Math 6 Syllabus

Learning Objective: Students will develop their mathematics knowledge of number sense, ratio, fractions and decimals, algebraic expressions, positive and negative numbers, volume and surface area, solving equations and inequalities.
Assessments: Homeworks, class activities, projects, assessments
Essential Questions: How do I use mathematics to solve real world problems? What are the relationships between different types of mathematics (eg fractions and ratios)? How can I use what I know to make sure my solution makes sense? How can I explain my mathematical thinking to another clearly?
Standards:
Ratios and Proportions
6.RP.1 Use ratio language to describe a ratio relationship between two quantities.
6.RP.2 Use rate language in the context of a ratio relationship. Find the unit rate.
6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems
a.Make tables of equivalent ratios relating quantities with whole- number measurements, Find missing values in the tables. Plot the pairs of values on the coordinate plane. Use tables to compare ratios.
b.Solve unit rate problems including those involving unit pricing and constant speed. Find a percent of a quantity as a rate per 100.
c.Solve problems involving finding the whole, given a part and the percent.
d.Use ratio reasoning to convert measurement units. Manipulate and transform units appropriately when multiplying or dividing quantities.
Number Systems
Fractions and Decimals
6.NS.1 Solve word problems involving division of fractions by fractions.
a.Interpret and compute quotients of fractions.
b.Solve word problems involving division of fractions by fractions.
c.Use visual fraction models and equations to represent the problem.
6.NS.2 Fluently divide multi-digit numbers
6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals
6.NS.4 Find the greatest common factor and least common multiple of two numbers
Positive and Negative Integers
6.NS.5 Explain how positive and negative numbers are used together to describe quantities having opposite directions or values Use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line.
6.NS.6 Recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
6.NS.7 Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. Write, interpret, and explain statements of order for rational numbers in real-world

contexts. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. Distinguish comparisons of absolute value from statements about order.
6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.

Expressions and Equations

Algebraic Expressions

6.EE.1 Write numerical expressions that have whole number exponents. Evaluate numerical expressions that have whole number exponents and rational bases.
6.EE.2 a.Write algebraic expressions to represent real life and math situations, with numbers and with letters standing for numbers. Read an expression correctly using appropriate mathematical terms.
b. Identify parts of an expression using appropriate terminology. View one or more parts of an expression as a single entity.
c.Given the value of a variable, students will evaluate the expression. Solve real world problems that involve expressions in formulas. Perform arithmetic operations, including those involving whole- number exponents, in the conventional order.
6.EE.3 Apply the properties of operations to generate equivalent expressions.
6.EE.4 Identify when two expressions are equivalent

Solving Equations and Inequalities

6.EE.5 Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.
6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Geometry

6.G.1 Find the area of polygons and solve problems about the areas of these figures.
6.G.2 Solve volume problems about rectangular prisms with fractional side lengths.
6.G.3 Solve problems by drawing polygons in the coordinate plane.
6.G.4 Use the nets to find the surface area of figures and solve problems about nets.

Class Structure and Grading:

Class Activities 40%
Projects, Assessments 40%
Homework 20%
All work is expected to be turned in on the due date, unless student has spoken to the teacher prior to the due date to make other arrangements. If school/class is missed, it is the responsibility of the student to seek out the teacher to get assignments and make up any work missed