SD Common Core State Standards Disaggregated Math Template

Domain:	Ratios and Proportional Relationships	**Cluster Heading:**	Analyze proportional relationships and use them to solve real-world and mathematical problems.	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. 6.RP3 Use ratio and rate reasoning to solve real-world and mathematical problems. e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed n 35 hours? At what rate were lawns being mowed?*	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.*	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

Student Friendly Language:

Given a real world situation, I can compute/calculate unit rates when the measurements are given as fractions.

I can simplify complex fractions.

I can convert quantities to units of the same measure and determine a reasonable solution.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Unit rate apply to fractions • Unit conversion using like or different units • Complex fraction	The process of calculating a unit rate involves division. Unit conversions may be needed to solve unit rates. Unit rates are used for comparison.	Use division to compute unit rate. Explain how the two units are related in a unit rate. Compute unit rates using fractions in real life situations. Convert different unit measures relating to length, time and other quantities.

Key Vocabulary:

ratio	unit rate	fraction	equivalent fractions	simplify
complex fraction	per	relationship	measurement	improper fractions
units	unit conversions	reciprocal	mixed numbers	

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Comparison shopping: Determine the best buy between two brands or two sizes of a single brand. Cost per square foot of living area when purchasing a home.

Mileage comparison of different vehicles.

Rates: Cost per student on a field trip.

Salary/wages: dollars/hour

Caring for animals: feed/pound, medicine/pound

Farming: cost/acre or profit/acre

If Lucy can run 150 feet in 1/3 of a minute. What is her unit rate in feet per minute?

A snail can crawl 6 feet 8 inches in 1 ½ hour. What is the snail's unit rate?

A group of construction workers can pave ¾ of a mile of the interstate in 6 ¾ hours. What is their unit rate for paving the interstate?

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Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.RP.2-Understand the concept of a unit rate a/b associated with a ratio a:b with b not equal to 0, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is ¾ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." 6.RP.3a-Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. 6.RP.3b-Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?	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.	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.* 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.

Student Friendly Language:

I can recognize and represent proportional relationships.
I can graph proportional relationships.
I can identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions.
I can graph an equivalent ratio.
I can observe that the graph of a proportional relationship represents a straight line through the origin.
I can represent proportional relationships as equations.
I can explain the points (0,0) and (1,r) mean where r is the unit rate on a coordinate graph.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Proportional Relationships • Constant of Proportionality (Unit Rate)	The graph of a proportional relationship is a straight line through the origin. The constant of proportionality is a unit rate. Proportional relationships can be represented by equations. Equivalent ratios can be used to show two quantities are proportional. In a graph of a proportional relationship, r is the unit rate in the coordinate (1, r).	Test using equivalent ratios to determine whether a relationship is proportional. Determine whether a relationship is proportional based on its graph. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. Write equations to represent proportional relationships. Explain what a point (x, y) means in terms of a real world situation. Explain what a point (0, 0) and (1, r) mean in terms of a real world situation.

Key Vocabulary:

ratios proportion proportional relationships constant of proportionality equivalent ratios
unit rate quantities origin coordinate plane equivalent ratios

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

-Students will find equivalent ratios for various proportional shapes by creating scale models of buildings.
-Students will create tables and graphs to show unit rates of purchases of products for a grocery list and compare the results using tables or graphs.
-Students will figure out how many miles per gallon each student gets when driving different cars.

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Domain:	Ratios and Proportional Relationships	**Cluster:**	Analyze Proportional Relationships and use them to solve real-world and mathematical problems	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.RP3.b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours?* 6.RP.3c. Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.	7RP3: 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.*	8EE5. 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.

Student Friendly Language:
I can use proportional relationships to solve real world problems. I can use estimation to determine if the answer makes sense.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Proportional relationships represent real world situations.	Ratios and percent problems can be represented by proportional relationships. Multiple methods exist to solve ratio and percent problems.	-Analyze the solution to determine whether or not the answer is reasonable. -Explain the method used to solve the problem. -Use proportional relationships to solve multistep ratio and percent problems. -Label answers appropriately.

Key Vocabulary:
ratio proportional relationships simple interest tax markup markdown gratuity commission fees percent increase percent decrease percent error simplify proportion cross multiply
Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?
Simple Interest: Determine the amount of interest you would pay on a house or a car. Tax: Determine amount you will pay in tax on food, clothes, and most other purchases as well as final cost. Gratuity: How much you need to give as a tip when you go out to eat? Markups and Discounts: How much will your final cost be on a good or service after the markup or discount? Commission: Determine extra income and total salary from a variety of sales jobs. Fee: Compare fees from Company A & Company B to determine the best plan for a given individual. Percent increase & decrease: Find percent of change for weight loss in 2 or more people. i.e. Biggest Loser,election results showing voter turnout.

SD Common Core State Standards Disaggregated Math Template

Domain:	Number System	**Cluster:**	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. 6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. 6.NS.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite. 6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. 6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers CC.6.NS.7 Understand ordering and absolute value of rational numbers. 6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.* 6NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. (*for example, write -3 degrees Celsius > -7 degrees Celsius to express the fact that -3 is warmer than -7 degrees)* 6NS.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.* 6NS.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*	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.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.* 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. 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. 7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.	Terminates

Student Friendly Language:
I can show that the sum of a number and its opposite is zero. I can add rational numbers using absolute value. I can change a subtraction problem into an addition problem by adding the opposite (additive inverse). I can use a number line to find the difference between two integers. I can apply properties of operations to add and subtract rational numbers. I can determine if a solution is reasonable. I can give examples of real life situations involving the addition and subtraction of integers.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Additive inverse of rational numbers • Absolute value difference • Properties of operations • Addition and subtraction of rational numbers	A number and its opposite have a sum of 0. Subtraction of rational numbers is equivalent to adding the additive inverse. A vertical or a horizontal number line can be used to show the relationship of adding and subtracting rational numbers. When adding integers on a number line, the sum is located a distance in the positive or negative direction depending on the sign of the number. Properties of operations can be used strategies to add and subtract rational numbers.	Model addition and subtraction of rational numbers using a number line. Use properties of operations to add and subtract rational numbers in real world situations. Rewrite subtraction problems as addition problems by applying the additive inverse property. Describe real life situations in which opposite quantities combine to make 0. Explain sums of rational numbers by describing real-world contexts.

Key Vocabulary:						
integers	rational number	opposites	additive inverse	absolute value	number line	commutative
associative	identity	difference	sum	distance	expression	

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Sports: football yards gained and lost; golf strokes above and below par

Temperature/elevation (Including fractional values)

Money account balance, debit/credit
Stock market

Price increases/decreases

Checking Account: Your current checking account balance is $200. You bought an iPod for $299 and basketball shoes for $109. You deposited $400, which you received from your birthday and Christmas, into the account. What is your account balance?

Temperature: You and a group of friends are scaling Mount Rushmore. When you begin your expedition the temperature was 12 degrees Fahrenheit. When you reached the top of Lincoln's head the temperature was -6 degrees Fahrenheit, how much did the temperature drop while you were on your expedition?

SD Common Core State Standards Disaggregated Math Template

Domain:	Number System	**Cluster:**	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	**Grade level:**	**7**

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.NS.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the birdhouse at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* 6.NS.2 Fluently divide multi-digit numbers using the standard algorithm. 6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each stuation.	7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to 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. 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. 7.NS.2c Apply properties of operations as strategies to 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.	8.NS.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3^2 × 3^(–5) = 3^ (–3) = 1/(3^ 3) = 1/27 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., π2). *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.* π2). *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. √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.*

Student Friendly Language:
I can solve real-life multiplication and division problems involving negative and positive rational numbers. I can divide rational numbers and understand that the denominator cannot be zero and the answer will be rational. I can apply mathematical properties of operations (ex.Distributive Property) to multiply and divide rational numbers. I can use long division to find the decimal form of a rational number.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Integer rules • Zero cannot be used as a denominator • Long division • Properties of operations	Rules used to multiply and divide whole numbers and integers can be applied to multiply and divide rational numbers. Zero as a denominator is undefined. Long division is used to rewrite numbers into decimal form. A decimal of a rational number terminates in a zero or eventually repeats. Properties of operations can be used as strategies to multiply and divide rational numbers.	Apply integer rules to solve real-world problems involving rational numbers. Convert rational numbers to decimals using long division. Explain why zero cannot be a denominator. Explain the relationship between multiplication and division of integers and rational numbers in real-world examples. Apply properties of operations to rational numbers.

Key Vocabulary:
rational numbers integers (positive and negative numbers) quotient product properties of operations terminating decimals repeating decimals operations decimal divisordividend factor long division reciprocal
Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this?"
You and five friends want a pop and decide to buy a 6 pack of Mello Yello. You are cheap and don't want to pay for all the pop. So how much does each of you need to pay if the pop costs $2.99? Recipe: You are entertaining and planning on having six people over for brownies. You receive a text that says 6 more are planning on coming. Now you need to double your brownie recipe. How much of each of the following ingredients do you need now? Ingredients: ¾ c flour, ⅓ c.sugar, ½ c. brown sugar, 2 eggs, ¼ c.oil , 1 ½ c cocoa. Before you went to bed, you looked at the temperature and noticed that at 10pm it was 20 degrees. When you woke up at 6am, the temperature was -7 degrees. What was the temperature change per hour? Elevation: You begin to descend a mountain at a rate of 3/4 feet per 4 seconds. What will be your total change in elevation after climbing at this rate for 4 hours?

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Domain:	Number System	**Cluster:**	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. 6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*	7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	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., π2). *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.* π2). *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.* *√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.*

Student Friendly Language:
I can add, subtract, multiply, and divide rational numbers in real world problems.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Real-world applications of rational number	Rules for all operations apply to real world situations.	Apply the four operations to real life problems involving rational numbers..

Key Vocabulary:
integer fractions rational numbers decimals reciprocal opposite absolute value operations ratios proportions common denominators
Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?
Money: Using integers to balance a checkbook, figure interest, taxes, and to find the best buys. (Including fractional values.) Sports: To show gain and loss of yards, shooting averages, and other statistics. Temperature: Find changes in temperature using integers. Cooking: Representing equivalent fractions, deviating from the recipe (double batch or half-a-batch).

SD Common Core State Standards Disaggregated Math Template

Domain:	Expressions and Equations	**Cluster:**	Use properties of operations to generate equivalent expressions	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.EE.3 Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.	7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients	8.EE.7 Solve linear equations in one variable. .EE.7b- Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms

Student Friendly Language:

I can use the associative, commutative, and distributive properties to solve problems involving linear expressions.
I can expand linear expressions with rational coefficients.
I can factor linear expressions with rational coefficients.
I can add linear expressions with rational coefficients.
I can subtract linear expressions with rational coefficients.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Properties of operations (associative, commutative, distributive) • Rational coefficient • Linear expression • Simplify expression • Common factor	Properties of operations can be used to expand expressions with rational coefficients. Properties of operations can be used to factor expressions with rational coefficients. Properties of operations can be used to add expressions with rational coefficients. Properties of operations can be used to subtract expressions with rational coefficients.	Apply the properties of operations to solve problems involving linear expressions with rational coefficients. Expand linear expressions with rational coefficients. Factor linear expressions with rational coefficients. Add linear expressions with rational coefficients. Subtract linear expressions with rational coefficients.

Key Vocabulary:

Rational coefficient, Variable, Properties of operations (associative, commutative, distributive)
Factoring expressions, Expanding expressions, Linear expressions
Simplifying expressions, Like terms, Equivalent expressions

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

- Write an equivalent expression for 7(b + 3) – 5.
- Cheyanne says the two expressions 2(3a – 7) + 5a and 11a – 7 are equivalent? Is she correct? How do you know?
- Robert earned some money mowing lawns. Robert's sister has $10 more than twice as much money as him. Write and simplify an expression for the amount of money Robert's sister has.

SD Common Core State Standards Disaggregated Math Template

Domain:	Expressions and Equations	**Cluster:**	Use properties of operations to generate equivalent expressions	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.	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."	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

Student Friendly Language:

I can rewrite expressions in different forms (a+.05a = 1.05a).
I can explain how quantities are related (a = 1a).
I can explain how rewriting expressions can show how quantities are related.
I can understand that rewriting expressions in different forms can help show how quantities are related.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Properties of operations • Relationships between expressions • A variety of expressions can represent contexts	Considering the context of a situation helps us better understand the problem. Rewriting an expression in different forms can shed light on how the quantities in a context are related.	Apply the properties of operations to rewrite equivalent expressions. Determine forms of expressions to represent specific contexts. Explain how multiple expressions are related given a context.

Key Vocabulary:

properties of operations (associative, commutative, distributive) equivalent order of operations
like terms combining like terms percent fraction decimal expressions simplify

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Explain how a 40% discount is the same as finding 60% of the cost, *c*.

Alex and Becca both get paid an equal hourly wage of $7 per hour. This week, Becca made an additional $12 dollars in overtime. Write an expression that represents the weekly wages of both if A = the number of hours that Alex worked this week and B = the number of hours Becca worked this week? What is another way to write the expression?

Solution:
Students may create several different expressions depending upon how they group the quantities in the problem.
Possible student responses are:

Response 1: To find the total wage, first multiply the number of hours Alex worked by 7. Then, multiply the number of hours Becca worked by 7. Add these two values with the $12 overtime to find the total wages for the week. The student would write the expression 7A + 7B + 12.

Response 2: To find the total wages, add the number of hours Alex and Becca worked. Then, multiply the total number of hours worked by 7. Add the overtime to that value to get the total wages for the week. The student would write the expression 7(A + B) + 12.

Response 3: To find the total wages, find out how much Alex made and add that to how much Becca made for the week. To figure out Alex wages, multiply the number of hours he worked by 7. To figure out Becca's wages, multiply the number of hours she worked by 7 and then add the $12 she earned in overtime. Add Alex and Becca's wages for the week to find their combined total wages. The student would write the expression (7A) + (7B + 12).

SD Common Core State Standards Disaggregated Math Template

Domain:	Expressions and Equations	**Cluster:**	Solve real-life and mathematical problems using numerical and algebraic expressions and equations	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px =q for cases in which p, q, and x are all non negative rational numbers	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 as strategies 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.	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.

Student Friendly Language:

I can solve real life problems with more than one step dealing with positive and negative numbers.
I can change between fractions, decimals, and percents mentally or with a calculator.
I can use calculators, models, and mental math to calculate and solve problems.
I can use estimation strategies to check my answer.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Properties of operations • Relationships between fractions, decimals, and percents • Rational numbers include whole numbers, integers, fractions, decimals, and percents	Numbers can be converted into various forms such as whole numbers, fractions, decimals, integers, and percents to solve real life problems. Properties of operations can be used to make solving problems more efficient.	Compute multi-step real-life problems using the appropriate operations and strategies, such as mental math, modeling, and calculator. Compute multi-step real-life problems using positive and negative numbers. Convert between fractions, decimals, and percents.

Key Vocabulary:

whole number fraction decimal estimate round rational properties
convert percent ratio integer multi-step operations computation positive negative

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Wage: Determining income after a raise in hourly rates.

Measurement: Centering multiple posters on a bedroom wall.

Savings: Figuring interest on your balance.

SD Common Core State Standards Disaggregated Math Template

Domain:	Expressions and Equations	**Cluster:**	Solve real-life and mathematical problems using numerical and algebraic expressions and equations	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. 6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. 6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px=q for cases in which p, q, and x are all nonnegative rational numbers. 6.EE.8 Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	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.*	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.*

Student Friendly Language:
When given real world math problems with unknown values, I can write, solve and graph simple equations and inequalities to represent the situation. I can use the correct order of operations. I can use estimation to check if my answer makes sense.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
● Equation ● Inequality ● Solution set ● Inverse Operations ● Constant Term ● Coefficient ● Like Terms ● Distributive Property ● Algebraic and Arithmetic Solutions ● Graphing Inequalities	There is a specific sequence of solving equations or inequalities. Variables can be used to represent quantities in real world problems. There are appropriate inverse operations necessary to evaluate an equation or inequality. Word problems can be solved by properly integrating variables into equations and inequalities. Equations yield one solution and inequalities produce a solution set that can be graphed. Algebraic solutions contain an unknown, while arithmetic solutions give a specific number.	Construct and evaluate simple equations and inequalities to solve word problems. Compare algebraic and arithmetic solutions. Summarize the sequence of operations in equations and inequalities. Apply knowledge of one step equations to 2-step equations. Construct and interpret the graph of a solution set for an inequality.

Key Vocabulary:					
variable	equation	inequalities	solution set	rational number	sequence
fraction	negative numbers	interpret	inverse operations	PEMDAS – Order of Operations	constant term
coefficient	like terms	solution set	distributive	property	

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

You are constructing a kennel for your dog and you want to have an area of 64 feet squared. If you want to have a square kennel, what is the length of 1 side and what is the perimeter?

If you want to tile your kitchen floor and the area is 144 feet, what would be the length of 1 side and how many 12 inch tiles would you need to create the border?

You are raising money for an awesome band trip. The band boosters are donating $75 to each student. If you need $200 to attend, how many buckets of cookie dough at $5 per bucket would you need to sell?

If you made $50 a week babysitting and an extra $20 per lawn you mow, how many lawns would you need to mow in a week to make a total of $150?

Figure out how much money you need to make each month to reach a yearly goal.

Determine the cost per person for ordering pizza, tickets, etc…

How many t-shirts you have to sell to cover break even costs?

How many lawns do you have to mow to buy a new computer?

SD Common Core State Standards Disaggregated Math Template

Domain:	Geometry	**Cluster:**	Draw, construct, and describe geometrical figures and describe the relationships between them	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	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.	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.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.

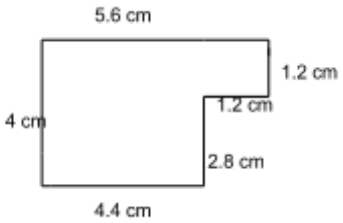
Student Friendly Language:
I can enlarge and reduce figures by a given scale. I can describe the impact of a scale on the side lengths of scaled figures. I can describe the impact of a scale on the area of scaled figures. I can find unknown side lengths of similar figures. I can find the areas of similar figures.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Scale • Similar figures • Area formula/strategy	When figures are scaled, the side lengths are scaled proportionately. When figures are scaled, the angle measurements remain the same. When figures are scaled, the area changes exponentially. Missing side lengths can be found by determining the scale factor of similar figures.	Reproduce a figure at a different scale. Find missing side lengths of similar figures. Find the area of scaled figures.

Key Vocabulary:				
scale drawing	dimensions	scale factor	similar	area

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Katniss shows the scale drawing of her room below.

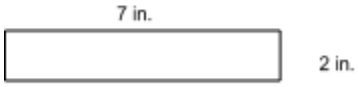


If each 2 cm on the scale drawing equals 5 ft, what are the actual dimensions of Katniss' room? Reproduce the drawing at 3 times its current size.

Solution:

5.6 cm
14 ft
1.2 cm
3 ft
2.8 cm
7 ft
4.4 cm
11 ft

If the rectangle below is enlarged using a scale factor of 1.5, what will be the perimeter and area of the new rectangle?



Solution:

The perimeter is linear or one-dimensional. Multiply the perimeter of the given rectangle (18 in.) by the scale factor (1.5) to give an answer of 27 in. Students could also increase the length and width by the scale factor of 1.5 to get 10.5 in. for the length and 3 in. for the width. The perimeter could be found by adding 10.5 + 10.5 + 3 + 3 to get 27 in.

The area is two-dimensional so the scale factor must be squared. The area of the new rectangle would be 14 x 1.5 or 31.5 in. squared.

- Provide a simple house plan for students to study. Students can calculate their own scale and recreate the floor plan on graph paper. Then, they determine the cost of carpet and laminate flooring (after researching local stores' bids on carpet and flooring) for the bedroom, living room, and kitchen in this home.

The example two story home above is illustrated at:
http://www.houseplans.com/771-square-feet-1-bedrooms-1-5-bathroom-traditional-house-plans-1-garage-35663
Teachers could also add to the experience by having students:
* calculate savings for a 15% off sale on laminate flooring
* redraw the living room to a different scale and use catalogs to draw furnishings to scale
* make a scale drawing of their own bedroom.

SD Common Core State Standards Disaggregated Math Template

Domain:	Geometry	**Cluster:**	Draw, construct, and describe geometrical figures and describe the relationships between them	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.G.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	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.	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.*

Student Friendly Language:

I can draw freehand geometric shapes when given angle measures or side lengths.

I can draw geometric shapes when given angle measures or side lengths using a ruler and protractor.

I can draw freehand geometric shapes when given angle measures or side lengths using technology.

I can determine if three given lengths of line segments can be used to construct a triangle; and if so, how many.

I can determine if three given angle measurements can be used to construct a triangle; and if so, how many.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• construction of geometric shapes (freehand, ruler and protractor, technology) • triangle properties (angle sum, side lengths) • unique triangle	The sum of the angles in a triangle will always equal 180 degrees. When given three lengths, the sum of two lengths has to be greater than the length of the third side if they are going to be used to construct a triangle. Triangles can have characteristics that classify them under more than one name. For example, a triangle with dimensions of 3, 4, and 5 is a right scalene triangle.	Draw freehand geometric shapes when given specific conditions. Draw geometric shapes when given specific conditions using a ruler and protractor. Draw geometric shapes when given specific conditions using technology. Examine three lengths and determine if they could be used to create a triangle. Examine three angles and determine if they could be used to create a triangle. Create a unique triangle when given specific conditions.

Key Vocabulary:

polygonn angle triangle obtuse triangle acute triangle right triangle
scalene triangle isosceles triangle equilateral equiangular <u>unique triangle</u>
ruler freehand protractor

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Could you ever have a triangular yard? Here is the story. I move into this house that is located on a small acreage. Behind the barn, the previous owner left three different piles of usable sections of fence. There is a place to build a triangular fenced in area in the backyard.

Possibilities to examine are:
a. 36 feet, 15 feet, and 16 feet
b. 35 feet, 35 feet, and 35 feet
c. 22 meters, 17 meters, 16 meters
Explain how you know which group of fencing will work.

So, think about it: Which three sides of any length create a triangle? .
Solution:
"A" above will not work; "B" and "C" will work. Students recognize that the sum of the two smaller sides must be larger than the third side.

Pretend you have a huge rectangular bedroom. It is 40 ft. by 30 ft. The drawback is that you have to share it with a sibling who loves triangles. You split the room in half with one diagonal line, so you can keep your roommate happy. What kind of triangle did you just create? What is the length of this diagonal line?

Extension: Thinking about the triangle you just created, create similar triangles by doubling the dimensions of your triangle or a 10:1 scale factor. What do you observe? (NOTE for teachers: Pythagorean Theorem is NOT expected – this is an exploration experiment only.)

Another extension: Could you find the area needed to carpet your side of the room? the wood flooring for your sibling's side of the room? Why would you need to know the length of the diagonal now? (You may possibly want to put a transition strip between the carpet and wood flooring.)

Garden in a Triangle: there are three sections of metal panel fence. All three sections are the same length. What kind of triangle would I create for my garden fence? What would the angles measure in the corners of my garden?
Extension: I have special angle corners to help me build my triangle garden. I have a 33 degree angle corner, an angle corner with an unknown measurement (because its tag fell off), and a 90 degree angle corner. If I am trying to create a triangle, what does my unknown angle corner have to measure?

Construction Zone: create a sequence of steps for drawing your favorite geometric shape. Give this recipe to a friend. Did they draw what you had in mind? Or were they unable to follow directions? Try to create unusual geometric shapes for each other to design. You may eventually want to put your shapes into some type of painting or collage to display on the wall.

Draw an isosceles triangle with only one 70 degree angle for your quilt pattern block. Is this the only possibility or can another triangle be drawn that will meet these conditions? (By experimenting, students realize that the sum of the angles of any triangle will be 180 degrees.) Draw out on paper what a quilt would look like with isosceles triangles used for the quilt blocks.

SD Common Core State Standards Disaggregated Math Template

Domain:	Geometry	**Cluster:**	Draw, construct, and describe geometrical figures and describe the relationships between them	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.G.4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	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.	8.G.9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Student Friendly Language:
I can slice 3-D figures such as right rectangular prisms and right rectangular pyramids. I can describe the 2-D figures that result from slicing 3-D figures. I can consider what 2-D figure will result depending on what part of the 3-D figure is sliced.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• names of three-dimensional figures (right rectangular figures, right rectangular pyramids, etc) • names of two-dimensional figures (parallelogram, trapezoid, etc) • parallel and perpendicular cuts	Two-dimensional figures result from slicing 3-D figures. The two-dimensional figures that result from slicing three-dimensional figures depend on what part of the figure (face, vertex) is sliced. The two-dimensional figures that result from slicing three-dimensional figures depends on the kind of cut (parallel, perpendicular).	Slice three-dimensional figures through a vertex. Slice and three-dimensional figures through a face. Describe the two-dimensional shape formed from a parallel cut to a given face. Describe the two-dimensional shape formed from a perpendicular cut to a given face through a vertex. Describe the two-dimensional shape formed from a perpendicular cut through a given face.

Key Vocabulary:

prism	pyramid	right angle	face	base
lateral	parallel cut	perpendicular cut	cross section	intersection

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

http://intermath.coe.uga.edu/dictnary/descript.asp?termID=95

The Body Worlds exhibits are constructed using cross sections. How might the two-dimensional cross-section of particular body results compare to the overall three-dimensional shape?

The volume of a cube is 512 cm^3. What is the area of a cross section taken parallel to the base?

You want to create a circular stamp. Which of the following shapes could you take a cross section of to get your desired stamp and how do know? (sphere, rectangular prism, triangular pyramid, cylinder, etc)

SD Common Core State Standards Disaggregated Math Template

Domain:	Geometry	**Cluster:**	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
Introduction to standard No previous standard	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.	8.G.9 Know the formulas for the volumes of cone, cylinders, and spheres and us them to solve real-world and mathematical problems.

Student Friendly Language:

I can find the relationship between radius and diameter.
I can find and explain that the ratio of circumference/diameter is pi.
I can find the area and circumference of a circle.
I can use a ratio to compare and contrast the area and circumference of a circle.

Know (Factual)	Understand (Conceptual) The students will understand:	Do (Procedural, Application, Extended Thinking)
• Formulas for area of a circle • Formulas for circumference of a circle • pi • How to find the area of a circle using the formula • How to find the circumference of a circle using the formula • Explain the source of the relationship between the circumference and area of a circle	How to discover pi. The formula for finding the area is pi times radius squared. The formula for finding the circumference is two times pi times radius or pi times diameter. The relationship between the circumference and area of a circle is Pi. How to utilize the formula for area of a circle. How to utilize the formula for the circumference of a circle.	Compare/contrast the area and circumference of a circle.

Key Vocabulary:

circle circumference diameter radius area pi π formula

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Students might determine what item might be priced lower based on size (price per square inch of pizza).

Students will determine which bicycle tire to use during a road race based on the circumference of the tire at a constant speed.

Students will be able to find the area and circumference of the round pen (corral) I use for training my horse.

SD Common Core State Standards Disaggregated Math Template

Domain:	Geometry	**Cluster:**	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
n/a no previous standard	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.	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.

Student Friendly Language:
I can state the relationship between supplementary, complementary, and vertical angles. I can solve equations for unknown angles using supplementary, complementary, vertical, and adjacent angles. I can use angle relationships to write algebraic equations for unknown angles to solve multi-step problems.

Know **(Factual)**	**Understand** **(Conceptual)** **The students will understand:**	**Do** **(Procedural, Application, Extended Thinking)**
• Supplementary angles • Complementary angles • Vertical angles • Adjacent angles	The similarities and differences between complementary and supplementary angles. The characteristics of adjacent and vertical angles.	Create and solve equations for unknown complementary, supplementary, adjacent and vertical angles.

Key Vocabulary:
supplementary angles complementary angles vertical angles adjacent angles intersecting lines right angle acute angle obtuse angle degrees straight line or straight angle
Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question “why do I have to learn this”?
Students will create sections of a garden using supplementary, complementary, vertical, and adjacent angles. Students will be able to draw examples of angles that represent real-world objects. (a support brace for a gate, a building or bridge has many supplementary, complementary, vertical and adjacent angle, etc.).

SD Common Core State Standards Disaggregated Math Template

Domain:	Geometry	**Cluster:**	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. 6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	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.	8.G.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Student Friendly Language:

I can determine the area of two-dimensional figures.
I can determine the surface area and volume of three-dimensional figures.
I can solve real-world problems involving area, surface area, and volume.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Formulas for area • Formulas for volume • Formulas for surface area for two- and three-dimensional objects	Area is the number of square units that cover the surface of a closed figure. Volume is the number of cubic units that fit in a closed figure. Surface area is the sum of the areas of all the faces on a three-dimensional object.	Construct a two-dimensional figure and calculate the area. Construct a three-dimensional figure and calculate the surface area and volume.

Key Vocabulary:

length width base height altitude of a triangle area surface area volume polygon right prism cube quadrilateral triangle two-dimensional three-dimensional formula triangles polygon

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Students will be able to determine the area of a playground and surface area of a tent.

Students can calculate the volume of popcorn kernels in a pyramid compared to a prism.

Make a birdhouse: What three dimensional figures make up the birdhouse?(rectangular prism and triangular prism) What methods could you use to find the surface area of the birdhouse? (find the area of each face and add, then subtract any overlap) How could you find the volume of the birdhouse? (Find the volume of each shape separately and then add)

Discover the surface area of boxes and containers of different shapes, such as a cylindrical container of oats, a rectangular prism such as a pasta box, and a triangle prism such as a Toblerone package.

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Use random sampling to draw inferences about a population	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*	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.	Terminating Standard

Student Friendly Language:

I can identify a random sample.
I can make conclusions about a population by examining a sample.

Know (Factual)	**Understand (Conceptual) The students will understand that:**	**Do (Procedural, Application, Extended Thinking)**
• A sample is part of a larger population. • Random Sample • Representative Sample	One can make generalizations about a population based on data collected from a sample of a population. Generalizations about a population from a sample are valid only if the sample is representative of that population. Random sampling tends to produce representative samples and support valid inferences.	Make generalizations about a population based on data collected from a sample. Explain whether or not a sample is representative of the entire population and why.

Key Vocabulary:

sample population random sample representative sample generalizations sampling
inferences statistics probability survey biased questions,

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Use the result of a survey or past actions to predict the actions of a larger group.

Collecting data about grasshoppers in a small area, such as male/female or size, in order to make generalizations about the grasshoppers in a yard or field.

Students will divide a sheet of graph paper into 20 equal squares. They will pour a cup of rice (to represent grasshoppers) onto the graph paper, making sure not to go off the grid. Students will select four squares as their population sample. Then students will take an average of the four squares they selected by adding the four squares and dividing by four. Students will then find an estimated population of grasshoppers by multiplying the average number of grasshoppers per square by the total number of squares.

Write a survey question to be given to community members (EX. "What day should school start?"). Determine how to collect a representative sample of the community. Conduct the survey and make generalizations about the community.

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Use random sampling to draw inferences about a population	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.* 6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. 6.SP.4 – Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	SP.7.2 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.*	8.SP.1 Construct and interpret scatter plots for bivariate measurement of data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

Student Friendly Language:

I can design a study to collect data on a population through a random and representative sample.
I can formulate survey questions to learn about a population.
I can use data that I collected from various random samples to make inferences about a population.
I can use a random sample to predict a common characteristic about a population.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Representative sample produce valid inferences about a population. • Variation occurs in predictions based on sampling.	If a sample of a population is random and representative, valid inferences can be made about the population. Proportional reasoning can be used to make predictions about a population. Generating multiple samples for the same population allows for gauging the variation of estimates or predictions	Formulate a survey question. Determine how to collect a random sample that is representative of a population. Draw inferences about a population from data obtained in a random and representative sample. Generate multiple samples of the same size for making estimates and predictions.

Key Vocabulary:

population sample random sample representative sample inference
variation measures of center proportions

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Conduct a survey to estimate a fish population from a tagged population

Conduct a survey to estimate how many hours per week students spend on the internet. Is the estimate appropriate?

Conduct a survey to estimate how many students are involved in sports.

Conduct a survey to estimate how many hours students spend per night on homework.

Using the best sample, Conduct a survey to estimate the number of students who are in band.

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Draw informal comparative inferences about two populations	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and boxplots. 6.SP.5 Summarize numerical data sets in relation to their context, such as: a) Reporting the number of observations. b) Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c) Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d) Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	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.	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.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?*

Student Friendly Language:

I can find the difference between measures of center (mean, median) for multiple sets of data.
I can compare the measures of center for multiple sets of data on a variety of graphs.
I can compare the degree of visual overlap between two or more graphs.
I can estimate the variability of a data set.
I can compare the variability of multiple data sets.
I can use a graph to compare key information about multiple sets of data such as how their means or medians vary.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Measures of Center: mean, median, mode • Measures of Variability: Mean absolute deviation, range • Multiples of variability	-Measures of center can be used to compare the variability between two sets of data. -Measures of variability such as mean absolute deviation can be used to determine how widespread a set of data is. -Differences between the measures of center and variability between multiple sets of data show how the sets of data different. -Variabilities can be expressed and compared as multiples of one another.	-Find the measures of variability of a set of data. -Compare the differences between the measures of center and variability between multiple sets of data. -Use measures of center and variability to visually analyze the overlap of data set displayed on a graph. -Express the measure of center as a multiple of the measure of variability.

Key Vocabulary:

Mean Median Mode Range Measures of center Measures of variability Mean absolute deviation
Multiple of a measure of variability Quartile Interquartile range Dot plot Line graph Box and whisker plot

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Compare the heights of the soccer players and basketball players.

Comparing amount of sleep (or anything) between males and females in the same age group.

Comparing the amount of text messages sent (or anything) between different age groups or male and female.

Jason wanted to compare the mean height of the players on his favorite basketball and soccer teams. He thinks the mean height of the players on the basketball team will be greater but doesn't know how much greater. He also
wonders if the variability of heights of the athletes is related to the sport they play. He thinks that there will be a
greater variability in the heights of soccer players as compared to basketball players. To find out the answer, he must consider the following questions.

How do the graphs overlap?
What is the difference between measures of center between the two data sets?
What is the mean absolute deviation of each data set? How do they compare?
How do the measures of variability compare?
How can I represent the difference between the measures of center as a multiple of the measure of variability?

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Draw informal comparative inferences about two populations	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and boxplots. SP.6.5 Summarize numerical data sets in relation to their context, such as: a) Reporting the number of observations. b) Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c) Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d) Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	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.	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. SP.8.4 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?*

Student Friendly Language:

I can find measures of center and use them to compare two populations.
I can find measures of variability and use them to compare two populations.
I can use my data to make inferences about two populations.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Measures of Center: mean, median, mode • Measures of Variability: mean absolute deviation, range • Random sampling • Comparative inference	-Measures of center can be used to make inferences about a population. -Measures of variability can be used to make inferences about a population. -Measures of center and variability can be used to compare populations.	-Make inferences about a population by using measures of center. -Make inferences about a population by using measures of variability. -Draw conclusions from random sample data to compare and analyze two populations.

Key Vocabulary:

Mean Median Mode Measures of center Measures of variability Mean absolute deviation
Range Quartile Interquartile range Dot plot Line graph Histogram
Box and Whisker Plot Unbiased Biased Random sampling Comparative inference

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Conduct a survey to analyze and compare the amount of time spent on homework at different grade levels.

Conduct a survey to analyze and compare the usage of internet or gaming systems between different ages, genders or students living in different countries.

Conduct a survey to collect and analyze data between different grades/ages of students in regards to a change at school, such as a different lunch menu.

When given two sets of data, students can use measures of center and measures of variability to make comparative inferences about two populations. For example, examine the following data sets and using measures of center and measures of variability, infer which data set could represent a set of middle school students and which set of data could represent a set of K-2 student and justify your reasoning.

Jumping Jacks Data Group 1: 1, 2, 4, 4, 6, 7, 7, 8, 8, 9, 12, 15

Jumping Jacks Data Group 2: 2, 3, 5, 9, 10, 10, 13, 17, 18, 19, 19, 20, 28

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Investigate chance processes and develop, use, and evaluate probability models	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.RP.1 Understand the concept of a ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the birdhouse at the zoo was 2:1, because for every 2 wings there was 1 beak." "For ever vote candidate A received, candidate C received nearly three votes."*	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.	None (Does build to further standards in 7th grade and later in high school.)

Student Friendly Language:
I can determine how likely or unlikely an event will occur. I can represent the likelihood of an event occurring with a number between 0 and 1.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Probability • Likely/Unlikely • Event	The probability of an event is the likelihood or chance that it will occur that is represented by a number between 0 and 1. 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.	Determine the likelihood of an event based on a given probability between 0 and 1 written in decimal, fraction and/or percent form. State whether a given event is unlikely, neither unlikely nor likely, or likely.

Key Vocabulary:				
probability	chance	event	likely	unlikely

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Have students give examples of real world events that are likely and/or unlikely such as: the probability it will snow in Florida, the probability that school will be canceled a day in February, or the probability that a coin will land on heads.

Weather, "What is the probability it will rain today?"

Sports, "What is the team's chances of winning the state tournament?"

Lottery, "What is the chance you will win the lottery?"

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Investigate chance processes and develop, use, and evaluate probability models	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.RP.1 Understand the concept of a ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the birdhouse at the zoo was 2:1, because for every 2 wings there was 1 beak." "For ever vote candidate A received, candidate C received nearly three votes."*	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.	(They will continue to build on this in high school.)

Student Friendly Language:
I can perform an experiment and collect data in order to determine the chance an event will happen. I can use the chance an event will occur to predict what will happen in an experiment.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Experimental Probability • Theoretical Probability • Relative Frequency • Sample Space • Predictions • Table • Organized list	Probability or the chance an event will occur can be modeled by an experiment. Experimental probability is based on the frequency of an event occurring during an experiment. Theoretical probability represents what should happen during an experiment. Relative frequency of an event should be close to the theoretical probability but may not be exactly the same.	Collect and organize data during an experiment by observing the relative frequency of an event during an experiment. Calculate the experimental probability of an event. Calculate the theoretical probability of an event. Analyze data collection to make predictions about what should happen in an experiment.

Key Vocabulary:
probability chance experimental probability theoretical probability frequency relative frequency event outcome sample space table organized list
Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?
Card Games, "What is the probability of being dealt a full house?" Carnival Games (Spinner, Darts, Lucky Duck), "What is the probability of choosing a winning duck?"

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Investigate chance processes and develop, use, and evaluate probability models	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
6.SP.5 Summarize numerical data sets in relation to their context, such as by: · a. Reporting the number of observations. · b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. · c. Giving quantitative measures of center (median and/or mean) and variability (interquartile and and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. · d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	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. a. 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. b. 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?	8.SP.4 Understanding 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

Student Friendly Language:

I can design a probability model.

I can use a probability model to determine probabilities of events.

I can explain the difference between theoretical and experimental probability.

I can decide if an event will have an equal chance of happening.

I can decide if a game is fair or unfair.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Predictions • Experiment • Trial • Uniform probability model • Equally likely or not equally lkely	The more trials conducted, the closer the experimental probability will be to the theoretical probability. Data must be collected to find experimental probability. Theoretical probability is found based on analyzing situations. Probabilities closer to one have a greater chance of occurring. Probabilities are represented as a fraction or decimal between 0 and 1 or as a percent between 0 and 100. To find all possible outcomes in a uniform probability model, you should use an organized list, chart or tree diagram to organize your data.	Design a model to simulate a situation and find the experimental or theoretical probability. Develop a probability model by observing the frequency of an event and gathering data to create charts, tables, lists or tree diagrams to find theoretical probability of a model. Compare experimental and theoretical probabilities and explain possible discrepancies. Develop a probability model to determine if an event is likely or unlikely to occur.

Key Vocabulary:

theoretical probability, experimental probability, predictions, experiment, outcomes, event, sample space, trials, uniform probability model

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Determine if all the possible outcomes in a game are equally likely to occur – would this make the game fair to all players?

Determine the number of possible options when ordering a sandwich from Subway.

SD Common Core State Standards Disaggregated Math Template

Domain:	Statistics and Probability	**Cluster:**	Investigate chance processes and develop, use, and evaluate probability models	**Grade level:**	7

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
no previous standard	7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. c. 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?	(Students will be building on this in high school.)

Student Friendly Language:

I can find the probability of a compound event by creating models such as lists, tables, and tree diagrams.

I can design and use a simulation to generate frequencies for compound events.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Compound event • Tree diagram • Favorable outcomes • Total outcomes • Simulation • Fundamental Counting Principle	A compound event consists of two or more events. Compound events can be independent or dependent. There are similarities and differences of independent and dependent events. Two events are independent events if one event does not affect the occurrence of the other event. Two events are dependent events if the occurrence of one event affects the probability of another. The probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. The Fundamental Counting Principle is more effective when there are several outcomes to choose from.	Calculate the probability of a compound event. Conduct an experiment to find the probability of a compound event. Draw a tree diagram of the outcomes for a compound event and place them in an organized list. Design and use a simulation to find frequencies of a compound event.

Key Vocabulary:

event compound event tree diagram organized list probability frequency table sample space

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Find the probability in various carnival games students have played.

Examples:

If you roll three standard number cubes once each, and you roll a 1, 2 and 3, you will win $50. What is the probability of winning the $50?

There is a bag with 100 numbers in it. You will reach in the bag a total of three times and replace the number each time. What is the probability that you will pull out a 5, 6 and 7?

There is a bag with the following bills in it. 1 - $1000, 5 - $100's, 5 - $10's and 1000 - $1's. After pulling out the first bill, you do not replace the bill. What is the probability of you pulling out a $1,000 and then a $100?

In a group of 20 balloons, 6 are filled with paper. What is the chance you pop 2 balloons with paper?

What is the probability of flipping a coin to get heads, roll a number cube to get a five, and then choose a red marble out of a bag of 3 marbles (red, blue, and green)?