Math 7 (1) - DRAFT

STRAND	SUBSTRAND	STANDARD	BENCHMARK	ESSENTIAL ELEMENTS	MATERIALS / RESOURCES	ASSESSMENTS
Number & Operation		Read, write, represent and compare positive and negative rational numbers, expressed as integers, fractions and decimals.	Know that every rational number can be written as the ratio of two integers or as a terminating or repeating decimal. Recognize that π is not rational, but that it can be approximated by rational numbers such as $\frac{22}{7}$ and 3.14. Understand that division of two integers will always result in a rational number. Use this information to interpret the decimal result of a division problem when using a calculator. Locate positive and negative rational numbers on a number line, understand the concept of opposites, and plot pairs of positive and negative rational numbers on a coordinate grid.	Identify a number as rational or irrational. Graph a rational no. on the number line. Find the opposite of a number. Graph ordered pairs on the coordinate plane.	5.5, 6.4, 9.2 2.5, 2.7 2.1, 2.8. 5.5, 7.4	HW assignments, quizzes, chapters 2, 5, 6, 9, tests and review on following tests.
Number & Operation		Read, write, represent and compare positive and negative rational numbers, expressed as integers, fractions and decimals.	Compare positive and negative rational numbers expressed in various forms using the symbols < , > , = , ≤ , ≥ . Recognize and generate equivalent representations of positive and negative rational numbers, including equivalent fractions.	Use <, >, or = to compare integers, fractions, and decimals. Find equivalent forms of fractions, decimals, and integers.	2.1, 4.5, 5,5, 7.4, 9.2 4.3, 4,6, 7.1	HW assignments, quizzes, chapters 2, 4, 5 & 9 tests and review on following tests.
Number & Operation		Calculate with positive and negative rational numbers, and rational numbers with whole number exponents, to solve real-world and mathematical problems.	Add, subtract, multiply and divide positive and negative rational numbers that are integers, fractions and terminating decimals; use efficient and generalizable procedures, including standard algorithms; raise positive rational numbers to whole-number exponents. Use real-world contexts and the inverse relationship between addition and subtraction to explain why the procedures of arithmetic with negative rational numbers make sense.	Add, subtract, multiply, divide decimals, fractions, and integers. Raise a whole number to a positive power. Change the subtractions of two or more integers to an addition problem.	2.2, 2.3, 2.4, 2.5, 5.1, 5.2, 5.3, 5.4, 5.6, 5.7 2.2, 2.3 Supplementary Materials	HW assignments, quizzes, chapters 2, 5, 6, & 7 tests and review on following tests

			Understand that calculators and other computing technologies often truncate or round numbers. Solve problems in various contexts involving calculations with positive and negative rational numbers and positive integer exponents, including computing simple and compound interest. Use proportional reasoning to solve problems involving ratios in various contexts. Demonstrate an understanding of the relationship between the absolute value of a rational number and distance on a number line. Use the symbol for absolute value.	Write a proportion to solve a word problem. Find the absolute value of a number. Use absolute value to find the distance between two numbers on the number line.	1.4, 2.2, 2.3, 2.4, 2.5, 5.1, 5.2, 5.3, 5.4, 5.6, 5.7, 7.5, 7.6, 7.7 4.3, 6.4, 7.1, 7.2, 7.3, 8.8, 12.3 2.1, 2.8	
Algebra		Understand the concept of proportionality in real-world and mathematical situations, and distinguish between proportional and other relationships.	Understand that a relationship between two variables, x and y, is proportional if it can be expressed in the form $\frac{y}{x}=k$ or $y=kx$. Distinguish proportional relationships from other relationships, including inversely proportional relationships ($xy=k$ or $y=\frac{k}{x}$). Understand that the graph of a proportional relationship is a line through the origin whose slope is the unit rate (constant of proportionality). Know how to use graphing technology to examine what happens to a line when the unit rate is changed.	Determine if an equation represent direct variation. Graph a direct variation equation.	11.6 11.6	HW assignments, quizzes, chapters 11 test and review on following tests
Algebra		Recognize proportional relationships in real-world and mathematical situations; represent these and other relationships with tables, verbal descriptions, symbols and graphs; solve	Represent proportional relationships with tables, verbal descriptions, symbols, equations and graphs; translate from one representation to another. Determine the unit rate (constant of proportionality or slope) given any of these representations. Solve multi-step problems involving proportional relationships in numerous contexts. Use knowledge of proportions to assess the reasonableness of solutions.	Given a rate, find a rate equivalent to it. Find percent of change, discount, sales tax, unit price, and determine the reasonableness of a solution. Convert between	7.1 7.1, 7.2, 7.3, 8.8, 12.3 7.2, 7.3, 8.8, 12.3	HW assignments, quizzes, chapters 1, 3, 6 & 7 tests and review on following tests

		problems involving proportional relationships and explain results in the original context.	Represent real-world or mathematical situations using equations and inequalities involving variables and positive and negative rational numbers.	miles and km, pounds and kg, feet and meters. Translate a verbal sentence into an equation or inequality.	1.5, 3.3, 3.4, 3.6, 6.1, 6.5, 6.6	
Algebra		Apply understanding of order of operations and algebraic properties to generate equivalent numerical and algebraic expressions containing positive and negative rational numbers and grouping symbols; evaluate such expressions.	Use properties of algebra to generate equivalent numerical and algebraic expressions containing rational numbers, grouping symbols and whole number exponents. Properties of algebra include associative, commutative and distributive laws. Evaluate algebraic expressions containing rational numbers and whole number exponents at specified values of their variables. Apply understanding of order of operations and grouping symbols when using calculators and other technologies.	Combine like terms in an algebraic expression. Simplify an expression using the distributive property. Multiply and divide expressions with exponents. Evaluate an expression using the rules for order of operations.	1.2, 1.4, 2.6, 2.7, 4.6, 5.1, 5.2 1.3, 1.4, 2.4, 4.6, 5.3 1.2, 1.4, 5.1	HW assignments, quizzes, chapters 1, 2 & 5 tests and review on following tests
Algebra		Represent real-world and mathematical situations using equations with variables. Solve equations symbolically, using the properties of equality. Also solve equations graphically and numerically. Interpret solutions in the original context.	Represent relationships in various contexts with equations involving variables and positive and negative rational numbers. Use the properties of equality to solve for the value of a variable. Interpret the solution in the original context. Solve equations resulting from proportional relationships in various contexts.	Solve a two-step linear equation. Write and solve an equation to model a situation, and interpret the result. Write and solve a proportion to solve a word problem.	1.5, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4, 6.1, 6.2, 6.3 7.1, 7.2, 7.3	HW assignments, quizzes, chapters 1, 2, 3, 6 & 7, tests and review on following tests
Geometry &		Use reasoning	Demonstrate an understanding of the	Given the radius or	6.4, 10.2	HW assignments,

Measurement		with proportions and ratios to determine measurements, justify formulas and solve real-world and mathematical problems involving circles and related geometric figures.	proportional relationship between the diameter and circumference of a circle and that the unit rate (constant of proportionality) is π. Calculate the circumference and area of circles and sectors of circles to solve problems in various contexts. Calculate the volume and surface area of cylinders and justify the formulas used.	the diameter, find the circumference and area of a circle. Find the perimeter and area of a sector of a circle. Given the radius or diameter and height, find the surface area and volume of a cylinder.	10.4, 10.6	quizzes, chapters 6 & 10, tests and review on following tests
Geometry & Measurement		Analyze the effect of change of scale, translations and reflections on the attributes of two-dimensional figures.	Describe the properties of similarity, compare geometric figures for similarity, and determine scale factors. Apply scale factors, length ratios and area ratios to determine side lengths and areas of similar geometric figures. Use proportions and ratios to solve problems involving scale drawings and conversions of measurement units. Graph and describe translations and reflections of figures on a coordinate grid and determine the coordinates of the vertices of the figure after the transformation.	Determine if two geometric figures are similar. Find the side lengths and area of two similar figures. Given a scale drawing, write and solve a proportion to find a dimension on the drawing or actual model. Convert between units of measure.	8.8 8.8 7.2, 8.8 8.6, 8.7	HW assignments, quizzes, chapters 7 & 8 tests and review on following tests
Data Analysis & Probability		Use mean, median, and range to draw conclusions about data and make predictions.	Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Know how to create displays using a spreadsheet to examine this impact.	Explain how adding or deleting a data item in a data set affects the mean and median.	5.8	HW assignments, quizzes, chapter 5, test and review on following tests
		Display and interpret data in a variety of ways, including circle graphs and histograms	Use reasoning with proportions to display and interpret data in circle graphs and histograms. Choose the appropriate data display and know how to create the display using a spreadsheet or other graphing technology.	Read and interpret a histogram. Read and interpret a circle graph.	1.1, 7.4, 7.8, 12.3	HW assignments, quizzes, chapters 1, 7 & 12 tests and review on following tests
		Calculate	Calculate probability as a fraction of sample	Given an	7.8	HW assignments,

		probabilities and reason about probabilities using proportions to solve real-world and mathematical problems.	space or as a fraction of area. Express probabilities as percents, decimals, and fractions.	experiment, determine the probability of different outcomes.		quizzes, chapter 7 test and review on following tests
			Use proportional reasoning to draw conclusions about and predict relative frequencies of outcomes based on probabilities.	Given an experiment and the probability of an event, predict how many times it will occur if the experiment is repeated multiple times.	7.8	HW assignments, quizzes, chapter 7 test and review on following tests