Grade 7 CCSS Skills

Ratios and Proportional Relationships

_____ Calculate unit rates based on ratios that include fractions. e.g. if a cyclist travels 1/4 of a mile in 1/6 of one hour their speed can be calculated as 1½ miles/ hour.

_____ Identify and show proportional relationships by testing equivalent ratios in a table or graphing on a coordinate plane

_____ Identify the constant of proportionality

_____ Use equations to represent proportional relationships

_____ Graph proportional relationships and explain what (x, y) values represent on the graph in terms of the relationship

_____ Use proportional relationships to solve real-world multi-step ratio and percent problems, Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error

Number System

_____ Add / Subtract rational numbers

_____ Represent addition and subtraction on a horizontal and vertical number line diagram

_____ Understand the distance between two rational numbers on the number line is the absolute value of their difference, and apply in real-world context (eg., Above/below sea level, temperatures)

_____ Multiply / Divide rational numbers

_____ 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

_____ Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats

_____ Solve real-world and mathematical problems involving the four operations with rational numbers

Expressions and Equations

_____ Apply properties of operations as strategies to add /subtract rational expressions with rational coefficients

_____ Apply properties of operations as strategies to factor / expand linear expressions with rational coefficients

_____ Solve multi-step real-world problems involving positive and negative rational numbers in whole number, fractional, and/or decimal form and being able to mental estimate to determine if answers appear reasonable.

_____ Write equations to solve problems

_____ Write inequalities to solve problems

Geometry

_____ Calculate full dimensions from scale drawings and redraw these at a larger or smaller scale.

_____ Draw figures from specified attributes including by hand, with a straight edge, with a protractor, and with other technology.

_____ Recognize conditions to determine a triangle / no triangle

_____ Describe the two-dimensional figures that result from slicing three dimensional figures in a plane

_____ Know and apply the formulas of the area and circumference of a circle to solve problems

_____ 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

_____ 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

Statistics and Probability

_____ Recognize / understand that Statistics use random sampling to make generalizations about the whole population

_____ Use measures of center and measures of variability to summarize numerical data about two populations

_____ Understand the probability of a chance occuring (likelihood)

_____ Collect data to approximate the probability of a chance occuring

_____ Develop probability models and use them to compare/explain results of events tested

_____ Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation