Wyoming Mathematics

Grade 7

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

E. Draw, construct, and describe geometrical figures and describe the relationships between them. 7.G.E

1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing. 7.G.E.1

Ad. Identify and reproduce scale drawing(s) at different scales with respect to the dimensions of the actual figure. 7.G.E.1.AD

P. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing. 7.G.E.1.P

Ba. Compute a single dimension from a scale drawing of a geometric figure. 7.G.E.1.BA

BeB. May be able to compute a single dimension from a scale drawing of a simple geometric figure with a scale factor of 2, 3, 5, or 10 when given a visual representation. 7.G.E.1.BEB

2. Draw geometric shapes with given conditions using a variety of tools (e.g., ruler and protractor, or technology). 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. 7.G.E.2

Ad. Explain the conditions for a unique triangle, more than one triangle, or no triangle. 7.G.E.2.AD

P. Draw geometric shapes with given conditions using a variety of tools (e.g., ruler and protractor, or technology). 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. 7.G.E.2.P

Ba. Draw a triangle using a variety of tools when given one angle measure or one side length. 7.G.E.2.BA

BeB. May be able to identify the type of triangle with respect to angle measures and side measures. 7.G.E.2.BEB

3. Describe the two-dimensional figures that result from slicing three-dimensional figures parallel to the base, as in plane sections of right rectangular prisms and right rectangular pyramids. 7.G.E.3

Ad. In addition to Proficient, the Advanced student is able to describe the two-dimensional figure that results from slicing a three-dimensional figure parallel, perpendicular, or oblique to the base as in plane sections of right rectangular prisms, right rectangular pyramids, or cylinders. 7.G.E.3.AD

P. The Proficient student is able to describe the two-dimensional figure (shape and size in relation to the base) that results from slicing a three-dimensional figure parallel to the base, as in plane sections of right rectangular prisms and right rectangular pyramids. 7.G.E.3.P

Ba. The Basic student is able to identify the two-dimensional figure that result from slicing a three-dimensional figure parallel to the base, as in plane sections of right rectangular prisms and right rectangular pyramids when given a visual representation. 7.G.E.3.BA

BeB. The Below Basic student may be able to identify the two-dimensional figure that result from slicing a three-dimensional figure parallel to the base, as in plane sections of right rectangular prisms when given a visual representation where the cross-section is drawn. 7.G.E.3.BEB

F. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. 7.G.F

4. Investigate the concept of circles. 7.G.F.4

   A. Demonstrate an understanding of the proportional relationships between diameter, radius, and circumference of a circle. 7.G.F.4.A

   B. Understand that π is defined by the constant of proportionality between the circumference and diameter. 7.G.F.4.B

   C. Given the formulas for circumference and area of circles, solve real-world and mathematical problems. 7.G.F.4.C

Ad. In addition to Proficient, the Advanced student is able to determine how much area or circumference changes based on a change in radius or diameter. 7.G.F.4.AD

P. The Proficient student is able to investigate the concept of circles. 7.G.F.4.P

   A. Demonstrate an understanding of the proportional relationships between diameter, radius, and circumference of a circle. 7.G.F.4.P.A

   B. Understand that π is defined by the constant of proportionality between the circumference and diameter. 7.G.F.4.P.B

   C. Given the formulas for circumference and area of circles, solve real-world and mathematical problems. 7.G.F.4.P.C

Ba. The Basic student is able to investigate the concept of circles. 7.G.F.4.BA

   A. Find radius when given the diameter and find diameter when given radius. 7.G.F.4.BA.A

   C. Given the formulas for circumference and area of circles, solve mathematical problems. 7.G.F.4.BA.C

BeB. The Below Basic student may be able to investigate the concept of circles. 7.G.F.4.BEB

   A. Identify parts of a circle (radius, diameter, center, and circumference). 7.G.F.4.BEB.A

   C. Given a word problem, identify which formula would be used to solve the problem (area or circumference). 7.G.F.4.BEB.C

5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. 7.G.F.5

Ad. In addition to Proficient, the Advanced student is able to write and solve equations for unknown angles in a complex diagram using facts about supplementary, complementary, vertical, and adjacent angles. 7.G.F.5.AD

P. The Proficient student is able to use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. 7.G.F.5.P

Ba. The Basic student is able to use facts about supplementary, complementary, and vertical angles to find missing angle measurements given a verbal description or

visual representation. 7.G.F.5.BA

BeB. The Below Basic student may be able to identify supplementary, complementary, vertical, and adjacent angles when given a visual representation. 7.G.F.5.BEB

6. Solve real-world and mathematical problems involving. 7.G.F.6

   A. Area and surface area of objects composed of triangles and quadrilaterals; 7.G.F.6.A

   B. Volume of objects composed only of right prisms having triangular or quadrilateral bases. 7.G.F.6.B

Ad. In addition to Proficient, the Advanced student is able to solve real-world and mathematical problems involving: 7.G.F.6.AD

   i. Find a missing dimension when given the area of objects composed of triangles, quadrilaterals, circles, and semi-circles. 7.G.F.6.AD.A.I

   ii. Find a missing dimension when given the surface area of objects composed of triangles and quadrilaterals. 7.G.F.6.AD.A.II

B. Find a missing dimension when given the volume of objects composed only of right prisms having triangular or quadrilateral bases. 7.G.F.6.AD.B

P. The Proficient student is able to solve real-world and mathematical problems involving: 7.G.F.6.P

   i. Find a missing dimension when given the area of objects composed of triangles, quadrilaterals, circles, and semi-circles. 7.G.F.6.P.A.I

   ii. Find a missing dimension when given the surface area of objects composed of triangles and quadrilaterals. 7.G.F.6.P.A.II

   B. Find a missing dimension when given the volume of objects composed only of right prisms having triangular or quadrilateral bases. 7.G.F.6.P.B

Ba. The Basic student is able to solve real-world and mathematical problems involving: 7.G.F.6.BA

   i. Area of objects composed of triangles and/or parallelograms. 7.G.F.6.BA.A.I

   ii. Surface area of objects where the base is an equilateral triangle or rectangle. 7.G.F.6.BA.A.II

   B. Volume of right prisms having triangular and rectangular bases. 7.G.F.6.BA.B

BeB. The Below Basic student may be able to solve real-world and mathematical problems involving: 7.G.F.6.BEB

   i. Area of triangles and/or parallelograms. 7.G.F.6.BEB.A.I

   ii. Surface area of right prisms and/or right pyramids when given the nets with the areas labeled. 7.G.F.6.BEB.A.II

   B. Volume of right rectangular prisms. 7.G.F.6.BEB.B

Ratios And Proportional Relationships

A. **Analyze proportional relationships and use them to solve real-world and mathematical problems.** 7.RP.A

1. Compute unit rates, including those involving complex fractions, with like or different units. 7.RP.A.1

Ad. Compute multi-step unit rates, including those involving complex fractions, with like or different units. 7.RP.A.1.AD

P. Compute unit rates, including those involving complex fractions, with like or different units. 7.RP.A.1.P

Ba. Compute unit rates, including those involving complex fractions, with like units. 7.RP.A.1.BA

BeB. May be able to compute unit rates, including those involving integers, with like units. 7.RP.A.1.BEB

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

A. Decide whether two quantities in a table or graph are in a proportional relationship. 7.RP.A.2.A

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

C. Represent proportional relationships with equations. 7.RP.A.2.C

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 (l, r) where r is the unit rate. 7.RP.A.2.D

Ad. Recognize and represent proportional relationships between quantities. 7.RP.A.2.AD

A. Justify proportionality in a table or graph by extrapolating and/or interpolating ratios that fit the proportional relationship. 7.RP.A.2.AD.A

B. Compare the constant of proportionality (unit rate) when given two different representations (tables, graphs, equations, diagrams, and verbal descriptions). 7.RP.A.2.AD.B

C. Create a scenario with a real-world context that represents a given proportional equation. 7.RP.A.2.AD.C

D. Extrapolate or interpolate coordinates of another point which follows the proportional relationship and explain the reasoning. 7.RP.A.2.AD.D

P. The Proficient student is able to recognize and represent proportional relationships between quantities. 7.RP.A.2.P

A. Decide whether two quantities in a table or graph are in a proportional relationship. 7.RP.A.2.P.A

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

C. Represent proportional relationships with equations. 7.RP.A.2.P.C

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 (l, r) where r

is the unit rate. 7.RP.A.2.P.D

Ba. Recognize and represent proportional relationships between quantities. 7.RP.A.2.BA

A. Identify characteristics of proportionality from a proportional table (consistent unit rates and passes through the origin). 7.RP.A.2.BA.A

B. Calculate the constant of proportionality (unit rate) from a verbal descriptions of a proportional relationship. 7.RP.A.2.BA.B

C. Represent proportional relationships with equations when the unit rate is given. 7.RP.A.2.BA.C

D. Identify the unit rate on the graph of a proportional relationship when given the coordinate (1, r) where r is the unit rate. 7.RP.A.2.BA.D

BeB. May be able to recognize and represent proportional relationships between quantities. 7.RP.A.2.BEB

A. Identify characteristics of proportionality from a proportional graph (linear and passing through the origin). 7.RP.A.2.BEB.A

B. Identify that the unit rate and the constant of proportionality are the same value. 7.RP.A.2.BEB.B

C. Identify an equation that represents a proportional relationship. 7.RP.A.2.BEB.C

D. Identify coordinates on a graph in the proportional relationship. 7.RP.A.2.BEB.D

3. Solve multi-step real-world and mathematical problems involving ratios and percentages. 7.RP.A.3

Ad. Represent and solve multi-step real-world and mathematical problems involving ratios and percentages in multiple ways. 7.RP.A.3.AD

P. Solve multi-step real-world and mathematical problems involving ratios and percentages (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error). 7.RP.A.3.P

Ba. Solve one-step real-world and mathematical problems involving ratios and percentages. 7.RP.A.3.BA

BeB. May be able to identify a proportion that can be used to solve real-world or mathematical problems involving ratios and percentages. 7.RP.A.3.BEB

The Number System

B. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. 7.NS.B

1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers. 7.NS.B.1

A. Describe situations in which opposite quantities combine to make 0 (the additive identity). 7.NS.B.1.A

B. Understand that p + q represents the distance |q| from P whose placement is determined by the sign of q. Interpret sums of rational numbers by describing real-world contexts. 7.NS.B.1.B

C. Show that a number and its opposite have a sum of 0 (are additive inverses). 7.NS.B.1.C

D. Understand subtraction of rational numbers as adding the additive inverse, p - q = p + (-q). Apply this principal in real-world contexts. 7.NS.B.1.D

E. Apply properties of addition as strategies to add and subtract rational numbers. 7.NS.B.1.E

Ad. Add and subtract rational numbers showing more than one strategy (e.g., number line diagrams, subtraction as adding the additive inverse, properties of addition). 7.NS.B.1.AD

P. Add and subtract two rational numbers and interpret sums of rational numbers by describing them in real-world contexts. 7.NS.B.1.P

Ba. Add and subtract two integers. 7.NS.B.1.BA

BeB. May be able to add and subtract two integers given a number line or manipulatives. 7.NS.B.1.BEB

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

1. Understand that the multiplicative inverse of a number is its reciprocal and their product is equal to one (the multiplicative identity). 7.NS.B.2.A.1

2. Understand positive and negative sign rules for multiplying rational numbers. Interpret products of rational numbers by describing real-world contexts. 7.NS.B.2.A.2

B. Understand that integers can be divided, provided that the divisor is not 0, and every quotient of integers is a rational number. Recognize that 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.B.2.B

C. Apply properties of multiplication (Commutative, Associative, Distributive, or Properties of Identity and Inverse elements) to multiply and divide rational numbers. 7.NS.B.2.C

D. Convert a rational number to a decimal. Recognize that rational numbers can be written as fractions or decimal numbers that terminate or repeat. 7.NS.B.2.D

Ad. In addition to Proficient, the Advanced student is able to multiply and divide rational numbers showing more than one strategy (e.g., as repeated addition, as

repeated subtraction, on a number line, properties of multiplication). 7.NS.B.2.AD

P. Multiply and divide two rational numbers and interpret products and quotients of rational numbers by describing real-world contexts.
Understand that integers can be divided, provided that the divisor is not 0. Recognize that if p and q are integers then -(p/q) = (-p)/q = p/(-q).
Convert a rational number to a decimal. Recognize that rational numbers can be written as fractions or decimal numbers that terminate or repeat. 7.NS.B.2.P

Ba. The Basic student is able to multiply and divide two integers. Convert a rational number to a decimal and recognize terminating or repeating decimals. 7.NS.B.2.BA

BeB. The Below Basic student may be able to multiply and divide two integers given a number line or manipulatives. 7.NS.B.2.BEB

3. Solve real-world and mathematical problems involving the four arithmetic operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) 7.NS.B.3

Ad. In addition to Proficient, the Advanced student is able to solve multi-step real-world and mathematical problems involving the four arithmetic operations with different representations of rational numbers (fractions, decimals, percentages, or integers). 7.NS.B.3.AD

P. The Proficient student is able to solve real-world and mathematical problems involving the four arithmetic operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) 7.NS.B.3.P

Ba. The Basic student is able to solve real-world and mathematical problems involving the four arithmetic operations with integers. 7.NS.B.3.BA

BeB. The Below Basic student may be able to determine if an answer will be positive or negative in a one- or two- step real-world or mathematical problem involving the four arithmetic operations with integers. 7.NS.B.3.BEB

Expressions and Equations

C. Use properties of operations to generate equivalent expressions. 7.EE.C

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

Ad. Create more than one equivalent expression when adding, subtracting, factoring, and expanding rational linear expressions and justify equivalence based on properties or a visual representation. 7.EE.C.1.AD

P. Add, subtract, factor, and expand linear expressions with rational coefficients. 7.EE.C.1.P

Ba. Combine like terms or use the Distributive Property to simplify integer expressions. 7.EE.C.1.BA

BeB. May be able to identify like terms in an expression. 7.EE.C.1.BEB

2. Recognize that algebraic expressions may have a variety of equivalent forms that reveal different information, and determine an appropriate form for a given real-world situation. 7.EE.C.2

Ad. Write different equivalent forms from real-world situations and explain why they are equivalent, referring to what the value represents for each term based on the context of the problem. 7.EE.C.2.AD

P. Identify equivalent forms of expressions from real-world situations, and interpret what the value represents for each term based on the context of the problem. 7.EE.C.2.P

Ba. Interpret what the value represents for each term based on the context of a real-world problem. 7.EE.C.2.BA

BeB. May be able to tell what the variable represents in the context of a real-world problem in an algebraic expression. 7.EE.C.2.BEB

D. Solve real-life and mathematical problems using numerical and algebraic expressions and equations. 7.EE.D

3. Solve multi-step real-world and mathematical problems involving rational numbers. Include fraction bars as a grouping symbol. 7.EE.D.3

Ad. Recognize a numerical expression that could be used to solve a multi-step real-world or mathematical problem involving rational numbers. Include fraction bars as a grouping symbol. 7.EE.D.3.AD

P. Solve multi-step real-world and mathematical problems involving rational numbers. Include fraction bars as a grouping symbol. 7.EE.D.3.P

Ba. Solve two-step real-world and mathematical problems involving rational numbers. Include fraction bars as a grouping symbol. 7.EE.D.3.BA

BeB. May be able to solve two-step real-world and mathematical problems involving integer values. 7.EE.D.3.BEB

4. Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. 7.EE.D.4

A. Write and fluently solve linear equations of the form ax + b = c and a(x + b) = c where a, b, and c are rational numbers. 7.EE.D.4.A

B. Write and solve multi-step linear equations that include the use of the Distributive Property and combining like terms. Exclude equations that contain variables on both sides. 7.EE.D.4.B

C. Write and solve two-step linear inequalities. Graph the solution set on a number line and interpret its meaning. 7.EE.D.4.C

D. Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities. 7.EE.D.4.D

Ad. Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. 7.EE.D.4.AD

A. Write and fluently solve linear equations of the form ax + b = c and a(x + b) = c where a, b, and c are rational numbers. Recognize and verify other equivalent forms of the equation. 7.EE.D.4.AD.A

B. Create a real-world scenario when given a multi-step linear equation that includes the use of the Distributive Property and combining like terms. 7.EE.D.4.AD.B

C. Write and solve a multi-step linear inequality that includes the use of the Distributive Property or combining like terms. Graph the solution set on a number line and interpret its meaning. 7.EE.D.4.AD.C

D. Identify and justify multiple ways for solving multi-step linear equations and inequalities that include the use of the Distributive Property and combining like terms. 7.EE.D.4.AD.D

P. Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. 7.EE.D.4.P

A. Write and fluently solve linear equations of the form ax + b = c and a(x + b) = c where a, b, and c are rational numbers. 7.EE.D.4.P.A

B. Write and solve multi-step linear equations that include the use of the Distributive Property and combining like terms. Exclude equations that contain variables on both sides. 7.EE.D.4.P.B

C. Write and solve two-step linear inequalities. Graph the solution set on a number line and interpret its meaning. 7.EE.D.4.P.C

D. Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities. 7.EE.D.4.P.D

Ba. Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. 7.EE.D.4.BA

A. Write and fluently solve linear equations of the form ax + b = c and a(x + b) = c where a, b, and c are integers. 7.EE.D.4.BA.A

B. Solve multi-step linear equations that include the use of the Distributive Property or combining like terms. Exclude equations that contain variables on both sides. 7.EE.D.4.BA.B

C. Solve two-step linear inequalities. Graph the solution set on a number line. 7.EE.D.4.BA.C

D. Identify and justify the steps for solving two-step linear equations and two-step linear inequalities with whole numbers. 7.EE.D.4.BA.D

BeB. May be able to apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. 7.EE.D.4.BEB

A. Write and solve one-step linear equations with whole numbers. 7.EE.D.4.BEB.A

B. Use the Distributive Property or combine like terms when given a multi-step linear equation to simplify the equation. Exclude equations that contain variables on both sides. 7.EE.D.4.BEB.B

C. Solve one-step linear inequalities with whole numbers. Graph the solution set on a number line. 7.EE.D.4.BEB.C

D. Identify and justify the steps for solving one-step linear equations and one-step linear inequalities with whole numbers. 7.EE.D.4.BEB.D

Statistics and Probability

G. Use random sampling to draw inferences about a population. 7.SP.G

1. Solve real-world and mathematical problems involving: 7.SP.G.1

   A. Understand that a sample is a subset of a population. 7.SP.G.1.A

   B. Differentiate between random and non-random sampling. 7.SP.G.1.B

   C. Understand that generalizations from a sample are valid only if the sample is representative of the population. 7.SP.G.1.C

   D. Understand that random sampling is used to gather a representative sample and tends to support valid inferences about the population. 7.SP.G.1.D

Ad. Solve real-world and mathematical problems involving: 7.SP.G.1.AD

   A. Generating a sample that is a subset of a population. 7.SP.G.1.AD.A

   B. Creating the parameters for a random sample. 7.SP.G.1.AD.B

   C. Writing a generalization and justifying its validity, given a population and a sample. 7.SP.G.1.AD.C

   D. Analyzing multiple random samples to explain why there might be differences in inferences from the data or analyzing errors in data collection performed by others. 7.SP.G.1.AD.D

P. Solve real-world and mathematical problems involving: 7.SP.G.1.P

   A. Describing a sample that is a subset of a population. 7.SP.G.1.P.A

   B. Differentiating between random and non-random sampling. 7.SP.G.1.P.B

   C. Determining if a generalization is valid by justifying whether or not the sample is representative of the population. 7.SP.G.1.P.C

   D. Determining if inferences about the population are valid based on how the given sample was collected. 7.SP.G.1.P.D

Ba. Solve real-world and mathematical problems involving: 7.SP.G.1.BA

   A. Identifying a sample that is a subset of a population. 7.SP.G.1.BA.A

   B. Identifying a random sample. 7.SP.G.1.BA.B

   C. Identifying a generalization based on a sample that is representative of the population. 7.SP.G.1.BA.C

   D. Identifying a random sampling that supports valid inferences about the given population. 7.SP.G.1.BA.D

BeB. Solve real-world and mathematical problems involving: 7.SP.G.1.BEB

   A. Defining sample or population. 7.SP.G.1.BEB.A

   B. Defining random sample. 7.SP.G.1.BEB.B

   C. Identifying a representative sample for a given population. 7.SP.G.1.BEB.C

   D. Defining valid inference. 7.SP.G.1.BEB.D

2. Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest. 7.SP.G.2

Ad. Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest and justify variability in context of the situation. 7.SP.G.2.AD

P. Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest. 7.SP.G.2.P

Ba. Draw inferences about a population given data from a random sample and recognize that random samples produce variability. 7.SP.G.2.BA

BeB. May be able to define variability. 7.SP.G.2.BEB

H. Draw informal comparative inferences about two populations. 7.SP.H

3. Visually compare the centers, spreads, and overlap of two displays of data (e.g., back-to-back stem and leaf plots, dot plots, histograms, box plots) that are graphed on the same scale and draw inferences about this data. 7.SP.H.3

Ad. Visually compare the centers, spreads, and overlap of two displays of data (e.g., back-to-back stem and leaf plots, dot plots, histograms, box plots) that are graphed on different scales or in different representations and draw inferences about this data. 7.SP.H.3.AD

P. Visually compare the centers, spreads, and overlap of two displays of data (e.g., back-to-back stem and leaf plots, dot plots, histograms, box plots) that are graphed on the same scale and draw inferences about this data. 7.SP.H.3.P

Ba. Visually compare the centers and spreads of two displays of data (e.g., dot plots, box plots) that are graphed on the same scale and draw inferences about this data. 7.SP.H.3.BA

BeB. May be able to visually compare the centers and spreads of two box plots that are graphed on the same scale. 7.SP.H.3.BEB

4. Given measures of center and variability (mean, median and/or mode; range, interquartile range, and/or standard deviation), for numerical data from random samples, draw appropriate informal comparative inferences about two populations. 7.SP.H.4

Ad. Given measures of center and variability (mean, median, and/or mode; range, interquartile range, and/or standard deviation), for numerical data from random samples, draw appropriate informal comparative inferences about multiple populations and determine to which population(s) given values are most likely to correspond. 7.SP.H.4.AD

P. Given measures of center and variability (mean, median, and/or mode; range, interquartile range, and/or standard deviation), for numerical data from random samples, draw appropriate informal comparative inferences about two populations. 7.SP.H.4.P

Ba. Given measures of center and variability (mean and/or median; range), for numerical data from random samples, identify valid comparisons about two populations. 7.SP.H.4.BA

BeB. May be able to identify measures of center and variability. 7.SP.H.4.BEB

I. **Investigate chance processes and develop, use, and evaluate probability models.** 7.SP.I

5. Find and interpret the probability of a random event. Understand that the probability of a random event is a number between, and including, 0 and 1 that expresses the likelihood of the event occurring. 7.SP.I.5

Ad. Justify why probability cannot be greater than 1 or less than 0. 7.SP.I.5.AD

P. Find and interpret the probability of a random event. Understand that the probability of a random event is a number between, and including, 0 and 1 that expresses the likelihood of the event occurring. 7.SP.I.5.P

Ba. Interpret the meaning of a given probability. 7.SP.I.5.BA

BeB. May be able to categorize events using certain, likely, equal chance, unlikely, or impossible. 7.SP.I.5.BEB

6. Collect multiple samples to compare the relationship between theoretical and experimental probabilities for simple events. 7.SP.I.6

Ad. Recognize and justify why the experimental probability approaches the theoretical probability as the relative frequency of an event increases. 7.SP.I.6.AD

P. Collect multiple samples to compare the relationship between theoretical and experimental probabilities for simple events. 7.SP.I.6.P

Ba. Collect one sample to compare the relationship between theoretical and experimental probabilities for a simple event. 7.SP.I.6.BA

BeB. May be able to identify theoretical and experimental probabilities for a simple event. 7.SP.I.6.BEB

7. Apply the concepts of theoretical and experimental probabilities for simple events. 7.SP.I.7

A. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. 7.SP.I.7.A

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

C. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancies. 7.SP.I.7.C

Ad. Given probabilities or outcomes, create the corresponding probability experiment. 7.SP.I.7.AD

P. Apply the concepts of theoretical and experimental probabilities for simple events. 7.SP.I.7.P

A. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. 7.SP.I.7.P.A

B. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. 7.SP.I.7.P.B

C. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancies. 7.SP.I.7.P.C

Ba. Given the theoretical and experimental probabilities from a model, compare probabilities; if the agreement is not good, explain possible sources of the discrepancies. 7.SP.I.7.BA

BeB. May be able to explain the difference between experimental and theoretical probability. 7.SP.I.7.BEB

8. Find probabilities of compound events using organized lists, tables, and tree diagrams. 7.SP.I.8

A. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. 7.SP.I.8.A

B. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. 7.SP.I.8.B

Ad. Find the probabilities of compound dependent events. 7.SP.I.8.AD

P. Find probabilities of compound events using organized lists, tables, and tree diagrams. 7.SP.I.8.P

A. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. 7.SP.I.8.P.A

B. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. 7.SP.I.8.P.B

Ba. Complete an organized list, a table, or a tree diagram and find the probability of a compound event. 7.SP.I.8.BA

BeB. May be able to find the probability of a compound event when given the sample space. 7.SP.I.8.BEB