Content			
	Correlated Assignments	Correlated Assignments	Correlated Assignments
Quarter 1 Math 7 Compacted	**Math 7 Unit B** Readiness Lesson Scuba Diving Lesson 4-1 Rational Numbers, Opposites and Absolute Values Lesson 4-2 Adding Integers Lesson 4-3 Adding Rational Numbers Lesson 4-4 Subtracting Integers Lesson 4-5 Subtracting Rational Numbers Lesson 4-6 Distance on a Number Line Lesson 4-7 Problem Solving Topic Review Topic Assessment Readiness Lesson Running a Bakery Lesson 5-1 Multiplying Integers Lesson 5-2 Multiplying Rational Numbers Lesson 5-3 Dividing Integers Lesson 5-4 Dividing Rational Numbers Lesson 5-5 Operations on Rational Numbers Lesson 5-6 Problem Solving Topic Review Topic Assessment	**Math 7 Unit C** Readiness Lesson Choosing a Cell Phone Plan Lesson 7-1 Expanding Algebraic Expressions Lesson 7-2 Factoring Algebraic Expressions Lesson 7-3 Adding Algebraic Expressions Lesson 7-4 Subtracting Algebraic Expressions Lesson 7-5 Problem Solving Topic Review Topic Assessment Readiness Lesson Gym Workouts Lesson 8-1 Solving Simple Equations Lesson 8-2 Writing Two-Step Equations Lesson 8-3 Solving Two-Step Equations Lesson 8-4 Solving Equations Using the Distributive Property Lesson 8-5 Problem Solving Topic Review Topic Assessment Readiness Lesson Taking Public Transportation Lesson 9-1 Solving Inequalities Using Addition or Subtraction Lesson 9-2 Solving Inequalities Using Multiplication or Division Lesson 9-3 Solving Two-Step Inequalities Lesson 9-4 Solving Multi-Step Inequalities Lesson 9-5 Problem Solving Topic Review Topic Assessment **Math 8 Unit A** Readiness Lesson Skyscrapers Lesson 1-1 Expressing Rational Numbers with Decimal Lesson 1-2 Exploring Irrational Numbers Lesson 1-3 Approximating Irrational Numbers Lesson 1-4 Comparing and Ordering Rational and Irrational Numbers Lesson 1-5 Problem Solving Topic Review Topic Assessment	**Math 8 Unit B** Readiness Lesson Auto Racing Lesson 2-1 Solving Two-Step Equations Lesson 2-2 Solving Equations with Variables on Both Sides Lesson 2-3 Solving Equations Using the Distributive Property Lesson 2-4 Solutions – One, None, or Infinitely Many Lesson 2-5 Problem Solving Topic Review Topic Assessment Readiness Lesson Ocean Waves Lesson 3-1 Perfect Squares, Square Roots, and Equations of the form x2 = p Lesson 3-2 Perfect Cubes, Cube Roots, and Equations of the form x3 = p Lesson 3-3 Exponents and Multiplication Lesson 3-4 Exponents and Division Lesson 3-5 Zero and Negative Exponents Lesson 3-6 Comparing Expressions with Exponents Lesson 3-7 Problem Solving Topic Review Topic Assessment Readiness Lesson: Mathematics of Sound Lesson 4-1 Exploring Scientific Using Scientific Notation to Lesson 4-2 Describe Very Large Quantities Notation Lesson 4-3 Using Scientific Notation to Describe Very Small Quantities Lesson 4-4 Operating with Numbers Expressed in Scientific Notation Lesson 4-5 Problem Solving Topic Review Topic Assessment

Domain 2: The Number System 7.NS

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

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.1.a: 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.1.b: Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 are additive inverses. Interpret sums of rational numbers by describing real-world contexts.

7.NS.1.c: Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

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

7.NS.2.a: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(–1)(–1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

7.NS.2.b: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real world contexts.

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

7.NS.2.d: Convert a rati onal 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 involving the four operations with rational numbers.

Domain 3: Expressions and Equations 7.EE

Use properties of operations to generate equivalent expressions.

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.”

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

7.EE3: 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 3/4 inches long in the center of a door that is 27 1/2 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.*

7.EE.4: Use variables to represent quantities in a real-world or mathematical problem, 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?

7.EE.4b: Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.

Domain 1: The Number System 8.NS

Know that there are numbers that are not rational, and approximate them by rational numbers.

8.NS.1: Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

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., √2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.

Domain 2: Expressions and Equations 8.EE

Work with radicals and integer exponents.

8.EE.1: Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = 1/33 = 1/27

8.EE.2: Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irra6onal.

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 × 108 and the population of the world as 7 × 109, 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.

Analyze and solve linear equations and pairs of simultaneous linear equations.

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.

Content			
	Correlated Assignments	Correlated Assignments	
Quarter 2 Math 7 Compacted	**Math 7 Unit A** Readiness Assessment for Unit A Readiness Lesson Planning a Concert Lesson 1-1 Equivalent Ratios Lesson 1-2 Unit Rates Lesson 1-3 Ratios with Fractions Lesson 1-4 Unit Rates with Fractions Lesson 1-5 Problem Solving Topic Review Tropic Assessment Readiness Lesson Making and Editing a Video Lesson 2-1 Proportional Relationships and Tables Lesson 2-2 Proportional Relationships and Graphs Lesson 2-3 Constant of Proportionality Lesson 2-4 Proportional Relationships and Equations Lesson 2-5 Maps and Scale Drawings Lesson 2-6 Problem Solving Topic Review Topic Assessment Readiness Lesson Restaurant Math Lesson 3-1 The Percent Equation Lesson 3-2 Using the Percent Equations Lesson 3-3 Simple Interest Lesson 3-4 Compound Interest Lesson 3-5 Percent Increase and Decrease Lesson 3-6 Markups and Markdowns Lesson 3-7 Problem Solving Topic Review Topic Assessment **Math 7 Unit B** Readiness Lesson Summer Olympics Lesson 6-1 Repeating Decimals Lesson 6-2 Terminating Decimals Lesson 6-3 Percent Greater than 100 Lesson 6-4 Percent less than 1 Lesson 6-5 Fractions, Decimals and Percent Lesson 6-6 Percent Error Lesson 6-7 Problem Solving Topic Review Topic Assessment	**Math 8 Unit C** Readiness Lesson High Speed Trains Lesson 5-1 Graphing Proportional Relationships Lesson 5-2 Linear Equations: y=mx Lesson 5-3 The Slope of a Line Lesson 5-4 Unit Rates and Slope Lesson 5-5 The y-intercept of a Line Lesson 5-6 Linear Equations: y = mx + b Lesson 5-7 Problem Solving Topic Review Topic Assessment Readiness Lesson Owning a Pet Lesson 6-1 What is a System of Linear Equations in Two Variables? Lesson 6-2 Estimating Solutions of Linear Systems by Inspection Lesson 6-3 Solving Systems of Linear Equations by Graphing Lesson 6-4 Solving Systems of Linear Equations Using Substitution Lesson 6-5 Solving Systems of Linear Equations Using Addition Lesson 6-6 Solving Systems of Linear Equations Using Subtraction Lesson 6-7 Problem Solving Topic Review Topic Assessment **Math 8 Unit D** Readiness Lesson Skydiving Lesson 7-1 Recognize a Function Lesson 7-2 Represent a Function Lesson 7-3 Linear Functions Lesson 7-4 Nonlinear Functions Lesson 7-5 Increasing and Decreasing Intervals Lesson 7-6 Sketching a Function Graph Lesson 7-7 Problem Solving Topic Review Topic Assessment Readiness Lesson Snowboarding Competitions Lesson 8-1 Defining a Linear Function Rule Lesson 8-2 Rate of Change Lesson 8-3 Initial Value Lesson 8-4 Comparing Two Linear Functions Lesson 8-5 Constructing a Function to Model a Linear Relationship Lesson 8-6 Problem Solving Topic Review Topic Assessment	

Domain 1: Ratios and Proportional Relationships 7.RP

Analyze proportional relationships and use them to solve real-world and mathematical problems.

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: Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

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

7.RP.2c: Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.

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.

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

Domain 2: Expressions and Equations 8.EE

Understand the connections between proportional relationships, lines, and linear equations.

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 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 for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

Analyze and solve linear equations and pairs of simultaneous linear equations.

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 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.

Domain 3: Functions 8.F

Define, evaluate, and compare functions.

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.

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 a 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.

Use functions to model relationships between quantities.

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.

Content			
	Correlated Assignments	Correlated Assignments	Correlated Assignments
Quarter 3 Math 7 Compacted	**Math 7 Unit D** Readiness Lesson Miniature Golf Lesson 10-1 Measuring Angles Lesson 10-2 Adjacent Angles Lesson 10-3 Complementary Angles Lesson 10-4 Supplementary Angles Lesson 10-5 Vertical Angles Lesson 10-6 Problem Solving Topic Review Tropic Assessment Readiness Lesson Planning Zoo Habitats Lesson 11-1 Center, Radius, and Diameter Lesson 11-2 Circumference of a Circle Lesson 11-3 Area of a Circle Lesson 11-4 Relating Circumference and Area of a Circle Lesson 11-5 Problem Solving Topic Review Topic Assessment Readiness Lesson Architecture Lesson 12-1 Geometry Drawing Tools Lesson 12-2 Drawing Triangles with Given Conditions 1 Lesson 12-3 Drawing Triangles with Given Conditions 2 Lesson 12-4 2-D Slices of Right Rectangular Prisms Lesson 12-5 2-D Slices of Right Rectangular Pyramids Lesson 12-6 Problem Solving Topic Review Topic Assessment Readiness Lesson Growing a Garden Lesson 13-1 Surface Area of Right Prisms Lesson 13-2 Volume of Rights Prisms Lesson 13-3 Surface Area of Right Pyramids Lesson 13-4 Volume of Right Pyramids Lesson 13-5 Problem Solving Topic Review Topic Assessment	**Math 8 Unit E** Readiness Lesson Computer-Aided Design Lesson 9-1 Translations Lesson 9-2 Reflections Lesson 9-3 Rotations Lesson 9-4 Congruent Figures Lesson 9-5 Problem Solving Topic Review Topic Assessment Readiness Lesson Air Travel Lesson 10-1 Dilations Lesson 10-2 Similar Figures Lesson 10-3 Relating Similar Triangles and Slope Lesson 10-4 Problem Solving Topic Review Topic Assessment Readiness Lesson Photography Lesson 11-1 Angles, Lines, and Transversals Lesson 11-2 Reasoning and Parallel Lines Lesson 11-3 Interior Angles of Triangles Lesson 11-4 Exterior Angles of Triangles Lesson 11-5 Angle-Angle Triangle Similarity Lesson 11-6 Problem Solving Topic Review Topic Assessment Readiness Lesson Designing a Billboard Lesson 12-1 Reasoning and Proof Lesson 12-2 The Pythagorean Theorem Lesson 12-3 Finding Unknown Leg Lengths Lesson 12-4 The Converse of the Pythagorean Theorem Lesson 12-5 Distance in the Coordinate Plane Lesson 12-6 Problem Solving Topic Review Topic Assessment	**Math 8 Unit E** Readiness Lesson Sand Sculptures Lesson 13-1 Surface Area or Cylinders Lesson 13-2 Volume of Cylinders Lesson 13-3 Surface Area of Cones Lesson 13-4 Volume of Cones Lesson 13-5 Surface Area of Spheres Lesson 13-6 Volume of Spheres Lesson 13-7 Problem Solving Topic Review Topic Assessment

Domain 4: Geometry 7.G

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

7.G.1: Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

7.G.2: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. 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.3: Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Solve real-life and mathematical problems involving angles measure, area, surface area, and volume.

7.G.4: Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

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

7.G.6: Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Domain 4: Geometry 8.G

Understand congruence and similarity using physical models, transparencies, or geometry software.

8.G.1: Verify experimentally the properties of rotations, reflections, and translations:

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 using coordinates.

8.G.4: Understand that a two-dimensional figure is similar to another if the second can be obtained from 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.

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

Understand and apply the Pythagorean Theorem.

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.

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

Solve real-world and mathematical problems involving volume or cylinders, cones and spheres.

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

Content			
	Correlated Assignments	Correlated Assignments	Correlated Assignments
Quarter 4 Math 7 Compacted	**Math 7 Unit E** Readiness Lesson Endangered Species Lesson 14-1 Populations and Samples Lesson 14-2 Estimating a Population Lesson 14-3 Convenience Sampling Lesson 14-4 Systematic Sampling Lesson 14-5 Simple Random Sampling Lesson 14-6 Comparing Sampling Methods Lesson 14-7 Problem Solving Topic Review Tropic Assessment Readiness Lesson Tornados Lesson 15-1 Statistical Measures Lesson 15-2 Multiple Populations and Inferences Lesson 15-3 Using Measures of Center Lesson 15-4 Using Measures of Variability Lesson 15-5 Exploring Overlap in Data Sets Lesson 15-6 Problem Solving Topic Review Topic Assessment	**Math 7 Unit F** Readiness Lesson Basketball Stats Lesson 16-1 Likelihood and Probability Lesson 16-2 Sample Space Lesson 16-3 Relative Frequency and Experimental Probability Lesson 16-4 Theoretical Probability Lesson 16-5 Probability Models Lesson 16-6 Problem Solving Topic Review Topic Assessment Readiness Lesson Games and Probability Lesson 17-1 Compound Events Lesson 17-2 Sample Spaces Lesson 17-3 Counting Outcomes Lesson 17-4 Finding Theoretical Probabilities Lesson 17-5 Simulation with Random Numbers Lesson 17-6 Finding Probability Using Simulation Lesson 17-7 Problem Solving Topic Review Topic Assessment	**Math 8 Unit F** Readiness Lesson Marching Bands Lesson 14-1 Interpreting a Scatter Plot Lesson 14-2 Constructing a Scatter Plot Lesson 14-3 Investigating Patterns – Clustering and Outliers Lesson 14-4 Investigating Patterns – Association Lesson 14-5 Linear Models – Fitting a Straight Line Lesson 14-6 Using the Equation of a Linear Model Lesson 14-7 Problem Solving Topic Review Topic Assessment Readiness Lesson Road Trip! Lesson 15-1 Bivariate Categorical Data Lesson 15-2 Constructing Two-Way Frequency Tables Lesson 15-3 Interpreting Two-Way Frequency Tables Lesson 15-4 Constructing Two-Way Relative Frequency Tables Lesson 15-5 Interpreting Two-Way Relative Frequency Tables Lesson 15-6 Choosing a Measure of Frequency Lesson 15-7 Problem Solving Topic Review Topic Assessment

Domain 5: Geometry 7.SP

Use random sampling to draw inferences about a population.

7.SP.1: Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

7.SP.2: Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.

Draw informal comparative inferences about two populations.

7.SP.3: Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.

7.SP.4: Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

Investigate chance processes and develop, use, and evaluate probability models.

7.SP.5: Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

7.SP.6: Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.

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

7.SP.7a: Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.

7.SP.7b: Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?

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

7.SP.8a: 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.8b: 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.8c: Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?

Domain 5: Geometry 8.SP

Investigate patterns of association in bivariate data.

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.

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 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 on 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?