

# PRE-ALGEBRA SEVENTH GRADE

## PURPOSE:

Students will find areas of all types (circles, triangles, rectangles, trapezoids, parallelograms, or a combination of them), volumes and probability. They will solve proportions and percent of a number. Students will convert measurement, data and scale drawings to real measurements. They will complete and/or continue patterns including the  $n$ th term. Students will set up and solve equations, and properly use integers in all computational situations.

## BENCHMARKS AND INDICATORS:

### Number Sense

1.1 Demonstrates number sense for rational numbers,  $\pi$ , and simple algebraic expressions in one variable

- 7P 11K1 Lists place value, can read and write whole numbers and decimals, converts between scientific notation, fractions, decimals, percents
- 7P 11K1 Solves ratios and proportions
- 7P 11K1 Evaluate powers of whole numbers/find whole number square and cube roots
- 7P 11K2 Compares/orders whole numbers, decimals, integers
- 7P 11K5 Explains/determines absolute values
- **\*7P 11A1 Solves real world problems using numbers in various forms**

1.2 Demonstrates an understanding of the rational number system and  $\pi$ ; recognizes, uses, and describes their properties; and extends properties to algebraic expressions in one variable

- 7P 12K3 Names/uses properties as listed in the standards.(A,C,D,I, substitution)
- 7P 12K4 Uses /describes properties (symmetric, zero, additive & multiplicative inverse)
- 7P 12A1 Solves real world problems using the properties to explain reasoning

1.3 Uses computational estimation with rational numbers and  $\pi$

- 7P 13K2 Estimates using various procedures

1.4 Models, performs and explains computation with rational numbers,  $\pi$ , and algebraic expressions with one variable

- **N\*7P 14K2a Add/subtract decimals**
- **N\*7P 14K2b,c Multiplies, divides whole numbers & decimals**
- **N\* 7P 14K2d Add, subtract, multiply, divide fractions with answers in simplest form**
- N7P 14K2e Add, subtract, multiply, divide integers
- N7P 14K2f Uses order of operations with whole numbers
- 7P 14K2h Combines like terms of an algebraic expression
- 7P 14K4 Finds prime factorization, lcm, gcf
- **\*7P 14K5 Finds percents of rational numbers**
- 7P 14A1 Solves real world problems using computational procedures

## Algebra

### 2.1 Recognizes, describes, and explains rules of patterns

- **\*7P 21K1a Identifies, states, and continues a pattern using counting numbers including perfect squares, cubes, factors, and multiples**
- **\*7P 21K1b Identifies, states, and continues a pattern using positive rational numbers including arithmetic and geometric sequences**
- **\*7P 21K4 States the rule to find the  $n$ th term of a pattern with one operational change**

### 2.2 Uses variable, symbols, rational numbers, and one variable simple algebraic equations and inequalities. expressions to solve linear equations and inequalities

- **\*7P 22A1 Represents real world problems using variables and symbols to write linear expressions or one or two step equations**
- 7P22K5a,b Solves one and two step linear equations
- 7P 22K5c Solves one step linear inequalities
- **\*7P 22K7 Solves for a missing term in a proportion**
- **\*7P 22K8 Evaluates simple algebraic expressions using positive numbers**

### 2.3 Recognizes, describes and analyzes constant and linear relationships

- 7P 23K3 Plots points on the coordinate plane

### 2.4 Generates and uses models to represent relationships

- 7P 24A3 Uses models to make inferences about real world situations

## Geometry

### 3.1 Recognizes geometric figures and compares their properties

- **\*7P 31K3 Knows attributes of quadrilaterals and triangles (sides/angles)**
- 7P 31K5 Identifies corresponding parts of similar/congruent triangles
- 7P 31K6 Uses symbols/identifies parallel, perpendicular
- 7P 31K7 classifies triangles by sides and angles

### 3.2 Estimates, measures, and uses measurement formulas

- 7P 32K2 Uses tools of measurement for both standard and metric system
- 7P 32K3 Convert within measurement system
- **\*7P 32K4 Knows and uses perimeter and area formulas for circles, squares, rectangles, triangles, and parallelograms**
- 7P 32K5 Finds perimeter and area of two dimensional composite figures
- **\*7P 32K6 Uses given formulas to find surface area and volumes of rectangular prisms**
- 7P 32K9 Finds missing angles in triangles
- **\*7P 32A1c Finds areas and perimeters of two dimensional composite figures**
- Uses Pythagorean Theorem
- Measure and construct geometric figures

### 3.3 Recognizes and performs transformations on two dimensional geometric figures

- 7P 33K1 Identifies and performs transformations (reflection, rotation, translation, reduction, enlargement)

- **\*7P 33A3 Determines actual dimensions of a scale drawing**
- 7P 33K4 Generates a tessellation

### 3.4 Uses the coordinate plane and the number line

- 7P 34K2 Plots and identifies points on the coordinate plane; identify points on a line

## **Data**

### 4.1 Applies concepts of probability to draw conclusions, generate arguments, and make predictions

- 7P 41K3 Represents the probability of a simple or compound event using fractions, decimals, or percents

### 4.2 Organizes, displays, and explains data sets

- **\*7P 42K1a-g Organizes, displays, and reads data from tables, graphs, diagrams, charts, stem and leaf plots, scatter plots, or box and whisker plots**
- 7P 42K4 Determines measures of central tendency (mean, median, mode) from a data set
- 7P 42K5 Determines the range and quartiles of a data set
- **\*7P 42A3 Recognizes and explains misleading representations of data or changes in scale**