

# Mathematics

## Course: Pre-Algebra

### 7<sup>th</sup> Grade

#### **MATH 100 Pre-Algebra**

No graduation credit  
 5 days per week; 1 year  
 Taught in English

This is a required class for all 7<sup>th</sup> grade students in the Mexican and/or U.S. Diploma program. This course will emphasize on the continued study of integers, order of operations, variables, expressions, and equations. Students will solve and graph equations and inequalities, write and solve ratios and proportions, and be introduced into fundamental concepts of geometry and data analysis. Problem solving will be emphasized throughout the course. Students will be expected to demonstrate skills that will be valuable not only in this course, but in higher level mathematical courses.

**Textbook:** Carter, John, A. et al. Algebra I. Glencoe/McGraw –Hill Education: Botell, Washington, (2014 edition).

**Prerequisite:** NONE

#### **Benchmark Code – Subject: Pre-Algebra = PA**

- Strand 1: Algebraic Expressions and Integers
- Strand 2: Equations
- Strand 3: Inequalities
- Strand 4: Decimals
- Strand 5: Functions
- Strand 6: Factors, Fractions, and Exponents
- Strand 7: Ratios, Proportions, and Percents
- Strand 8: Geometry
- Strand 9: Data Analysis and Probability

Code: Subject.Grade.Strand#.Standard#.Benchmark#

Example: PA.7.1.4.3 Pre-Algebra, Seventh Grade, Strand 1, Standard 4, Benchmark 3

### **Strand 1: Algebraic Expressions and Integers**

#### **Standard 1: The student analyzes and identifies characteristics of algebraic expressions.**

Benchmark Code	Benchmark
PA.7.1.1.1	The student will define real numbers, properties of real numbers and the real line. (Fractions, decimals and negatives)
PA.7.1.1.2	The student will use divisibility rules of 2, 3, 4, 5, 6, 7, 8, 9, 10.
PA.7.1.1.3	The student will find patterns such as arithmetic and geometric sequences and then use inductive reasoning to solve problems.
PA.7.1.1.4	The student will represent unknown quantities with variables and write numerical and variable expressions.

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PA.7.1.1.5	The student will use order of operations (PEMDAS) to simplify and evaluate numerical and variable expressions. (with fractions, decimals and negatives).
PA.7.1.1.6	The student will find the absolute value of integers and will represent it on the number line.
PA.7.1.1.7	The student will name coordinates and quadrants and graph points representing relations.
<b>Strand 2: Equations</b>	
<b>Standard 1: The student solves equations and inequalities.</b>	
<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.2.1.1	The student will solve one- and multi-step linear equations by applying inverse operations.
PA.7.2.1.2	The student will solve one- and multi-step linear equations using distributive property.
PA.7.2.1.3	The student will write equations to solve problems, including those with variables on both sides.
<b>Strand 3: Inequalities</b>	
<b>Standard 1: The student applies the characteristics of decimals to solve problems.</b>	
<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.3.1.1	The student will solve one- and multi-step linear inequalities by applying inverse operations.
PA.7.3.1.2	The student will solve one- and multi-step linear inequalities using distributive property.
PA.7.3.1.3	The student will graph inequalities and identify inequalities by looking at graphs.
PA.7.3.1.4	The student will write inequalities to solve problems, including those with variables on both sides.
<b>Strand 4: Decimals</b>	
<b>Standard 1: The student applies the characteristics of decimals to solve problems.</b>	
<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.4.1.1	The student will review reading, writing, and rounding of decimals.
PA.7.4.1.2	The student will estimate decimal sums, differences, products, and quotients.
PA.7.4.1.3	The student will identify appropriate metric measures and convert metric units.
<b>Strand 5: Functions</b>	
<b>Standard 1: The student defines functions.</b>	
<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.5.1.1	The student determines how a relation is a function. From a table, graphs and algebraically). Linear functions.

PA.7.5.1.2	The student will use function notation.
PA.7.5.1.3	The student will graph linear functions using a table of values for the relation.
PA.7.5.1.4	The student will find the slope of a line.
PA.7.5.1.5	The student will write the equation of a line in slope-intercept form and graph its function.

### **Strand 6: Factors, Fractions, and Exponents**

**Standard 1: The students use factors, multiples, prime factorization, and relatively prime numbers to solve problems.**

<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.6.1.1	The student will use divisibility rules to find prime factorization, the greatest common factor, equivalent fractions, and to simplify fractions.
PA.7.6.1.2	The student will write and simplifying expressions using exponents product, quotient and power of a power rules.
PA.7.6.1.3	The student will evaluate numerical expressions using negative exponents.
PA.7.6.1.4	The student will use the order of operations with exponents.
PA.7.6.1.5	The student will write, evaluate, and calculate with scientific notation.
PA.7.6.1.6	The student will find and estimate a square roots and graph them on the real line.

### **Strand 7: Ratios, Proportions and Percents**

**Standard 1: The student understands and uses ratios and proportions to represent quantitative relationships.**

<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.7.1.1	The student will use ratios, rates, and unit rates including proportions involving similar figures and scale drawings, probabilities and odds, and percent problems.
PA.7.7.1.2	The student will identify a ratio as a fraction and a decimal form.
PA.7.7.1.3	The student will represent proportional relationships to solve multistep ratio and percent problems.

### **Strand 8: Geometry**

**Standard 1: The student understands characteristics and properties of two and three dimensional geometric shapes.**

<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.8.1.1	The student will model points, lines, line segments, rays, angles, and planes.
PA.7.8.1.2	The student will find the distance between 2 points and the midpoint of a segment using the Distance and Midpoint formulas.
PA.7.8.1.3	The student will name basic geometric figures.

PA.7.8.1.4	The student will find the perimeter of polygons and a circle.
PA.7.8.1.5	The student will apply knowledge of angle measures and line relationships to classify triangles and quadrilaterals.
PA.7.8.1.6	The student will construct triangles and quadrilaterals, and use triangle congruence theorems.
PA.7.8.1.7	The student will identify corresponding parts of polygons and determine whether 2 triangles are congruent.
PA.7.8.1.8	The student will find areas of different geometric figures such as quadrilaterals, triangles and, circles.
PA.7.8.1.9	The student will calculate the volume of prisms with triangular and quadrilateral base.
PA.7.8.1.10	The student will verify algebraically the equivalence of first degree expressions from sequences.
PA.7.8.1.11	The student will formulate expressions to represent geometrical figures properties such as perimeter and area; and verify the equivalence of expressions algebraically and geometrically.

**Strand 9: Data Analysis**

**Standard 1: The student formulates questions that can be addressed with data and collects, organizes and displays data.**

<b>Benchmark Code</b>	<b>Benchmark</b>
PA.7.9.1.1	The student will find range, mean, median, and mode of a set of data and choose the best measure of central tendency.
PA.7.9.1.2	The student will display data in frequency tables, scatter plot, line plot and box-and-whisker plots.