

Math 6 (1) - DRAFT

STRAND	SUBSTRAND	STANDARD	BENCHMARK	ESSENTIAL ELEMENTS	MATERIALS / RESOURCES	ASSESSMENTS
Number & Operation		Read, write, represent and compare positive rational numbers expressed as fractions, decimals, percents and ratios; write positive integers as products of factors; use these representations in real-world and mathematical situations.	<p>Locate positive rational numbers on a number line and plot pairs of positive rational numbers on a coordinate grid.</p> <p>Compare positive rational numbers represented in various forms. Use the symbols $<$, $=$ and $>$.</p> <p>Understand that percent represents parts out of 100 and ratios to 100.</p> <p>Determine equivalences among fractions, decimals and percents; select among these representations to solve problems.</p> <p>Factor whole numbers; express a whole number as a product of prime factors with exponents.</p> <p>Determine greatest common factors and least common multiples. Use common factors and common multiples to calculate with fractions and find equivalent fractions.</p> <p>Convert between equivalent representations of positive rational numbers.</p>	<p>Positive numbers are numbers greater than zero.</p> <p>Negative numbers are numbers which are less than zero.</p> <p>Whole numbers are all of the counting numbers including zero.</p> <p>Integers are all of the natural numbers and their opposites, natural numbers are counting numbers 1 – infinity.</p> <p>Greater means having more, it is expressed by a greater than sign $>$.</p> <p>Less means not having as much, it is expressed by a less than sign $<$.</p> <p>Percents are parts per hundred.</p> <p>To change a percent to a fraction, write the percent as the numerator with a denominator of 100 and reduce the fraction.</p> <p>To change a percent to a decimal, move the decimal two places to the left.</p> <p>A prime number is a number that has only 2 factors: one and itself.</p> <p>A composite number has more than 2 factors.</p>	<p>McDougal Littell Math Course 2 copyright 2007 and accompanying materials.</p> <p>4.1, 4.2, 4.3, 6.1, 6.8, 9.1, 9.2, 9.3</p>	<p>Chapter assessments, Section quizzes, NWEA and MCA-II data, Study Island, homework and Classzone.com quizzes</p>

				<p>A multiple is a number into which another number may be divided with a remainder of zero.</p> <p>A factor is one of two numbers that when multiplied together equal a given number.</p> <p>Prime factorization is expressing a whole number as a product of prime numbers.</p>		
Number & Operation		<p>Understand the concept of ratio and its relationship to fractions and to the multiplication and division of whole numbers. Use ratios to solve real-world and mathematical problems.</p>	<p>Identify and use ratios to compare quantities; understand that comparing quantities using ratios is not the same as comparing quantities using subtraction.</p> <p>Apply the relationship between ratios, equivalent fractions and percents to solve problems in various contexts, including those involving mixtures and concentrations.</p> <p>Determine the rate for ratios of quantities with different units.</p> <p>Use reasoning about multiplication and division to solve ratio and rate problems.</p>	<p>A ratio is a relationship of two numbers.</p> <p>Ratios can be written in three ways $\frac{3}{8}$, 3:8 or 3 to 8.</p> <p>Cross multiplying is multiplying diagonally across an equal sign in a proportion.</p> <p>The order of operations is Parenthesis, Exponents, Multiplication (left to right), Division (left to right), Addition(left to right) and Subtraction (left to right)</p>	8.1,8.2, 8.4, 8.5, 4.2, 4.4, 4.6, 6.6, 9.1, 9.2	
Number & Operation		Multiply and divide decimals, fractions and	Multiply and divide decimals and fractions, using efficient and	Reciprocals are two #'s whose product is 1. To find the reciprocal, invert the	2.1, 2.2, 2.3, 2.4, 4.5, 4.7, 5.3, 5.4	

		<p>mixed numbers; solve real-world and mathematical problems using arithmetic with positive rational numbers.</p>	<p>generalizable procedures, including standard algorithms.</p> <p>Use the meanings of fractions, multiplication, division and the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions.</p> <p>Calculate the percent of a number and determine what percent one number is of another number to solve problems in various contexts.</p> <p>Solve real-world and mathematical problems requiring arithmetic with decimals, fractions and mixed numbers.</p> <p>Estimate solutions to problems with whole numbers, fractions and decimals and use the estimates to assess the reasonableness of results in the context of the problem.</p>	<p>fraction by switching the position of the numerator and the denominator.</p> <p>To add fractions you need to have a common denominator. When adding fractions with common denominators, add the numerators, keep the denominator the same.</p> <p>To subtract fractions you need to have a common denominator. When subtracting fractions with common denominators, subtract the numerators, keep the denominator the same.</p> <p>The lowest/least common multiple (LCM) is the smallest number that is on the list of common multiples.</p> <p>The greatest common factor (GCF) is the largest number that two or more numbers can be divided by.</p> <p>Simplifying fractions is dividing the numerator and denominator by their greatest common factors (GCF).</p> <p>When multiplying simple fractions, multiply the two numerators and the two denominators then simplify.</p> <p>When multiplying mixed numbers, change the mixed numbers to improper fractions, multiply the</p>		
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				<p>numerators and denominators and simplify.</p> <p>To divide simple fractions, invert the fraction on the right side and multiply.</p> <p>The decimal form of a fraction can be found by dividing the numerator by the denominator.</p> <p>When dividing mixed numbers, change the mixed numbers to improper fractions, invert the fraction on the right side and multiply.</p>		
Algebra		Recognize and represent relationships between varying quantities; translate from one representation to another; use patterns, tables, graphs and rules to solve real-world and mathematical problems.	Understand that a variable can be used to represent a quantity that can change, often in relationship to another changing quantity. Use variables in various contexts.	<p>Algebra is a branch of mathematics that uses variables to generalize the rules of numbers and operations.</p> <p>A variable is a symbol or letter that represents a number that changes or is unknown.</p> <p>An exponent tells the number of times the base is multiplied.</p> <p>A sequence is an ordered list of numbers or objects.</p>	1.2, 1.3, 1.4	
Algebra		Use properties of arithmetic to generate equivalent numerical expressions and evaluate expressions	Apply the associative, commutative and distributive properties and order of operations to generate equivalent expressions and to solve problems involving positive rational	<p>The Associative Property says that regrouping numbers when you multiply or add them does not change the result.</p> <p>The Commutative Property is a property</p>	6.6, 6.7	

		involving positive rational numbers.	numbers.	<p>which allows you to change the order of numbers and still arrive with the same result.</p> <p>The Distributive Property for multiplication over addition says that to multiply a sum, you can multiply each addend and add the products ($9 \times (4 + 3) = 9 \times 4 + 9 \times 3$). The Distributive Property for multiplication over subtraction says that to multiply a difference, you can multiply each number and take the difference of the products ($9 \times (4 - 3) = 9 \times 4 - 9 \times 3$).</p>		
Algebra		Understand and interpret equations and inequalities involving variables and positive rational numbers. Use equations and inequalities to represent real-world and mathematical problems; use the idea of maintaining equality to solve equations. Interpret solutions in the original context.	<p>Represent real-world or mathematical situations using equations and inequalities involving variables and positive rational numbers.</p> <p>Solve equations involving positive rational numbers using number sense, properties of arithmetic and the idea of maintaining equality on both sides of the equation. Interpret a solution in the original context and assess the reasonableness of results.</p>	<p>Cross multiplying is multiplying diagonally across an equal sign in a proportion.</p> <p>The order of operations is Parenthesis, Exponents, Multiplication (left to right), Division (left to right), Addition(left to right) and Subtraction (left to right)</p> <p>To evaluate an expression is to substitute values for variables and perform the operations.</p>	7.3, 7.4, 7.5	
Geometry & Measurement		Calculate perimeter, area, surface area and volume of two- and three-	Calculate the surface area and volume of prisms and use appropriate units, such as cm^2 and cm^3 . Justify	The perimeter is the distance around the outside of a polygon, measured in length units .	1.6, 11.4, 11.5	

		<p>dimensional figures to solve real-world and mathematical problems.</p>	<p>the formulas used. Justification may involve decomposition, nets or other models.</p> <p>Calculate the area of quadrilaterals. Quadrilaterals include squares, rectangles, rhombuses, parallelograms, trapezoids and kites. When formulas are used, be able to explain why they are valid.</p> <p>Estimate the perimeter and area of irregular figures on a grid when they cannot be decomposed into common figures and use correct units, such as cm and cm².</p>	<p>Area is the amount of space within a two dimensional object, measured in square units.</p> <p>The surface area of an object is found by finding all the areas of the surfaces and adding them together.</p> <p>A quadrilateral is a closed figure with four sides. Types: square, rhombus, rectangle, parallelogram, trapezoid.</p> <p>Area of a triangle is $A = \frac{1}{2} b \times h$ (1/2 times the base times the height)</p> <p>The area of a rectangle is found by multiplying the base times the height.</p> <p>The area of a parallelogram is found by multiplying base times height.</p> <p>Volume is the amount of (three dimensional) space an object contains.</p> <p>The volume of a rectangular prism is found by multiplying length x width x height.</p>		
<p>Geometry & Measurement</p>		<p>Understand and use relationships between angles in geometric figures.</p>	<p>Solve problems using the relationships between the angles formed by intersecting lines.</p> <p>Determine missing angle measures in a triangle using the fact that the sum of the interior angles</p>	<p>A line is defined by two points and extends infinitely in both directions.</p> <p>A point is an exact location in space.</p> <p>A line segment is part of a line with two end points.</p>	<p>10.1, 10.2, 10.3</p>	

			<p>of a triangle is 180°. Use models of triangles to illustrate this fact.</p> <p>Develop and use formulas for the sums of the interior angles of polygons by decomposing them into triangles.</p>	<p>An angle is a geometric figure made up of two rays or line segments and have the same end point.</p> <p>A vertex of an angle is the endpoint where two rays meet to form an angle.</p> <p>Complementary angles are two angles whose measures add to 90°.</p> <p>Supplementary angles are to angles whose measures add to 180°.</p> <p>A ray is a portion of a line that has one endpoint and extends forever in one direction.</p> <p>Lines are perpendicular if they intersect in a 90° angle.</p> <p>Lines are parallel if they are in the same plane and never intersect.</p>		
Geometry & Measurement		Choose appropriate units of measurement and use ratios to convert within measurement systems to solve real-world and mathematical problems.	<p>Solve problems in various contexts involving conversion of weights, capacities, geometric measurements and times within measurement systems using appropriate units.</p> <p>Estimate weights, capacities and geometric measurements using benchmarks in measurement systems with appropriate units.</p>	<p>To convert in the customary system, multiply by the convenient for of 1.</p> <p>Customary nits of length: 1 foot=12 inches, 1 yard=3 feet, 1 mile=5280 ft=1760yd</p> <p>Customary units for weight: 16 oz= 1 lb, 1 ton=2,00 lbs.</p> <p>Customary units for capacity: 1 cup = 8 oz, 1 pint = 2 cups, 1 quart= 2 pints, 1 gallon = 4 quarts</p>	2.6, 2.7, 5.5, 5.6	
Data Analysis		Use probabilities	Determine the sample	Probability is the branch of	13.1, 13.2	

<p>& Probability</p>		<p>to solve real-world and mathematical problems; represent probabilities using fractions, decimals and percents.</p>	<p>space (set of possible outcomes) for a given experiment and determine which members of the sample space are related to certain events. Sample space may be determined by the use of tree diagrams, tables or pictorial representations.</p> <p>Determine the probability of an event using the ratio between the size of the event and the size of the sample space; represent probabilities as percents, fractions and decimals between 0 and 1 inclusive. Understand that probabilities measure likelihood.</p> <p>Perform experiments for situations in which the probabilities are known, compare the resulting relative frequencies with the known probabilities; know that there may be differences.</p> <p>Calculate experimental probabilities from experiments; represent them as percents, fractions and decimals between 0 and 1 inclusive. Use experimental probabilities to make predictions when actual probabilities are unknown.</p>	<p>mathematics that deals with chances of specific events happening</p> <p>An outcome is a possible result of an experiment.</p> <p>The sample space is a list of all the possible outcomes.</p> <p>Theoretical probability or odds, is the ration of the number of outcomes in an event to the total number of possible outcomes.</p> <p>Experimental probability is the ratio of the number of times the outcome happened to the number of times the experiment was repeated.</p> <p>An event is a set of outcomes for a particular experiment.</p> <p>Certain Event is when an event must happen- it has a probability of 1.</p> <p>Impossible Event is an event that can never happen- it has a probability of zero.</p> <p>A Tree Diagram is a diagram that organizes the possible outcomes for an experiment.</p>		
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