

# Grade 7 Honors Yearlong Mathematics Map

**Resources:** Approved from Board of Education

**Assessments:** District Benchmark Assessments

**Common Core State Standards – Standards for Mathematical Practice:**

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

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
NS	Know that there are numbers that are not rational, and approximate them by rational numbers.	8.NS.1 Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.	rational number irrational number	8.NS.1 Classify numbers as rational (terminating or repeating) or irrational by using the decimal expansion	
NS	Know that there are numbers that are not rational, and approximate them by rational numbers.	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., $\pi^2$ ). For example, by truncating the decimal expansion of $\sqrt{2}$ , show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	rational number irrational number	8.NS.2 Compare the size of irrational numbers by approximating	
NS	Know that there are numbers that are not rational, and approximate them by rational numbers.	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., $\pi^2$ ). For example, by truncating the decimal expansion of $\sqrt{2}$ , show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	rational number irrational number	8.NS.2 Locate approximate placement of irrational number on a number line diagram	

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NS	Know that there are numbers that are not rational, and approximate them by rational numbers.	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., $\pi^2$ ). For example, by truncating the decimal expansion of $\sqrt{2}$ , show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	rational number irrational number	8.NS.2 Estimate the value of an irrational expression	
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.	Equivalent Expressions	7.EE.1 Add linear expressions with rational coefficients, using properties of operations.	linear expression
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.	Equivalent Expressions	7.EE.1 Subtract linear expressions with rational coefficients, using properties of operations.	linear expression
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.	Equivalent Expressions	7.EE.1 Factor linear expressions with rational coefficients, using properties of operations.	linear expression
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.	Equivalent Expressions	7.EE.1 Expand linear expressions with rational coefficients, using properties of operations.	distributive property linear expression
EE	Use properties of operations to generate equivalent expressions.	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."	Equivalent Expressions	7.EE.2 Explain 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.	

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EE	Expressions and Equations Work with radicals and integer exponents.	8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$ .	exponent properties	8.EE.1 Apply the properties of integer exponents	
EE	Expressions and Equations Work with radicals and integer exponents.	8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	radicals expressions integer exponents	8.EE.2 Represent solutions to equations as square or cube roots	Square Root      Cube Root
EE	Expressions and Equations Work with radicals and integer exponents.	8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	radicals expressions integer exponents	8.EE.2 Evaluate square and cube roots of small perfect squares and cubes (but do not simplify non perfect radicals)	Perfect Radicals
EE	Expressions and Equations Work with radicals and integer exponents.	8.EE.3 Use numbers expressed in the form of a single digit times a whole-number 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 times $10^8$ and the population of the world as 7 times $10^9$ , and determine that the world population is more than 20 times larger.	radicals expressions integer exponents	8.EE.3 Estimate very large or very small quantities as a single digit times a power of 10	standard notation scientific notation
EE	Expressions and Equations Work with radicals and integer exponents.	8.EE.3 Use numbers expressed in the form of a single digit times a whole-number 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 times $10^8$ and the population of the world as 7 times $10^9$ , and determine that the world population is more than 20 times larger.	radicals expressions integer exponents	8.EE.3 Compare estimations of very large or very small quantities when expressed as a single digit times a power of 10	standard notation scientific notation

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
EE	Expressions and Equations Work with radicals and integer exponents.	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.	radicals expressions integer exponents scientific notation	8.EE.4 Utilize scientific notation and choose units of appropriate size for measurements of very large or very small quantities	scientific notation
EE	Expressions and Equations Work with radicals and integer exponents.	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.	radical expressions integer exponents scientific notation	8.EE.4 Perform operations (add, subtract, multiply and divide) with numbers expressed in scientific notation	
EE	Expressions and Equations Work with radicals and integer exponents.	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.	radical expressions integer exponents scientific notation	8.EE.4 Interpret scientific notation that has been generated by technology	
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 a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	proportional relationships linear equations	8.EE.5 Graph proportional relationships	slope

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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 a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	proportional relationships linear equations	8.EE.5 Interpret the unit rate as the slope of the graph.	unit rate
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 a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	proportional relationships linear equations	8.EE.5 Compare two different proportional relationships represented in different ways (table, graph, equation).	
EE	Understand the connections between proportional relationships, lines, and linear equations.	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 $b$ .	proportional relationships linear equations similarity	8.EE.6 Explain why slope is the same between 2 distinct points on a line using similar triangles	slope triangles similar
EE	Understand the connections between proportional relationships, lines, and linear equations.	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 $b$ .	proportional relationships linear equations similarity	8.EE.6 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 $b$ .	slope-intercept form y-intercept origin
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	8.EE.7 Solve linear equations in one variable.	Linear equations	8.EE.7 Solve linear equations in one variable	linear equation variable

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	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).	Linear equations	8.EE.7a Solve linear equations in one variable with one solution, no solutions or infinitely many solutions and apply to graphical representations (no solution = parallel lines).	
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	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.	Linear equations	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.	like terms      distributive property
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	8.EE.8 Analyze and solve pairs of simultaneous linear equations.	Simultaneous Equations	8.EE.8 Analyze and solve pairs of simultaneous linear equations.	simultaneous linear equations
EE	Analyze and solve linear equations and 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.	Simultaneous Equations	8.EE.8a Recognize that solutions to a system of two linear equations in two variables corresponds to points of intersection of their graphs.	system of equations point of intersection
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	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.	Simultaneous Equations	8.EE.8b Estimate the solutions of systems of two linear equations in two variables by graphing the equations.	
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	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.	Simultaneous Equations	8.EE.8b Solve systems of two linear equations in two variables algebraically (symbolic and substitution methods only).	

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EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	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.	Simultaneous Equations	8.EE.8b Solve simple cases of systems of two linear equations in two variables by inspection.	
EE	Analyze and solve linear equations and pairs of simultaneous linear equations.	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.	Simultaneous Equations	8.EE.8c Solve real-world and mathematical problems leading to two linear equations in two variables.	
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.1	Functions	8.F.1 Identify that a function is a rule that assigns to each input exactly one output.	Function Input Output Independent Dependent
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.1	Functions	8.F.1 Illustrate that a function is a graph consisting of sets of ordered pairs, each with an input and the corresponding output.	
F	Define, evaluate, and compare functions.	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.	Functions	8.F.2 Compare properties of two functions each represented in a different way, including: algebraically, graphically, numerically in tables, or by verbal descriptions.	

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
F	Define, evaluate, and compare functions.	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.	Functions	8.F.3 Define a linear function in the form $y = mx + b$ and identify linear functions from graphs, tables, and equations.	
F	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.	Functions	8.F.4 Calculate the rate of change and the initial value of a function from a description of a relationship or from two (x, y) values, including a table or graph.	rate of change initial value
F	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.	Functions	8.F.4 Construct a function to model a linear relationship between two quantities.	
F	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.	Functions	8.F.4 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.	



Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
F	Use functions to model relationships between quantities.	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.	Functions	8.F.5 Compare qualitatively the functional relationship between two quantities by analyzing a graph.	
F	Use functions to model relationships between quantities.	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.	Functions	8.F.5 Construct a graph that exhibits the qualitative features of a function that has been described verbally.	
G	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.1 Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.	rotations, reflections, translations of two-dimensional figures	8.G.1 Discover the properties of rotations, reflections, and translations.	rotations, translations, reflections lines line segments angles parallel lines
G	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.1 Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.		8.G.1 Model that in rotations, reflections and translations, the image retains the same properties as the original figure. (Teach rotations through the concept of perpendicular slopes).	transformation figure image
G	Understand congruence and similarity using physical models, transparencies, or geometry software.	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 by a sequence of rotations, reflections, and translationsthe congruence between them.		8.G.2 Prove that a pair of two-dimensional figures are CONGRUENT if one can be obtained from the first by a sequence of rotations, reflections, and translations.	congruent figures

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G	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.		8.G.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	dilations, translations, rotations, reflections
G	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.4 Prove that a pair of two-dimensional figures are SIMILAR if one can be obtained from the first by a sequence of rotations, reflections, translations, and/or dilations.	similar figures
G	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.		8.G.5 Justify facts about the angle sum and exterior angle of triangles.	angle sum; exterior angle
G	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.		8.G.5 Determine properties about the angles created when parallel lines are cut by a transversal.	transversal; parallel lines; vertical angles; corresponding angles; alternate interior angles; alternate exterior angles; consecutive interior angles

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G	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.		8.G.5 Justify that angle-angle-angle can be used as a criterion for similarity.	similar triangles
G	Understand and apply the Pythagorean Theorem.	8.G.6 Explain a proof of the Pythagorean Theorem and its converse.	Pythagorean Theroem	8.G.6 Explain a proof of the Pythagorean Theorem and its converse.	Pythagorean Theorem
G	Understand and apply the Pythagorean Theorem.	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.	Pythagorean Theroem	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.	
G	Understand and apply the Pythagorean Theorem.	8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Pythagorean Theroem	8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	
G	Solve real-world and mathematical problems involving volume of 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.	Volume	8.G.9 Identify the formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems.	
G	Solve real-world and mathematical problems involving volume of 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.	Volume	8.G.9 Apply the formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems.	

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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.	Random Sampling	7.SP.1 Explain that statistics can be used to gain information about a population by examining a representative sample of the population.	
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.	Random Sampling	7.SP.1 Produce inferences about a population from a valid representative sample.	Inferences
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.	Random Sampling	7.SP.1 Explain that random sampling tends to produce representative samples and support valid inferences.	Random sampling
SP	Use random sampling to draw inferences about a population.	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.	Random Sampling	7.SP.2 Generalize about a population with an unknown characteristic of interest using data from a random sample.	

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SP	Use random sampling to draw inferences about a population.	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.	Random Sampling	7.SP.2 Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	
SP	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.	Statistics and data analysis	7.SP.3 Compare the degree of visual overlap of two numerical data distributions with similar variabilities.	
SP	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.	Statistics and data analysis	7.SP.3 Measure the difference between the centers by expressing it as a multiple of a measure of variability.	

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
SP	Draw informal comparative inferences about two populations.	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.	Statistics and data analysis	7.SP.4 Apply measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	
SP	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 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Probability	7.SP.5 Explain 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 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Likely and unlikely, probability, simple event
SP	Investigate chance processes and develop, use, and evaluate probability models.	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.	Probability	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.	Theoretical probability, experimental probability, relative frequency.
SP	Investigate chance processes and develop, use, and evaluate probability models.	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.	Probability	7.SP.7 Create a probability model and use it to find probabilities of events.	
SP	Investigate chance processes and develop, use, and evaluate probability models.	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.	Probability	7.SP.7 Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	Discrepancy

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SP	Investigate chance processes and develop, use, and evaluate probability models.	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.	Probability	7.SP.7a Create a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	Outcomes
SP	Investigate chance processes and develop, use, and evaluate probability models.	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?	Probability	7.SP.7b Create a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	Equally likely
SP	Investigate chance processes and develop, use, and evaluate probability models.	7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	Probability	7.SP.8 Compute probabilities of compound events using organized lists, tables, tree diagrams, simulation and the fundamental counting principle.	
SP	Investigate chance processes and develop, use, and evaluate probability models.	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.	Probability	7.SP.8a Explain 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.	
SP	Investigate chance processes and develop, use, and evaluate probability models.	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.	Probability	7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams.	

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
SP	Investigate chance processes and develop, use, and evaluate probability models.	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?	Probability	7.SP.8c Design and apply a simulation to generate frequencies for compound events.	
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.	scatter plot	8.SP.1 Construct scatter plots for two variables.	independent & dependent variables
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.	scatter plot	8.SP.1 Interpret scatter plots for two variables.	
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.	scatter plot	8.SP.1 Highlight patterns in scatter plots.	
SP	Investigate patterns of association in bivariate data.	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.	scatter plot	8.SP.2 Construct a line of best fit.	



Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
SP	Investigate patterns of association in bivariate data.	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.	scatter plot	8.SP.2 Informally assess a line of best fit.	line of best fit; also known as trend lines in science
SP	Investigate patterns of association in bivariate data.	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.	scatter plot	8.SP.3 Derive the equation of a line of best fit.	
SP	Investigate patterns of association in bivariate data.	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.	scatter plot	8.SP.3 Explain what the slope of the line means in terms of the given data.	
SP	Investigate patterns of association in bivariate data.	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.	scatter plot	8.SP.3 Explain what the x and y intercepts of the line mean in terms of the given data.	

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
SP	Investigate patterns of association in bivariate data.	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?	frequency; relative frequency	8.SP.4 Distinguish between the probability of an event and the relative frequency of an event.	probability; frequency; relative frequency
SP	Investigate patterns of association in bivariate data.	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?	frequency; relative frequency	8.SP.4 For a given set of data, organize frequencies and relative frequencies into two-way tables.	

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
SP	Investigate patterns of association in bivariate data.	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?	frequency; relative frequency	8.SP.4 interpret a two-way table summarizing data on two categorical variables collected from the same subjects.	
SP	Investigate patterns of association in bivariate data.	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?	frequency; relative frequency	8.SP.4 Calculate relative frequencies and apply these to determine possible association between the two variables.	