Ganado Unified School District #20
(Mathematics / Grade 7)

PACING Guide SY 2022-2023

Time Line & Resources (Identify textbook, page number or website link & etc.)	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
First Quarter				
Textbook:20220 Edition Reveal Math Course 2 Volume 2 **Module 1 Proportional Relationships** **Embedded: ALEKS online support by Glencoe**	**Module 1 Proportional Relationships** **7.RP. A** **Analyze proportional relationships and use them to solve mathematical problems and problems in real-world context.** **7.RP.A.1** Compute unit rates associated with ratios involving both simple and complex fractions, including ratios of quantities measured in like or different units.	**Module 1 Proportional Relationships** What does it mean for two quantities to be in a proportional relationship?	**Module 1 Proportional Relationships** Lesson 1-1 I can find unit rates when one or both quantities are fractions. Lesson 1-2 I can use models and ratio reasoning to understand how a proportional relationship can exist between quantities. Lesson 1-3 I can determine whether two quantities shown in a table are in a proportional relationship by testing equivalent ratios.	**Module 1 Proportional Relationships** Unit rate Proportional relationship Constant of proportionality Proportional Nonproportional Proportion

	7.RP.A.2 Recognize and represent proportional relationships between quantities. a. 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). b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. 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.* d. Explain what a point (*x, y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate.		Lesson 1-4 I can determine if a relationship is proportional by analyzing its graph and explain what the points (0,0) and (1, r) mean on the graph of a proportional relationship. Lesson 1-5 I can write equations to represent proportional relationships and identify the constant of proportionality in the equation representing a proportional relationship. Lesson 1-6 I can solve problems involving proportional relationships by making a table using a graph, or writing an equation.	

	7.RP.A.2.A Recognize and represent proportional relationships between quantities. a. 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.A.2.B** Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **7.RP.A.2.C** Recognize and represent proportional relationships between quantities.			

	c. 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.A.2.D** Recognize and represent proportional relationships between quantities. d. Explain what a point (*x, y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where *r* is the unit rate. **7.RP.A.3** Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).			

Module 2 **Solve Percent Problems** **Embedded:** **ALEKS online support by Glencoe**	**Module 2** **Solve Percent Problems** **7.RP.A.3** Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error). **7.EE.A** **Use properties of operations to generate equivalent expressions.** **7.EE.A.2** Rewrite an expression in different forms, and understand the relationship between the different forms and their meanings in a problem context. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	**Module 2** **Solve Percent Problems** How can percent describe the change of a quantity**?**	**Module 2** **Solve Percent Problems** Lesson 2-1 I can use proportional relationships to solve percent of change problems. Lesson 2-2 I can use proportional relationships to find the amount of tax charged for an item. Lesson 2-3 I can use proportional relationships to find the amount to pay for a tip and the amount of markup on items. Lesson 2-4 I can use proportional relationships to find the amount of discount or markdown. Lesson 2-5 I can use the simple interest formula to find the amount of interest earned for a given principal, at a given interest rate, for a given period of time.	**Module 2** **Solve Percent Problems** Percent of change Percent of increase Percent of decrease sales tax gratuity markup selling price tip wholesale cost discount markdown interest principal simple interest commission fee amount of error percent of error

Module 3 **Operations with Integers** **Embedded:** **ALEKS online support by Glencoe**	**Module 3** **Operations with Integers** **7.NS.A** **Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers except division by zero.** **7.NS.A.1** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	**Module 3** **Operations with Integers** How are operations with integers related to operations with whole numbers?	Lesson 2-6 I can use proportional relationships to find the amount of commission earned on sales and the amount of fees for certain services. Lesson 2-7 I can use proportional relationships to solve percent error problems. **Module 3** **Operations with Integers** Lesson 3-1 I can use different methods, including algebra tiles, number lines or absolute value, to add integers. Lesson 3-2 I can use different methods, including algebra tiles, number lines or the additive inverse, to subtract integers. Lesson 3-3 I can use number lines and mathematical properties to multiply integers.	**Module 3** **Operations with Integers** additive inverse Additive Inverse Property opposites additive inverse Distributive Property Multiplicative Identity Property Multiplicative Property of Zero

	7.NS.A.1.A Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. **7.NS.A.1.B** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. b. Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world context.		Lesson 3-4 I can use a related multiplication sentence to divide integers. Lesson 3-5 I can use the order of integer operations to evaluate expressions.	

	7.NS.A.1.C Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world context. **7.NS.A.1.D** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. d. Apply properties of operations as strategies to add and subtract rational numbers. **7.NS.A.2** Multiply and divide integers and other rational numbers.			

	7.NS.A.2.A Multiply and divide integers and other rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world context. **7.NS.A.2.B** Multiply and divide integers and other rational numbers. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world context			

	7.NS.A.2.C Multiply and divide integers and other rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers. **7.EE.B.3** Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate and assess the reasonableness of answers. *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 per hour.*			

Second Quarter				
Module 4 **Operations with Rational Numbers** **Embedded:** **ALEKS online support by Glencoe**	**Module 4** **Operations with Rational Numbers** **7.NS. A** **Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers except division by zero.** **7.NS.A.1.A** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. **7.NS.A.1.B** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	**Module 4** **Operations with Rational Numbers** How are operations with rational numbers related to operations with integers?	**Module 4** **Operations with Rational Numbers** Lesson 4-1 I can divide rational numbers and convert fractions to decimal equivalents using division. Lesson 4-2 I can find the additive inverse of a rational number and add rational numbers. Lesson 4-3 I can subtract rational numbers by adding the additive inverse. Lesson 4-4 I can use the rules of multiplying integers to multiply rational numbers. Lesson 4-5 Lesson 4-4 I can use the rules of dividing integers to divide rational numbers.	**Module 4** **Operations with Rational Numbers** bar notation rational number repeating decimal terminating decimal

	b. Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world context. **7.NS.A.1.C** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world context. **7.NS.A.1.D** Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.		Lesson 4-6 I can add, subtract, multiply and divide rational numbers including those four operations to solve real-world problems.	

	d. Apply properties of operations as strategies to add and subtract rational numbers. **7.NS.A.2** Multiply and divide integers and other rational numbers. **7.NS.A.2.A** Multiply and divide integers and other rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world context **7.NS.A.2.B** Multiply and divide integers and other rational numbers. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is			

	a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world context. **7.NS.A.2.C** Multiply and divide integers and other rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers **7.NS.A.2.D** Multiply and divide integers and other rational numbers d. Convert a rational number to decimal form using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats **7.NS.A.3** Solve mathematical problems and problems in real-world context involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where $a/b \div c/d$			

Textbook:20220 Edition **Reveal Math Course 2 Volume 2**	when *a*,*b*,*c*,and *d* are all integers and *b*,*c*, and $d \neq 0$. **7.EE.B.3** Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate and assess the reasonableness of answers. *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 per hour.*			

Module 5 **Simplify Algebraic Expression** **Embedded:** **ALEKS online support by Glencoe**	**Module 5** **Simplify Algebraic Expression** **7.EE. A** **Use properties of operations to generate equivalent expressions.** **7.EE.A.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. **7.EE.A.2** Rewrite an expression in different forms, and understand the relationship between the different forms and their meanings in a problem context. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	**Module 5** **Simplify Algebraic Expression** Why is it beneficial to rewrite expressions in different forms?	**Module 5** **Simplify Algebraic Expression** Lesson 5-1 I can simplify algebraic expressions by identifying and combining like terms. Lesson 5-2 I can use different methods to add linear expressions. Lesson 5-3 I can use different methods to subtract linear expressions. Lesson 5-4 I can use GCF to factor linear expressions. Lesson 5-5 I can combine operations to simplify linear expressions.	**Module 5** **Simplify Algebraic Expression** Coefficient Constant Like terms Simplest form Term Linear expression Nonlinear expression Factor Factored form Greatest common factor Monomial

Module 6 **Write and Solve Equations** **Embedded:** **ALEKS online support by Glencoe**	**Module 6** **Write and Solve Equations** **7.NS.A** **Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers except division by zero.** **7.NS.A.3** Solve mathematical problems and problems in real-world context involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where $a/b \div c/d$ when $a,b,c,$and d are all integers and b,c, and $d \neq 0$. **7.EE.B** **Solve mathematical problems and problems in real-world context using numerical and algebraic expressions and equations.** **7.EE.B.4.A** Use variables to represent quantities in mathematical	**Module 6** **Write and Solve Equations** How can equations be used to solve everyday problems?	**Module 6** **Write and Solve Equations** Lesson 6-1 I can write one-step equations involving integers and rational numbers and use inverse operations to solve the equations. Lesson 6-2 I can use inverse operations to solve two-step equations of the form px + q = r. Lesson 6-3 I can write two-step equations of the form px + q = r and use inverse operations to solve the equations. Lesson 6-4 I can write two-step equations of the form p (x + q) = r. Lesson 6-5 I can write two-step equations of the form p (x + q) = r and use inverse operations to solve the equations.	**Module 6** **Write and Solve Equations** One-step equation Addition Property of Equality Defining a variable Division Property of Equality Equation Equivalent equations Inverse Property of Equality Multiplication Property of Equality Solution Subtraction Property of Equality Two-step equation Distributive Property

	problems and problems in real-world context, and construct simple equations and inequalities to solve problems. a. 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. b. Solve word problems leading to inequalities of the form $px+q > r$ or $px+q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.			
Third Quarter				
Module 7 **Write and Solve Inequalities** **Embedded:**	**Module 7** **Write and Solve Inequalities**	**Module 7** **Write and Solve Inequalities**	**Module 7** **Write and Solve Inequalities**	**Module 7** **Write and Solve Inequalities**

ALEKS online support by Glencoe	**7.EE.B** **Solve mathematical problems and problems in real-world context using numerical and algebraic expressions and equations.** **7.EE.B.4** Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems. a. 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. b. Solve word problems leading to inequalities of the form $px+q > r$ or $px+q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	How are solutions to inequalities different from solutions to equations?	Lesson 7-1 I can use inverse operations to solve one-step addition and subtraction inequalities. Lesson 7-2 I can write one-step addition and subtraction inequalities from real-world situations and use inverse operations to solve inequalities. Lesson 7-3 I can use inverse operations to solve one-step multiplication and division inequalities with positive coefficients. Lesson 7-4 I can use inverse operations to solve one-step multiplication and division inequalities with negative coefficients. Lesson 7-5 I can write one-step multiplication and division from real-world situations and use inverse operations to solve the inequalities. Lesson 7-6 I can write two-step inequalities from real-world situations and use inverse	Addition Property of Inequality Inequality Subtraction Property of Inequality One-Step Addition and Subtraction Inequalities Multiplication Property of Inequality Division Property of Inequality One-Step Multiplication and Division Inequalities with Positive Coefficients One-Step Multiplication and Division Inequalities with Negative Coefficients Two-Step Inequality

	7.EE.B.4.B Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems. b. Solve word problems leading to inequalities of the form $px+q > r$ or $px+q < r$, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.		operations to solve the inequalities.	
Module 8 **Geometric Figures** **Embedded:** **ALEKS online support by Glencoe**	**Module 8** **Geometric Figures** **7.G.A.** **Draw, construct, and describe geometrical figures, and describe the relationships between them.** **7.G.A.1** Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing	**Module 8** **Geometric Figures** How does geometry help to describe objects**?**	**Module 8** **Geometric Figures** Lesson 8-1 I can identify vertical and adjacent angles, and use them to write and solve equations to find the unknown angle measures. Lesson 8-2 I can identify complementary and supplementary angles, and use them to write and solve equations to find the unknown measures.	**Module 8** **Geometric Figures** Acute angle Adjacent angle Congruent Obtuse angle Right angle Straight angle Vertex Vertical angles Zero angle Complementary angles Supplementary angles

	and reproducing a scale drawing at a different scale. **7.G.A.2** Draw geometric shapes with given conditions using a variety of methods. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. **7.G.A.3** Describe the two-dimensional figures that result from slicing three-dimensional figures. **7.G.B** **Solve mathematical problems and problems in real-world context involving angle measure, area, surface area, and volume.** **7.G.B.5** Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve		Lesson 8-3 I can classify and draw triangles, freehand, with tools, and with technology given certain conditions such as angle measures or side lengths. Lesson 8-4 I can use ratio reasoning to find actual lengths and areas from a scale drawing and reproduce a scale drawing at a different scale. Lesson 8-5 I can describe three-dimensional figures and determine the shapes resulting from horizontal, vertical, and angled cross sections.	Acute triangle Equilateral triangle Isosceles triangle Obtuse triangle Right triangle Scalene triangle Scale Scale drawings Scale factor Scale models Bases Cone Cross section Cylinder Edge Face Plane Polyhedron Prism Pyramid Vertices

	simple equations for an unknown angle in a figure.			
Fourth Quarter				
Module 9 **Measure Figures** **Embedded:** **ALEKS online support by Glencoe**	**Module 9** **Measure Figures** **7.G.B** **Solve mathematical problems and problems in real-world context involving angle measure, area, surface area, and volume.** **7.G.B.4** Understand and use the formulas for the area and circumference of a circle to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. **7.G.B.6** Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Solve mathematical problems and problems in real-	**Module 9** **Measure Figures** How can we measure objects to solve problems?	**Module 9** **Measure Figures** Lesson 9-1 I can find the circumference of circles, given the radius or diameter, using the formulas for the circumference of a circle, and find the radius or diameter of a circle, given its circumference. Lesson 9-2 I can find the areas of circles, given the radius or diameter, using the formula for the area of a circle. Lesson 9-3 I can find the areas of composite figures by decomposing the figures into known shapes, and then adding the areas of those shapes. Lesson 9-4 I can find volumes of prisms and pyramids by using	**Module 9** **Measure Figures** Center Circe Circumference Diameter Pi Radius Area Semicircle Composite figure Cubic units Pyramid Rectangular prism Triangular prism Volume Face Lateral face Regular pyramid Slant height Surface area

	world context involving volume and surface area of three-dimensional objects composed of cubes and right prisms		formulas for volume of prisms and pyramids. Lesson 9-5 I can find the surface areas of solids by relating the nets of those solids to the formulas for surface area. Lesson 9-6 I can find volumes and surface areas of composite figures by decomposing the figures into common solids and using the formulas for volume and surface area of those solids.	
Module 10 Probability **Embedded: ALEKS online support by Glencoe**	**Module 10 Probability** **7.SP.C** **Investigate chance processes and develop, use and evaluate probability models.** **7.SP.C.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	**Module 10 Probability** How can probability be used to predict future events?	**Module 10 Probability** Lesson 10-1 I can solve problems that classify the likelihood of simple events. Lesson 10-2 I can find the relative frequency of simple events and compare the relative frequency to experimental probability.	**Module 10 Probability** Event Likelihood Outcome Experimental probability Probability Probability experiment Relative frequency Relative frequency table Simple event

	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. **7.SP.C.6** Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.* **7.SP.C.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		Lesson 10-3 I can solve problems involving theoretical probability of simple events and their complements. Lesson 10-4 I can solve problems that compare probabilities and relative frequencies of simple events. Lesson 10-5 I can solve problems involving the probability of compound events. Lesson 10-6 I can solve problems by simulating compound probability events.	Complementary event Sample space Theoretical probability Uniform probability model Compound event Theoretical probability of a compound event Tree diagram Simulation

	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?* **7.SP.C.7.B** 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. 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? **7.SP.C.7.A** 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.*			

Module 11 **Sampling and Statistics** **Embedded:** **ALEKS online support by Glencoe**	**Module 11** **Sampling and Statistics** **7.SP.A** **Use random sampling to draw inferences about a population.** **7.SP.A.1** Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. **7.SP.A.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*	**Module 11** **Sampling and Statistics** How can you use a sample to gain information about a population?	**Module 11** **Sampling and Statistics** Lesson 11-1 I can identify samples as biased or unbiased and determine whether inferences from samples are valid. Lesson 11-2 I can make predictions based on data gathered using a valid sampling method. Lesson 11-3 I can understand that taking multiple samples can help gauge the variations in their predictions. Lesson 11-4 I can make comparative inferences about two populations based on the data from random samples. Lesson 11-5 I can informally assess the degree of visual overlap between two distributions.	**Module 11** **Sampling and Statistics** Biased sample Convenience sample Inferences Invalid inference Population Sample Simple random sample Statistics Stratified random sample Survey Systematic random sample Unbiased sample Valid inference Valid sampling method Voluntary response sample Variability Asymmetric distribution Distribution Double box plot Symmetric distribution Visual overlap

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

	between the two distributions of heights is noticeable. **7.SP.B.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.*			