 6.NS.D.5

Ad. Recognizes patterns and makes generalizations about characteristics of positive and negative numbers in real-world contexts (may use any rational number, including fractions and decimals). 6.NS.D.5.AD

P. Understand that positive and negative integers are used together to describe quantities having opposite directions or values and use them to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. 6.NS.D.5.P

B. Place integers on the number line. In a given situation (e.g., elevation, sea level), student is able to determine the meaning of 0. 6.NS.D.5.B

BeB. May be able to place integers on the number line (with whole-number increments), extending the counting pattern to integers. 6.NS.D.5.BEB

6. Extend the understanding of the number line to include all rational numbers and apply this concept to the coordinate plane. 6.NS.D.6

A. Understand the concept of opposite numbers, including 0, and their relative locations on the number line. 6.NS.D.6.A

B. Understand that signs of numbers in ordered pairs indicate 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. 6.NS.D.6.B

C. Find and position rational numbers on a horizontal or vertical number line diagram; find and position pairs of rational numbers on a coordinate plane. 6.NS.D.6.C

A. Create a real-world situation to demonstrate opposite numbers. 6.NS.D.6.AD.A

B. Given one ordered pair, create a reflection across the x- and y-axis. 6.NS.D.6.AD.B

C. Find and position rational numbers on a horizontal or vertical number line diagram when the scale is not given; find and position pairs of rational numbers on a coordinate plane when the scale is not given. 6.NS.D.6.AD.C

P. Extend the understanding of the number line to include all rational numbers and apply this concept to the coordinate plane. 6.NS.D.6.P

A. Represent the concept of opposite numbers, including 0, and their relative locations on the number line in real-world contexts. 6.NS.D.6.P.A

B. Given ordered pairs that differ by a sign with x-coordinate and/or y-coordinate, recognize that the location of the points are related by reflections across one or both axes. 6.NS.D.6.P.B

C. Find and position rational numbers on a horizontal or vertical number line diagram when the scale is given; find and position pairs of rational numbers on

a coordinate plane when the scale is given. 6.NS.D.6.P.C

A. Place two opposite numbers on a number line in a mathematical context. 6.NS.D.6.BA.A

B. Identify/determine the quadrant from a given coordinate. 6.NS.D.6.BA.B

C. Graph integer values on a horizontal or vertical number line and graph ordered pairs of integers in all four quadrants of a coordinate plane. 6.NS.D.6.BA.C

A. Place the opposite number on a number line given one. 6.NS.D.6.BEB.A

B-C. Plot whole-number ordered pairs in the first quadrant of a coordinate plane (with one-unit increments on both axes). 6.NS.D.6.BEB.B-C

7. Understand ordering and absolute value of rational numbers. 6.NS.D.7

   A. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. 6.NS.D.7.A

   B. Write, interpret, and explain statements of order for rational numbers in real-world contexts. 6.NS.D.7.B

   C. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. 6.NS.D.7.C

   D. Distinguish comparisons of absolute value from statements about order. 6.NS.D.7.D

Ad. In addition to Proficient, the Advanced student is able to apply ordering and absolute value of rational numbers (including percent form). 6.NS.D.7.AD

   A. Create statements of inequality about the relative position of two numbers on a (vertical or horizontal) number line diagram. 6.NS.D.7.AD.A

   B. Write, interpret, and explain statements of order for rational numbers in real-world contexts. 6.NS.D.7.AD.B

   C. Describe 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 a real-world situation. 6.NS.D.7.AD.C

   D. Distinguish comparisons of absolute value from statements about order. 6.NS.D.7.AD.D

P. Understand ordering and absolute value of rational numbers. 6.NS.D.7.P

   A. Interpret statements of inequality as statements about the relative position of two numbers on a (vertical or horizontal) number line diagram. 6.NS.D.7.P.A

   B. Write, interpret, and explain statements of order for rational numbers in real-world contexts. 6.NS.D.7.P.B

   C. Describe 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 a real-world situation. 6.NS.D.7.P.C

   D. Distinguish comparisons of absolute value from statements about order. 6.NS.D.7.P.D

Ba. Understand ordering and absolute value of integers. 6.NS.D.7.BA

A. Interpret statements of inequality as statements about the relative position of two numbers on a (vertical or horizontal) number line diagram. 6.NS.D.7.BA.A

B. Write, interpret, and explain statements of order for integers in real-world contexts. 6.NS.D.7.BA.B

C. Describe the absolute value of an integer as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. 6.NS.D.7.BA.C

D. Distinguish comparisons of absolute value from statements about order. 6.NS.D.7.BA.D

BeB. May be able to understand ordering and absolute value of whole numbers. 6.NS.D.7.BEB

A. Interpret statements of inequality as statements about the relative position of two numbers on a (vertical or horizontal) number line diagram. 6.NS.D.7.BEB.A

B. Write, interpret, and explain statements of order for whole numbers in real-world contexts. 6.NS.D.7.BEB.B

C. Describe the absolute value of a whole number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive quantity in a real-world situation. 6.NS.D.7.BEB.C

D. Distinguish comparisons of absolute value from statements about order. 6.NS.D.7.BEB.D

8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Find distances between points with the same first coordinate or the same second coordinate; relate absolute value and distance. 6.NS.D.8

Ad. Solve real-world and mathematical problems by graphing non-integer points in all four quadrants of the coordinate plane. Find distances between non-integer points with the same first coordinate or the same second coordinate; relate absolute value and distance. 6.NS.D.8.AD

P. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Find distances between points with the same first coordinate or the same second coordinate; relate absolute value and distance. 6.NS.D.8.P

Ba. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Find distances between points with the same first coordinate or the same second coordinate in the same quadrant. 6.NS.D.8.BA

BeB. May be able to solve real-world and mathematical problems by graphing points in quadrant one of the coordinate plane. Find distances between points with the same first coordinate or the same second coordinate. 6.NS.D.8.BEB

**Expressions and Equations**

**E. Apply and extend previous understandings of arithmetic to algebraic expressions.** 6.EE.E

1. Write and evaluate numerical expressions involving whole-number exponents. 6.EE.E.1

Ad. Write and evaluate numerical multi-step expressions involving the Distributive Property and whole number exponents. 6.EE.E.1.AD

P. Write and evaluate multi-step numerical expressions involving whole number exponents. 6.EE.E.1.P

Ba. Write and evaluate two-step numerical expressions involving one whole number exponent. 6.EE.E.1.BA

BeB. May be able to write and evaluate one-step numerical expressions involving one whole number exponent. 6.EE.E.1.BEB

2. Write, read, and evaluate expressions in which letters stand for numbers. 6.EE.E.2

A. Write expressions that record operations with numbers and with letters standing for numbers. 6.EE.E.2.A

B. Identify parts of an expression using mathematical terms (sum, difference, term, product, factor, quotient, coefficient, constant). 6.EE.E.2.B

C. Use Order of Operations to evaluate algebraic expressions using positive rational numbers and whole-number exponents. Include expressions that arise from formulas in real-world problems. 6.EE.E.2.C

Ad. Write, read, and evaluate expressions in which letters stand for numbers. 6.EE.E.2.AD

A. Write algebraic expressions using grouping symbols. 6.EE.E.2.AD.A

B. Create an expression given mathematical terms (sum, difference, term, product, factor, quotient, coefficient, constant). 6.EE.E.2.AD.B

C. Use Order of Operations to justify the evaluation of algebraic expressions that contain positive rational numbers and whole-number exponents. Include expressions that arise from formulas relative to sixth grade standards in real-world problems. 6.EE.E.2.AD.C

P. Write, read, and evaluate expressions in which letters stand for numbers. 6.EE.E.2.P

A. Write two-step algebraic expressions. 6.EE.E.2.P.A

B. Identify parts of an expression using mathematical terms (sum, difference, term, product, factor, quotient, coefficient, constant). 6.EE.E.2.P.B

C. Use Order of Operations to evaluate algebraic expressions using positive rational numbers and whole-number exponents. Include expressions that arise from formulas relative to sixth grade standards in real-world problems. 6.EE.E.2.P.C

Ba. Write, read, and evaluate expressions in which letters stand for numbers. 6.EE.E.2.BA

A. Write one-step algebraic expressions. 6.EE.E.2.BA.A

B. Identify a part of an expression using mathematical terms (sum, difference, term, product, factor, quotient, coefficient, constant). 6.EE.E.2.BA.B

C. Use Order of Operations to evaluate algebraic expressions using whole numbers and whole-number exponents. Include expressions that arise from formulas relative to sixth grade geometry standards in real-world problems. 6.EE.E.2.BA.C

BeB. May be able to write, read, and evaluate expressions in which letters stand for numbers. 6.EE.E.2.BEB

A. Identify an algebraic expression. 6.EE.E.2.BEB.A

B. Identify the number of terms in a mathematical expression. 6.EE.E.2.BEB.B

C. Use Order of Operations to evaluate algebraic expressions using whole numbers. 6.EE.E.2.BEB.C

3. Apply the properties of operations to generate equivalent expressions. 6.EE.E.3

Ad. Justify why two expressions are equivalent using the properties of operations. 6.EE.E.3.AD

P. Apply the properties of operations to generate equivalent expressions (Commutative Property, Associative Property, Distributive Property, Additive Identity Property, Multiplicative Identity Property, and Zero Product Property). 6.EE.E.3.P

Ba. Identify the properties of operations in equivalent expressions (Commutative Property, Associative Property, Distributive Property, Additive Identity Property, Multiplicative Identity Property, and Zero Product Property). 6.EE.E.3.BA

BeB. May be able to identify the properties of operations in equivalent expressions (Commutative Property, Associative Property, Distributive Property). 6.EE.E.3.BEB

4. Identify when two expressions are equivalent. 6.EE.E.4

Ad. Generate equivalent expressions. 6.EE.E.4.AD

P. Identify when two expressions are equivalent with positive rational numbers. 6.EE.E.4.P

Ba. Identify a model that matches an expression. 6.EE.E.4.BA

BeB. May be able to identify when two numerical expressions are equivalent. 6.EE.E.4.BEB

**F. Reason about and solve one-variable equations and inequalities.** 6.EE.F

5. Understand a solution to an equation or an inequality makes the equation or inequality true. Use substitution to determine whether a given number in a specified set makes an equation or inequality true. 6.EE.F.5

Ad. Use substitution to determine whether a given rational number in a specified set makes a two-step equation or a two-step inequality true. 6.EE.F.5.AD

P. Use substitution to determine whether a given non-negative rational number in a specified set makes a one-step equation or a one-step inequality true. 6.EE.F.5.P

Ba. Use substitution to determine whether a given whole number in a specified set makes a one-step equation or a one-step inequality true. 6.EE.F.5.BA

BeB. May be able to use substitution to determine whether a given whole number in a specified set makes a one-step equation true. 6.EE.F.5.BEB

6. Use variables to represent unknown numbers and write expressions when solving a real-world or mathematical problem. 6.EE.F.6

Ad. Use variables to represent unknown numbers and write multiple expressions to represent the same real-world or mathematical problem and justify that they are equivalent. 6.EE.F.6.AD

P. Use variables to represent unknown numbers and write expressions to represent real-world or mathematical problems. 6.EE.F.6.P

Ba. Use variables to represent unknown numbers and write one-step expressions to represent real-world or mathematical problems. 6.EE.F.6.BA

BeB. May be able to identify a variable representing an unknown number. 6.EE.F.6.BEB

7. Write and solve real-world and mathematical problems in the form of one-step, linear equations involving nonnegative rational numbers. 6.EE.F.7

Ad. Solve problems in both real-world and mathematical contexts by writing and solving equations in the form of two-step, linear equations involving nonnegative rational numbers. 6.EE.F.7.AD

P. Solve problems in both real-world and mathematical contexts by writing and solving equations in the form of one-step, linear equations involving nonnegative rational numbers. 6.EE.F.7.P

Ba. Solve problems in both real-world and mathematical contexts by writing and solving equations in the form of one-step, linear equations involving whole numbers. 6.EE.F.7.BA

BeB. May be able to solve equations in the form of one-step, linear equations involving whole numbers. 6.EE.F.7.BEB

8. Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams. 6.EE.F.8

Ad. Write an inequality of the form x ≥ c or x ≤ c (with the variable on either side) to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities have infinitely many solutions and represent solutions by graphing on a number line. 6.EE.F.8.AD

P. Write an inequality of the form x > c or x < c (with the variable on either side) to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities have infinitely many solutions and represent solutions by graphing on a number line. 6.EE.F.8.P

Ba. Write an inequality of the form x > c or x < c (with the variable on the left) to represent a constraint or condition in a real-world or mathematical problem. Represent solutions by graphing on a number line. 6.EE.F.8.BA

BeB. May be able to recognize the value on an inequality of the form x > c or x < c (with the variable on the left) on number line diagrams. 6.EE.F.8.BEB

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**G. Represent and analyze quantitative relationships between dependent and independent variables.** 6.EE.G

9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity (dependent variable), in terms of the other quantity (independent variable). Analyze their relationship using graphs and tables, and relate these to the equation. 6.EE.G.9

Ad. Create a real-world problem from a given table, graph, or equation and justify the relationship between the dependent and independent variables. 6.EE.G.9.AD

P. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity (dependent variable) in terms of the other quantity (independent variable). Analyze their relationship using graphs and tables, and relate these to the equation. 6.EE.G.9.P

Ba. Describe the relationship between dependent and independent variables from a table or graph. 6.EE.G.9.BA

BeB. May be able to complete a table from a given equation. 6.EE.G.9.BEB

**Statistics and Probability**

I. **Develop understanding of statistical variability.** 6.SP.I

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. 6.SP.I.1

Ad. Create a statistical question and explain the variability in the answer. 6.SP.I.1.AD

P. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. 6.SP.I.1.P

Ba. Change a question from a nonstatistical question to a statistical question. 6.SP.I.1.BA

BeB. May be able to recognize a statistical question from a list of questions. 6.SP.I.1.BEB

2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.I.2

Ad. Make generalizations about a numerical data set collected to answer a statistical question that has a distribution which can be described by its center (median, mode, or mean), spread (range or interquartile range), and overall shape (symmetry). 6.SP.I.2.AD

P. Show that a visual representation of a set of data collected to answer a statistical question has a distribution which can be described by its center (median, mode, or mean), spread (range or interquartile range), and overall shape (symmetry). 6.SP.I.2.P

Ba. Show that a visual representation of a set of data collected to answer a statistical question has a distribution which can be described by its spread (range or interquartile range) and overall shape (symmetry). 6.SP.I.2.BA

BeB. May be able to show that a visual representation of a set of data collected to answer a statistical question has a distribution which can be described by its overall shape (symmetry). 6.SP.I.2.BEB

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 describes how its values vary with a single number. 6.SP.I.3

Ad. The Advanced student is able to:<ul><li>Create questions that could be answered from the measures of center or the measures of variation. OR</li><li>Determine the kinds of questions that can be answered using the measures of center and the measures of variation.</li></ul> 6.SP.I.3.AD

P. Compare and contrast the measures of center for a numerical data set that summarizes all of its values with a single number and the measures of variation that describe how its values vary with a single number. 6.SP.I.3.P

Ba. Compare and contrast the measures of center (mean or median) for a numerical data set that summarizes all of its values with a single number and the measure of variation (range) that describes how its values vary with a single number. 6.SP.I.3.BA

BeB. May be able to identify a measure of center (mean or median) for a numerical data set that summarizes all of its values with a single number. 6.SP.I.3.BEB

J. **Summarize and describe distributions.** 6.SP.J

4. Display numerical data in plots on a number line, including dot plots, stem-and-leaf plots, histograms, and box plots. 6.SP.J.4

Ad. Determine the appropriate display to represent numerical data (e.g., plot on a number line, including dot plots or histograms) and justify the choice. 6.SP.J.4.AD

P. Display numerical data in plots on a number line, including dot plots, stem-and-leaf plots, histograms, and box plots. 6.SP.J.4.P

Ba. Identify from a given data set a corresponding representation including dot plots, stem-and-leaf plots, histograms, and box plots. 6.SP.J.4.BA

BeB. May be able to match a visual representation of data to the name of the graph (dot plot, stem-and-leaf plot, histogram, or box plot). 6.SP.J.4.BEB

5. Summarize numerical data sets in relation to their real-world context. 6.SP.J.5

A. Report the sample size. 6.SP.J.5.A

B. Describe the context of the data under investigation, including how it was measured and its units of measurement. 6.SP.J.5.B

C. Find quantitative measures of center (median, mode and mean) and variability (range and interquartile range). Describe any overall pattern (including outliers, clusters, and distribution), with reference to the context in which the data was gathered. 6.SP.J.5.C

D. Justify the choice of measures of center (median, mode, or mean) based on the shape of the data distribution and the context in which the data was gathered. 6.SP.J.5.D

Ad. Compare and make generalizations about two different sets of numerical data in relation to their real-world context including: 6.SP.J.5.AD

A. Report sample size. 6.SP.J.5.AD.A

B. Describe the context of the data under investigation, including how it was measured and its units of measurement. 6.SP.J.5.AD.B

C. Find quantitative measures of center (median, mode, and mean) and variability (range and interquartile range). Describe any overall pattern (including outliers, clusters, and distribution), with reference to the context in which the data was gathered. 6.SP.J.5.AD.C

D. Justify the choice of measures of center (median, mode, or mean) based on the shape of the data distribution and the context in which the data was gathered. 6.SP.J.5.AD.D

P. Summarize numerical data sets in relation to their real-world context. 6.SP.J.5.P

A. Report the sample size. 6.SP.J.5.P.A

B. Describe the context of the data under investigation, including how it was measured and its units of measurement. 6.SP.J.5.P.B

C. Find quantitative measures of center (median, mode, and mean) and variability (range and interquartile range). Describe any overall pattern (including outliers,

clusters, and distribution), with reference to the context in which the data was gathered. 6.SP.J.5.P.C

D. Justify the choice of measures of center (median, mode, or mean) based on the shape of the data distribution and the context in which the data was gathered. 6.SP.J.5.P.D

Ba. Summarize numerical data sets in relation to their real-world context. 6.SP.J.5.BA

A. Report sample size. 6.SP.J.5.BA.A

B. Describe the context of the data under investigation, including how it was measured and its units of measurement. 6.SP.J.5.BA.B

C. Find quantitative measures of center (median, mode, and mean) and variability (range and interquartile range). 6.SP.J.5.BA.C

BeB. May be able to summarize numerical data sets in relation to their real-world context by finding quantitative measures of center (median, mode, and mean) and variability (range). 6.SP.J.5.BEB