

# **Grade 7 Math Curriculum**

## **Fundamentals in Algebra**

### **Integers**

- Define absolute value
- Compare and order integers
- Model and compute operations with integers
- Use Order of Operations to simplify expressions
- Extend properties of addition and multiplication to include the entire set of integers
- Identify the Closure Properties for any defined set of numbers
- Use Laws of Exponents to simplify expressions
- Relate integers to the four quadrants of the coordinate plane

### **Expressions and Equations**

- Write, simplify and evaluate numerical and algebraic expressions
- Apply Properties of Equality to solve addition, subtraction, multiplication and division equations
- Model and solve two-step equations
- Find missing values in problems involving formulas

### **Inequalities**

- Use math symbols to express word sentences as an inequality
- Write and graph inequalities on a number line
- Solve inequalities using the Addition, Subtraction, Multiplication and Division Properties of Inequality

### **Rational Numbers: Decimals**

- Compare and order decimals
- Solve equations by adding, subtracting, multiplying and dividing decimals
- Express numbers in scientific notation
- Multiply and divide numbers using Scientific notation
- Rename metric units of measure

### **Rational Numbers: Fractions**

- Apply prime factorization to find the GCF and LCM of multiple numbers
- Apply the Density Property of Numbers to compare and order fractions and mixed numbers
- Identify properties of addition and multiplication of rational numbers
- Apply Order of Operations to simplify expressions containing rational numbers
- Add, subtract, multiply, and divide positive and negative fractions and mixed numbers
- Solve two-step equations with fractions and mixed numbers
- Rename customary units of measure

### **Ratio and Proportion**

- Identify and compare ratios
- Find and compare unit rates, unit costs
- Write proportions and find the missing term in a proportion
- Solve direct and indirect proportions
- Apply dimensional analysis to convert measurements from one unit to another

### **Percent and Consumer Applications**

- Write fractions, decimals, and ratios as percents
- Find percentage, a percent and an original number (base)
- Write fractions and decimals greater than 1 or less than 0.01 of a percent
- Calculate percent increase and decrease
- Calculate sales tax, tips, discounts, mark-up, profit, loss, sale prices and commission
- Calculate simple and compound interest
- Apply problem-solving strategies for consumer math problems

### **Data Analysis and Statistics**

- Use sampling to conduct a survey
- Find the range and measures of central tendency of a data set
- Organize, represent, interpret and compare data in frequency tables, line plots, stem-and-leaf plots and histograms
- Find the best line of fit for scatter plots
- Identify what type of correlation is shown by the data in a scatter plot
- Recognize misleading graphs and statistics

### **Geometry-Two-Dimensional and Three- Dimensional**

- Identify complimentary, supplementary, adjacent, and vertical angles
- Identify congruent angles formed by pairs of parallel lines cut by a transversal
- Identify and classify polygons
- Identify congruent angles
- Identify central angles and inscribed angles
- Construct circle graphs to display data
- Classify three-dimensional figures
- Use nets to find surface area
- Use formulas to find the surface area and volume of prisms, pyramids, cylinders, and cones
- Find the unknown dimensions given the volume of three- dimensional figures
- Identify line symmetry and lines of symmetry, rotational symmetry or point symmetry

### **Measurement Applications**

- Distinguish between precision and accuracy in measurements
- Use formulas to find the perimeter and area of polygons, complex figures, and circles
- Find the positive and negative square roots of perfect and nonperfect squares
- Distinguish between rational and irrational numbers
- Apply The Pythagorean Theorem in problem-solving

### **Probability and Logic**

- Use tree diagrams to find the number of possible outcomes in a sample space
- Use the Fundamental Counting Principle or factorials to find the size of a sample space
- Find the theoretical or experimental probability of an event
- Compute odds in favor or against an event
- Compute probability of independent and dependant events
- Determine the number of permutations or combinations

### **Patterns, Relations and Function**

- Recognize, describe and extend patterns in sequences
- Verify conjectures or provide counter examples
- Graph linear functions from a table of values and identify solutions to the related linear equations
- Identify different forms of slope and find the slope of a line from two given points
- Identify linear and nonlinear functions using equations and graphs
- Identify and graph transformation of figures on the coordinate plane
- Identify a graphical representation of a real-world situation

### **Polynomials, Equations and Inequalities**

- Classify, model and evaluate polynomials
- Addition and subtraction of polynomials
- Multiplication and division of monomials
- Multiplication and division of polynomials by monomials
- Solve multistep linear equations with a variable on both sides of the equation
- Solve and graph one and two-step inequalities involving rational numbers and using the Properties of Inequality

### **Problem- Solving Strategies**

- Work-Backward
- Guess and Test
- Organize Data/Information
- Find a Pattern
- Reason Logically
- Make a Drawing
- Understanding Distracters
- Show All Your Work
- Answer All Parts
- Apply Mathematical Reasoning
- Account For All Possibilities
- Adopt a Different Point of View
- Consider Extreme Cases