GRADE 7 MATHEMATICS
Performance Criteria

Overview
In 7th grade, students focus on using their understanding of ratios and rates to solve real-world problems involving proportional relationships, solving problems involving positive and negative rational numbers, and working with mathematical expressions and linear equations.

RATIOS, RATES, & RELATIONSHIPS:
Real World Problems
Solve real-world rate, ratio, proportion and percent problems involving discounts, markups, markdowns, interest, taxes, tips, commissions, percent increase or decrease.

Unit Rate of Change
Understand variables as symbols for numbers, or values, not yet known – for example, x and y are the variables in $y = 2x + 6$. Using equations, tables, graphs, and descriptions, identify the unit rate of change – a ratio comparing the change in one quantity to a 1-unit change in another quantity.

Calculating Unit Rates
Calculate unit rates associated with ratios of fractions including ratios of lengths and areas and quantities measured in different units.

ADDITION, SUBTRACTION, MULTIPLICATION, & DIVISION:
Multi-Step Real World Problems
Add, subtract, multiply, and divide with positive and negative rational numbers in any form – including whole numbers, fractions, or decimals. Understand that numbers cannot be divided by 0. Use these skills to solve multi-step real-world problems.

Long Division
Convert rational numbers to decimals using long division.

EXPRESSIONS & EQUATIONS:
Generating Simple Equations
Use letters to represent numbers in real-world math problems and generate simple equations to solve them. Graph the solution set when there are multiple answers.

Solving for X
Determine the value of the variable in an equation, and a multi-step equation.

Writing Equivalent Expressions
Using diagrams as tools, understand and generate equivalent mathematical expressions.

GEOMETRY:

Understanding Scale

Use understanding of ratio and proportion to understand scale: the ratio of the length in a drawing (or model) of an object to the length of the actual object. In the example problem figures, scale of the top figure to the bottom figure is 1:2 ("one to two"). Change scale and compute actual lengths and areas of geometric figures.

STATISTICS & PROBABILITY:

Samples

Understand the concept of random sampling and representative sample size. Use random sampling to draw conclusions or inferences about a population from a representable sample.

Understanding Probability

Understand probability as a mathematical representation of the likelihood that something, like an event or a result, will happen. Larger numbers represent greater likelihood.

Calculating Probability

Calculate probability by dividing the number of chances that the event or result will happen by the number of possible outcomes – for example, if there are 10 oranges, 5 peaches, and 15 apples in a bag, the probability of randomly selecting a peach is 5 out of 30 (5/30 or 1/6). Calculate probabilities of simple and compound events.