Grade 7 Yearlong Mathematics Map

Resources: Approved from Board of Education

Assessments: District Benchmark Assessments

Common Core State Standards – Standards for Mathematical Practice:

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
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 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.	Ratio Unit Rate	7.RP.1 Compute unit rates with ratio of fractions including ratios of length, areas, and other quantities of like or different units.	Complex fraction Ratio Unit Rate
RP	Analyze proportional relationships and use them to solve real-world and mathematical problems.	7.RP.2 Recognize and represent proportional relationships between quantities.	Proportional Relationships	7.RP.2	Proportion (equivalent ratio) Proportional relationship Scale factor
RP	Analyze proportional relationships and use them to solve real-world and mathematical problems.	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.	Proportional Relationships	7.RP.2a Decide whether two quantities are in a proportional relationship by using a table or graphing on a coordinate plane.	Proportional Relationship Proportion Coordinate Plane Origin x-coordinate y-coordinate quadrant x-axis y-axis scale

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RP	Analyze proportional relationships and use them to solve real-world and mathematical problems.	7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	Unit Rate	7.RP.2b Derive the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	Unit Rate Table Graph Diagrams Equations
RP	Analyze proportional relationships and use them to solve real-world and mathematical problems.	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.	Proportional Relationships	7.RP.2c Write equations to represent proportional relationships.	Proportional relationships Equation Proportion
RP	Analyze proportional relationships and use them to solve real-world and mathematical problems.	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.	Proportional Relationships	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.	Unit Rate Rate of change (slope) Graphs Equations Origin Ordered pair x-axis y-axis x coordinate y coordinate Coordinate plane

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RP	Analyze proportional relationships and use them to solve real-world and mathematical problems.	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.	Proportional Relationships	7.RP.3 Solve multi-step ratio and percent problems using proportional relationships.	Proportional relationship Proportion Ratio Percent Percent error Simple Interest Percent increase Percent decrease Markup Sales Tax Commissions Gratutidies
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.	Rational Numbers	7.NS.1	
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1a Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.	Rational Numbers	7.NS.1a Describe situations in which opposite quantities combine to make 0.	Property of Opposites

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NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1b 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.	Rational Numbers	7.NS.1b Explain p + q as the number located a distance |q| from p on a number line, in the positive or negative direction depending on whether q is positive or negative.	Rational numbers Vertical number line Horizontal number line Property of Opposites Positive number Negative number Combine Number line
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1b 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.	Rational Numbers	7.NS.1b Prove that a number and its opposite have a sum of 0 (are additive inverses).	Rational number Absolute value Combine (Additive Inverses) Property of opposites
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1b 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.	Rational Numbers	7.NS.1b Interpret sums of rational numbers by describing real-world contexts.	Rational number
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1c Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	Subtraction Rational numbers	7.NS.1c Explain subtraction of rational numbers as adding the additive inverse	Rational number Combine (Additive Inverses) Absolute Value

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1c Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	Subtraction Rational numbers	7.NS.1c Prove that the distance between two rational numbers on the number line is the absolute value of their difference.	Rational number Absolute Value Number line Positive numbers Negative numbers
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.	Properties of Operations	7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.	Rational number Associative Property Commutative Property Additive Identity Property of Opposites
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Multiplication and Division of Rational Numbers		
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	Multiplication Rational Numbers	7.NS.2a Apply the properties of multiplication and rules for multiplying signed numbers to rational numbers.	Rational number Distributive Property Associative Property Commutative Property Multiplicative Identity Fraction Signed numbers

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NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	Multiplication Rational Numbers	7.NS.2a Interpret products of rational numbers by describing real-world contexts.	Rational number Product
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2b 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.	Divide rational numbers	7.NS.2b Explain 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.	Integers Rational numbers divisors quotients Undefined quotient
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2b 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.	Divide rational numbers	7.NS.2b Interpret quotients of rational numbers by describing real-world contexts.	Quotient Rational numbers
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.	Multiplication Rational Numbers	7.NS.2c Apply properties of operations as strategies to multiply rational numbers.	Rational number Associative Property Commutative Property Multiplicative Identity

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.	divide rational numbers	7.NS.2c Apply properties of operations as strategies to divide rational numbers.	Rational number Associative Property Commutative Property Multiplicative Identity
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	rational numbers	7.NS.2d Convert a rational number to a decimal using long division	Rational number decimal place value terminating decimal repeating decimal bar notation
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	rational numbers	7.NS.2d Recognize that the decimal form of a rational number terminates in 0s or eventually repeats.	Rational number decimal place value terminating decimal repeating decimal bar notation
NS	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	rational numbers	7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers including complex fractions.	Rational number Complex fractions

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
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 and subtract linear expressions with rational coefficients, using properties of operations.	Associative Property Commutative Property Distributive Property Linear expression Rational coefficent
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 and expand linear expressions with rational coefficients, using properties of operations.	Associative Property Commutative Property Distributive Property Linear expression Factor Rational coefficent
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 Rewriting an expression in different forms in a problem context to shed light on the problem and how the quantities in it are related.	Equivalent ratio expression equation decimal percent fraction

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 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.	Algebraic expressions Algebraic equations Numerical expressions Numerical equations	7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form. Convert if necessary.	Positive number Negative number Rational number Equation Expression Decimal Percent Fraction
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 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.	Algebraic expressions Algebraic equations Numerical expressions Numerical equations	7.EE.3 Evaluate the reasonableness of answers using mental computation and estimation strategies. Convert if necessary.	Estimation Resonable expression equation decimal percent fraction

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	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.	Algebraic expressions and algebraic inequalities	7.EE.4 Choose 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.	Rational numbers Variables Equation Inequality
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	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?	Algebraic and numerical equations	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.	Rational numbers Variables Equation Inequality
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	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?	Algebraic and numerical equations	7.EE.4a Compare an algebraic solution to an arithmetic solution by Identifying the sequence of the operations used in each approach.	Rational numbers Variables Equation Inequality
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	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.	Algebraic inequalities Numerical inequalities	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.	Inequality Rational numbers Solution set Infinite

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EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	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.	Algebraic inequalities Numerical inequalities	7.EE.4b Graph the solution set of the inequality.	Solution set Inequality Number line Infinite
EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	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.	Algebraic inequalities Numerical inequalities	7.EE.4b Interpret the solution set in the context of the problem.	Solution set Inequality Number line Infinite
G	Draw construct, and describe geometrical figures and describe the relationships between them.	7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	Proportional Relationships	7.G.1 Compute actual lengths and areas from a scale drawing of geometric figures.	Scale drawing Scale factor Scale model Scale bar Scale distance
G	Draw construct, and describe geometrical figures and describe the relationships between them.	7.G.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	Proportional Relationships	7.G.1 Reproduce a scale drawing at a different scale of geometric figures.	Scale drawing Scale factor Scale model Scale bar Scale distance

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G	Draw construct, and describe geometrical figures and describe the relationships between them.	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.	Two dimensional shapes	7.G.2 Draw (freehand, with a ruler and protractor, and with technology) geometric shapes with given conditions.	Unique triangle Side Lengths Angle measure Conjecture Conditions
G	Draw construct, and describe geometrical figures and describe the relationships between them.	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.	Two dimensional shapes	7.G.2 Determine if measures of three angles or sides create a unique triangle, more than one triangle, or no triangle.	Unique triangle Side Lengths Angle measure Conjecture Conditions
G	Draw construct, and describe geometrical figures and describe the relationships between them.	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.	Two dimensional shapes	7.G.2 Construct triangles from three measures of angles or sides.	Unique triangle Side Lengths Angle measure Conjecture Conditions

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G	Draw construct, and describe geometrical figures and describe the relationships between them.	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.	Two dimensional shapes	7.G.3 Identify and describe the two-dimensional figures that result from slicing three-dimensional figures	Two dimensional shapes Three dimensional shapes Coplanar Parallel Solid Polyhedron Diagonal Slicing Cross section Vertical slice Angled slice Horizontal cross section Base Face Edges Vertices Rectangular Prisms Rectangular Pryamid
G	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	7.G.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	Two dimensional shapes	7.G.4 Express and apply the formulas for the area and circumference of a circle.	Circumference Area Pi Diameter Radius
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	7.G.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	Two dimensional shapes	7.G.4 Informally derive the relationship between the circumference and area of a circle.	Circumference Area Pi Diameter Radius

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G	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	7.G.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.	Angle Relationships	7.G.5 Write and solve simple equations for an unknown angle in a figure using facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem.	Equations Supplementary angles Complementary angles Vertical angles Adjacent angles
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	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.	Area	7.G.6 Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons.	Compose figures Triangles Quadrilaterals Polygons Area Square unit
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	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.	Volume	7.G.6 Solve real-world and mathematical problems involving volume of three-dimensional objects composed of cubes and right prisms.	Three dimensional shapes Cubes units Right prism Volume Square units
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	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.	Surface Area	7.G.6 Solve real-world and mathematical problems involving surface area of three-dimensional objects composed of cubes and right prisms.	Three dimensional shapes Cubes units Right prism Volume Surface area Square units
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.	Data Survey Statistic Sample Population Representative sample Inferences Visual overlap

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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 generalizations about a population from a sample are valid only if the sample is representative of that population.	Data Generalization Survey Statistic Sample Population Representative sample Valid 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.	Data Generalization Survey Statistic Sample Population Representative sample 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.	Unknown characteristic of interest Statistic Population Random Sample Representative 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.	Simulated sample Variation Predication
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.	Dot plot Box-and-whisker plot Interquartile Range Mean absolute variation Visual overlap Numerical data distribution Similar variablities
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 of two numerical data distributions with similar variabilities by expressing it as a multiple of a measure of variability.	Visual overlap Numerical data distribution Similar variablities Measure of variability(mean absolute variation), dot plot

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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.	Population Random sample Measures of center (mean, median, mode) Range Measures of variability for Numerical data Comparative inferences
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.	Probability Simple events Outcome Likely event Unlikely event Certainty Impossible
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.	Probability Outcomes Data Experimental probability Relative frequency Predication
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	

Domain	Cluster	Common Core Standard	Content	Skills	Academic Vocabulary
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.	Probability Outcomes Probability model Equally likely Theoretical probability
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.	Probability model Observed frequencies Experimental probability Discrepancy
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	
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.	Probability Simple events Outcomes Compound events Sample space
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.	Probability Compound events Sample space (organized list, tables, tree diagrams) Outcomes

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.	Probability Simulation Outcomes Compount events Frequencies