GBCS Curriculum Guide			GRADE: 6th		SUBJECT: Math			
Topic	**Pacing**	**Unit**	**Standards**	**Enduring Understandings & Essential Questions**	**Learning Targets**	**Vocabulary/Concepts**	**Materials**	**Assessments**
Ratios and			6.RP.1 Understand the concept of a ratio and use ratio	- How are ratios and	-I can write ratio notation in three ways as it applies to	ratio		
Ratios and			6.RP.2 Understand the concept of a unit rate a/b associated	* How do you determine a	Given a real-world ratio relationship, I can use ratio	Rate		
Ratios and			6.RP.3 Use ratio and rate reasoning to solve real-world and	* How do you determine a	Given a real-world mathematical problem, I can create	Equivalent Ratios		
Ratios and			6.RP.3 Use ratio and rate reasoning to solve real-world and	* What are the differences	I can solve real-world problems involving unit pricing,			
Ratios and			6.RP.3 Use ratio and rate reasoning to solve real-world and	* Give the quantity and price	Given a real word and mathematical problem, I can			
Ratios and			6.RP.3 Use ratio and rate reasoning to solve real-world and	* Given the quantity and	I can apply ratio reasoning to convert measurement			
The Number			6.NS.1 Interpret and compute quotients of fractions, and	* How can we use	I can compute quotients of fractions divided by	Quotients		
The Number			6.NS.2 Fluently divide multi-digit numbers using the standard	* What kinds of situations	I can divide multi-digit numbers using the standard			
The Number			6.NS.3 Fluently add, subtract, multiply, and divide multi-digit	* How can knowledge of	I can add multi-digit decimals using the standard	Terminating Decimals		
The Number			6.NS.4 Find the greatest common factor of two whole	* What are the relationships	* I can determine the Greatest Common Factor of two	greatest common factor		
The Number			6.NS.5 Understand that positive and negative numbers are	* What are the relationships	I can use integers to represent quantities in real world			
The Number			6.NS.6 Understand a rational number as a point on the	* How can positive and	I can identify a negative number as being to the left of			
The Number			6.NS.6Understand a rational number as a point on the	How does absolute value	I can identify the location in all quadrants of the	Coordinate		
The Number			6.NS.6 Understand a rational number as a point on the	* How can one extend the	I can find and position ordered pairs of rational			
The Number			6.NS.7 Understand ordering and absolute value of rational	see above questions	I can interpret an inequality as a statement of position	greater than >		
The Number			6.NS.7 Understand ordering and absolute value of rational	see above questions	I can write statements of order for rational numbers in			
The Number			6.NS.7Understand ordering and absolute value of rational	see above questions	I can interpret absolute value of a rational number as			
The Number			6.NS.7Understand ordering and absolute value of rational	see above questions	I can tell the difference between statements of			
The Number			6.NS.8 Solve real-world and mathematical problems by	see above questions	I can solve real-world and mathematical problems by	vertical		
Expressions			6.EE.1 Write and evaluate numerical expressions involving	* How can one use	* I can write numerical expressions involving whole	Exponent		
Expressions			6.EE.2 Write, read, and evaluate expressions in which letters	* How can you use algebraic	I can write algebraic expressions, with numbers and	expression;		
Expressions			6.EE.2 Write, read, and evaluate expressions in which letters	* How can you use algebraic	I can identify parts of an expression using	expression;		
Expressions			6.EE.2 Write, read, and evaluate expressions in which letters	* How can you use algebraic	I can evaluate specific values for variables in real-	expression;		
Expressions			6.EE.3 Apply the properties of operations to generate	* How can you use algebraic	I can apply the properties of operations to generate	Commutative Property		
Expressions			6.EE.4 Identify when two expressions are equivalent (i.e.,	* How can you use algebraic	I can identify, using various strategies, that two	equivalent;		
Expressions			6.EE.5 Understand solving an equation or inequality as a		I can recognize solving an equation or inequality as a	substitute		
Expressions			6.EE.6 Use variables to represent numbers and write		I can recognize that a variable can represent an	rule;		
Expressions			6.EE.7 Solve real-world or mathematical problems by writing	* How can you use algebraic	I can write and solve equations for real-world or	inverse operation;		
Expressions			6.EE.8 Write an inequality of the form x > c or x < c to	* How can you use algebraic	I can recognize that inequalities of the form x > c or x <	inequality;		
Expressions			6.EE.9 Use variables to represent two quantities in a real-	* What are the variables in	I can use variables to represent two quantities in a	table;		
Geometry			6.G.1 Find the area of right triangles, other triangles, special	* What is one finding when	I can find the area of triangles by decomposing	area;		
Geometry			6.G.2 Find the volume of a right rectangular prism with		I can calculate the volume of a right rectangular prism.	volume;		
Geometry			6.G.3 Draw polygons In the coordinate plane given		Given coordinates for the vertices, I can draw			
Geometry			6.G.4 Represent three-dimensional figures using nets made		I can represent three dimensional figures using nets	nets;		
Statistics			6.SP.1 Recognize a statistical question as one that anticipates	* What is the question being	* I can recognize that data can have variability.	line plot		

Statistics			6.SP.2 Understand that a set of data collected to answer a	* How could one organize a	* I can recognize that a set of data for a statistical	mode		
Statistics			6.SP.3 Recognize that a measure of center for a numerical	see above questions	* I can recognize that measures of center for a data		Be intentional	
Statistics			6.SP.4 Display numerical data in plots on a number line,	* What do the measures of	* I can create a histogram to display a set of numerical	histogram		
Statistics			6.SP.5 Summarize numerical data sets in relation to their	see above questions	I can report the number of observations in a data set	vertical		
Statistics			6.SP.5 Summarize numerical data sets in relation to their	see above questions	I can describe the data being collected, including how	vertical		
Statistics			6.SP.5 Summarize numerical data sets in relation to their	* How do the median and	I can calculate measures of center (mean, median, and	outlier		
Statistics			6.SP.5 Summarize numerical data sets in relation to their	* How do we display data	· I can choose the appropriate measure of	measures of central		
MATH PRACTICES with explanations taken from "Math Solutions" - Marilyn Burns								
						In grade 6, students solve problems involving ratios and rates and discuss how they solved them. Students		
						In grade 6, students represent a wide variety of real world contexts through the use of real numbers and		
						In grade 6, students construct arguments using verbal or written explanations accompanied by expressions,		
MP.4. Model with mathematics.						In grade 6, students model problem situations symbolically, graphically, tabularly, and contextually.		
						Students consider available tools (including estimation and technology) when solving a mathematical problem		
						In grade 6, students continue to refine their mathematical communication skills by using clear and		
						Students routinely seek patterns or structures to model and solve problems. For instance, students		
						In grade 6, students use repeated reasoning to understand algorithms and make generalizations about		

Resources & References:

1. Arizona Dept. of Educ.: http://www.azed.gov/standards-practices/mathematics-standards/

GBCS Curriculum Guide			GRADE: 7th Grade		SUBJECT: Math			
Topic	**Pacing**	**Unit**	**Standards**	**Enduring Understandings & Essential Questions**	**Learning Targets**	**Vocabulary/Concepts**	**Materials**	**Assessments**
Ratio and			7.RP.1 Compute unit rates associated with ratios of fractions,	* How do you use	• I can compute unit rates with fractional values.	unit rate		
Ratio and Proportional Reasoning			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.	*What are the variables in a problem? *Do the variables in a problem have a relationship to each other? If so, describe. *What patterns in a problem suggest that it is changing at a constant rate? * What is the connection between linear equations and the patterns in tables and graphs of those equations: rate of change, slope, and y-intercept? * How can tables, graphs, and equations of proportional and non-proportional relationships be used to answer questions?	•I can determine if two ratios are proportional by examining a graph and a table. *I can analyze two ratios to determine if they are proportional by examining a table and identifying whether the line crosses through the point (0, 0). (Be sure students verbalize that the graph is a straight line and that it passes through the origin in order to determine if the relationship is proportional.) MP: 1-8	linear; proportional;		
Linear Relationships			7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	* How can the proportional and non-proportional changes in a problem be represented in a table, graph, or with an equation? * How do changes in one variable affect changes in a related variable?	•I can analyze tables, graphs, equations, diagrams, and verbal descriptions to identify the unit rate of a proportional relationship. MP: 1-8	constant of proportionality		

Ratio and Proportional Reasoning			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.*	*What are the variables in a problem? *Do the variables in a problem have a relationship to each other? If so, describe. *What patterns in a problem suggest that it is changing at a constant rate?	•I can write an equation to represent a proportional relationship. MP: 1-8	linear; proportional;		
Ratio and Proportional Reasoning			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	* How can the proportional and non-proportional changes in a problem be represented in a table, graph, or with an equation? * How do changes in one variable affect changes in a related variable?	•I can determine if two ratios are proportional by examining a graph and observing whether the graph has a straight line through the origin (0, 0). •I can explain a proportional relationship with points (0, 0) and (1, r), where r is the unit rate. MP: 1-8	constant of proportionality; directly proportional	Identify the difference between relationships that are directly proportional as opposed to just linear.	
Ratio and Proportional Reasoning			7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*	* How do you determine the percentage change for a given situation? * How can proportions be used to find unknown quantities or inaccessible measurements?	I can apply proportional reasoning to solve real world multistep ratio and percent problems. MP: 1-8	proportion proportional relationship		
The Number System - operations with rationals			7.NS.1 Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. 7.NS.1a Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*	* How do you use your understanding of whole number operations and number quantity to make sense of addition, subtraction, multiplication, and division of integers? * What are the relationships between positive and negative numbers?	I can describe situations in which opposite quantities combine to make 0. MP: 2,4,7	opposite, integer, rational number, zero pair		

The Number System - operations with rationals			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.	* How can positive and negative numbers be represented on a number line?	•I can show that a number and its opposite have a sum of 0 (are additive inverses). * I can interpret sums of rational numbers by describing real-world contexts. •I can describe the sum when adding positive and negative numbers as distance on a number line.	additive inverse		
The Number System - operations with rationals			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.	* How can sums and differences of positive and negative numbers be modeled? * What rules can we find to generalize patterns when operating with positive and negative numbers?	•I can show that the distance between two rational numbers on the number line is the absolute value of their difference. •I can apply the principle of additive inverse in a real-world context. •I can show that subtraction is addition of the opposite. MP: 2,4,7	absolute value additive inverse		
The Number System - operations with rationals			7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.	* How can sums and differences of positive and negative numbers be modeled?	•I can apply properties of operations (Commutative Property) to add and subtract rational numbers. MP: 2,4,7	algorithm		
The Number System - operations with rationals			7.NS.2 Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. 7.NS.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	* How can sums, differences, products, and quotients of positive and negative numbers be modeled?	• I can multiply integers. * I can use real world examples to explain the pattern for multiplying integers. MP: 2,4,7			

The Number System - operations with rationals			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.	* What rules can we find to generalize patterns when operating with positive and negative numbers?	• I can divide with integers, provided the divisor is not zero. * I can use real world examples to explain the pattern for dividing integers. * I know that the placement of the negative sign in a division problem written in fraction form makes no difference if the negative sign is in either the numerator or denominator. -(p/q) = (-p)/q = p/(-q). MP: 2,4,7			
The Number System - operations with rationals			7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.	* How can sums, differences, products, and quotients of positive and negative numbers be modeled?	• I can apply properties of operations to multiply and divide numbers. • I can apply order of operations to multiply and divide numbers. MP: 2,4,7	factored form expanded form		
The Number System - operations with rationals			7.NS.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0's or eventually repeats.		* I can convert a fraction to a decimal by dividing. * I can identify a terminating decimal and a repeating decimal. MP: 2,4,7	quotient rational number numerator/dividend denominator/divisor		
The Number System - operations with rationals			7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	*Where are integers used in the real world?	* I can add rational numbers in real world problems. * I can subtract rational numbers in real world problems. * I can multiply rational numbers in real world problems. * I can divide rational numbers in real world problems. MP: 1,2,5-8			

Expressions & Equations			7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	* How do properties of operations help us to operate with expressions?	I can apply properties of operations to add and subtract linear expressions with rational coefficients. I can apply properties of operations to factor linear expressions with rational coefficients. I can apply properties of operations to expand linear expressions with rational coefficients. MP: 2,6,7	algebraic expression associative property commutative property distributive property		
Expressions & Equations			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."*	* How can I rewrite expressions in equivalent forms?	• I can rewrite an expression in an equivalent form and explain how the quantities are related. MP: 2,6,7,8			
Expressions & Equations			7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*	* How can I use operation properties to solve real-world problems?	Using tools strategically, I can solve multi-step real-world problems with any form of positive and negative rational numbers. I can apply the properties of operations, and convert between forms as appropriate, to solve real-world problems. I can justify if an answer is reasonable by using estimation and mental math. MP: 1-8			

Expressions & Equations			7. EE.4 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. 7.EE.4a 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?*	* How can I use operation properties to solve real-world problems?	I can solve equations in the form px + q = r with speed and accuracy. I can identify the sequence of operations used to solve an equation of the form px + q = r and p(x + q) = r. I can compare the sequence of operations in an algebraic solution to an arithmetic solution. MP: 1-8			
Expressions & Equations			7.EE.4b 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.*	* How can I use operation properties to solve real-world problems?	In a real world problem, I can graph and interpret the solution set of an inequality. MP: 1-8	inequality		
Geometry			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.	* What does proportionality look like in geometric contexts (similar figures) and what does it mean for two geometric figures to be mathematically similar and how can these ideas help you solve real-world problems? *How can one apply ideas about proportionality in geometric shapes in the everyday world? *How are ideas about similarity used in the everyday world?	* When given two figures, I can describe the relationship between the two. * I can determine whether or not two figures are similar. * I can find the ratio of adjacent sides and use these ratios to determine whether or not figures are similar. * I can create a scale drawing using a different scale. * I can compute areas from a scale drawing. * I can use scale factor to find the sidelengths and areas of similar figures. * I can correctly relate perimeter to scale factor. * I can use an area factor to create a scale drawing. MP: 1-8.	scale factor scale drawing similar corresponding sides corresponding angles		

Geometry			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.	* How can we obtain accurate measures of angles?	*I can measure and construct angles using a protractor; * I can construct triangles from three given angle measures resulting in unique triangles, more than one triangle, or no triangle by drawing free-hand, or by using rulers, protractors, or technology. MP: 4-8			
Geometry			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.	* What problems can we solve involving shapes?	• I can describe the two-dimensional figures that result from slicing a 3-D figure. MP: 2,4,5,7	plane section; right rectangular prism; right rectangular pyramid		
Geometry			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.	* What dimensions are important to measure to find area or circumference? * How does one determine if one needs to find area or perimeter (circumference) to solve a problem?	• I can apply the formula for area of a circle to solve problems. • I can apply the formula for circumference to solve problems. • I can find the area of a circle given the circumference. • I can find the circumference of a circle given the area. • I can describe and justify the relationship between area and circumference of a circle. MP: 1-8	area; circumference; diameter; radius; pi	Regarding the fifth learning target, see Arizona unpacked standard for 7.G.4	
Geometry			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.	* How can we classify, analyze, measure, and reason about shapes and patterns? * How do the measures of angles in a polygon determine its possible shapes? * What patterns help determine angle sums of polygons?	• I can identify and recognize types of angles: supplementary, complementary, vertical, adjacent. • I can calculate the complement and supplement of a given angle. • I can determine an unknown angle measure by writing and solving equations based upon relationships among angles. MP: 3-7	complementary; supplementary; vertical; adjacent;		

Geometry			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.	* How can one 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? * What dimensions are important to measure to find the volume? * What measures are needed to find the surface area? * What strategies or formulas might be helpful in finding volume? Surface area?	* I can find the area of triangles, quadrilaterals, and polygons. * I can find the surface area of cubes and right prisms. * I can solve real world and mathematical problems involving area, surface area and volume. * I can find volume of cubes and right prisms. MP: 1-8	area; volume; surface area; nets		
Statistics & Probability			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.	* How do we use samples to reason about populations and make predictions, make comparisons between samples, and find relationships among attributes in data sets? * What are "samples" and how are they related to populations?	• I can make generalizations when a sample of a population is a valid representative. • I can apply statistics from a sample to gain information about a population. • I can identify characteristics of sample that is representative of that population. MP: 3,6	sample; random sample; representative; inference		
Statistics & Probability			7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*	* How do we use the process of statistical investigation to explore problems? * How do we choose appropriate samples from populations and use statistical information from samples to draw conclusions about populations?	• I can analyze statistical data to draw inferences from a sample population with an unknown characteristic of interest. • I can generate random samples of appropriate size for a population to gauge the variation. MP: 1-3,5-7	variation		

Statistics & Probability			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.*	* How are concepts from probability applied to select random samples from populations? * How do sample size and sample selection processes influence a sample's potential for making predictions about a population?	• I can compare two distributions on a graph by visually comparing their displays. • I can compare the measures of center in data distributions by measuring the difference between the centers. MP: 1-7			
Statistics & Probability			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.*	* How do we use measures of center (mean, median), measures of spread (range, quartiles, mean absolute deviation), and data displays (histograms, box plots, dot plots, line plots) to compare distributions of two samples?	• I can use measures of center from random samples to make informal comparisons of two populations. MP: 1-7			
Statistics & Probability			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.	* How do we use probability and expected values to make decisions and predictions? * How do the numbers from 0 to 1 represent the likelihood of an event? * What does it mean for events to be equally likely?	• I can express probability as a number between 0 and 1. • I recognize a probability of 1/2 as neither likely nor unlikely to occur. • I recognize that as a probability moves closer to 1 that it is more likely to occur. • I recognize that as a probability moves closer to 0 it is less likely to happen. MP: 4-7			

Statistics & Probability			7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *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.*	* How does one determine experimental probabilities? * How does one calculate theoretical probabilities? * What is the difference between theoretical probability and experimental probability?	• I can determine relative frequency by predicting the approximate probability for an event and then comparing it to the actual probability after collecting data. MP: 1-5	theoretical probability; experimental probability	Be sure to identify theoretical and experimental probability and the differences between them.	
Statistics & Probability			7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. 7.SP.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*	*When are experimental probabilities better estimates of theoretical ones? (the larger the number of trials)*	• I can design a uniform probability model. • I can use a uniform probability model to determine the probability of events.			
Statistics & Probability			7.SP.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*	*When are experimental probabilities better estimates of theoretical ones? (the larger the number of trials)	• I can develop a probability model from experimental data. • I can compare an experimental model to a uniform model and explain any differences. MP: 1-8	uniform probability non-uniform probability		
Statistics & Probability			7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 7.SP.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	How do we analyze compound situations that have two events?	• I can find the probability of a compound event using a list, a table, a tree diagram or a simulation. * I can interpret probability of compound events as a fractional amount.	organized list		

Statistics & Probability			7.SP.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.	* How do we analyze compound situations that have two events? * How do we determine the expected value of a probability situation? * How do we use probabilities and expected values to make decisions and answer questions?	•Given a compound event, I can create a list, table, tree diagram, or simulation to represent the sample space. • Given an event, I can identify that outcome in the sample space. MP: 1-8			
Statistics & Probability			7.SP.8c Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	* How do we analyze compound situations that have two events? * How do we determine the expected value of a probability situation? * How do we use probabilities and expected values to make decisions and answer questions?	• I can design and use simulations to generate frequencies for compound events. MP: 1-8			

MATH PRACTICES with explanations taken from "Math Solutions" - Marilyn Burns

MP .4: Model with mathematics.

In grade 6, students solve problems involving ratios and rates and discuss how they solved them. Students solve in grade 6, students represent a wide variety of real world contexts through the use of real numbers and in grade 6, students construct arguments using verbal or written explanations accompanied by expressions in grade 6, students model problem situations symbolically, graphically, tabularly, and contextually. Students consider available tools (including estimation and technology) when solving a mathematical problem in grade 6, students continue to refine their mathematical communication skills by using clear and Students routinely seek patterns or structures to model and solve problems. For instance, students recognize in grade 6, students use repeated reasoning to understand algorithms and make generalizations about

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1. Arizona Dept. of Educ.: http://www.azed.gov/standards-practices/mathematics-standards/