Mathematics
Course: Algebra 1
8th Grade

MATH 200 Algebra I

    1 credit
    5 days per week; 1 year
    Taught in English

This is a required class for all 8th grade students in the Mexican and/or U.S. diploma program. This course extends what students have learned in the introductory-level Pre-Algebra course as well as introducing more advanced topics in Algebra. These advanced topics include understanding our number system, solving, graphing and writing linear equations and inequalities, linear systems, exponents, basic quadratic functions, polynomials and factoring. 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. Algebra 1. Glencoe/McGraw Hill School Publishers: Columbus (2014)
Prerequisite: MATH 100

Benchmark Code – Subject: Algebra 1 = A1
Strand 1 = Fundamental Skills and Concepts Review
Strand 2 = Solving Equations
Strand 3 = Linear Equations and Graphing Linear Equations
Strand 4 = Solving and Graphing Inequalities
Strand 5 = Solving Systems of Equations and Inequalities
Strand 6 = Exponent Properties and Scientific Notation
Strand 7 = Scientific Notation
Strand 8 = Polynomials and Factoring
Strand 9 = Quadratic Functions and Quadratic Equations
Strand 10 = Geometry
Strand 11 = Data Analysis and Probability
Code: Subject.Grade.Strand#.Standard#.Benchmark#
Example: A1.8.1.4.3 –Algebra 1, Eighth Grade, Strand 1, Standard 4, Benchmark 3

Strand 1: Fundamental Skills and Concepts Review

Standard 1: The student evaluates expressions and performs operations on integers and rational numbers.

Benchmark Code	Benchmark
A1.8.1.1.1	The student will find the absolute value of integers and will represent it on the number line.
A1.8.1.1.2	The student perform will perform addition, subtraction, multiplication, and division on integers (including positives and negatives).

A1.8.1.1.3	The student will perform addition, subtraction, multiplication, and division on decimals (including positives and negatives).
A1.8.1.1.4	The student will perform addition, subtraction, multiplication, and division on rational numbers (including positives and negatives).
A1.8.1.1.5	The student will translate sentences into expressions and expressions into sentences.
A1.8.1.1.6	The student will use order of operations (PEMDAS) to simplify and evaluate numerical and variable expressions. (with fractions, decimals and negatives).
A1.8.1.1.7	The student will use divisibility rules of 2, 3, 4, 5, 6, 7, 8, 9, 10.
A1.8.1.1.8	The student will identify prime numbers up to 30.
A1.8.1.1.9	The student will find the least common denominator.
A1.8.1.1.10	The student will find the greatest common factor.

Standard 2: The student identifies and finds the value of functions.	
Benchmark Code	**Benchmark**
A1.8.1.2.1	The student will determine how a relation is a function. (From a table, graphs and algebraically).
A1.8.1.2.2	The student will calculate the value of a function f(x) given an x-value.

Strand 2: Solving Equations	

Standard 1: The student solves equations.	
Benchmark Code	**Benchmark**
A1.8.2.1.1	The student will solve multi-step equations with variables on both sides (linear and quadratic).
A1.8.2.1.2	The student will solve equations involving absolute values.
	The student will write the corresponding equation to solve application problems involving real-world situations.

Standard 2: The student applies understanding of ratios, proportions, rates, unit rates, and percent of change.	
Benchmark Code	**Benchmark**
A1.8.2.2.1	The student will solve proportions.
A1.8.2.2.2	The student will write the corresponding proportion to solve application problems involving real-world situations.
A1.8.2.2.3	The student will solve direct variation and inverse variation problems using tables, graphs and algebraic equations.
A1.8.2.2.4	The student will calculate values using the percent proportion equation.

Strand 3 : Linear Equations and Graphing Linear Equations	

Standard 1: The student writes and graphs linear equations.	
Benchmark Code	**Benchmark**
A1.8.3.1.1	The student will graph lines from a table of values and sees the relationships

	between the line that they have graphed and the equation that represents it.
A1.8.3.1.2	The student will define the concept of x-intercept and y-intercept (b).
A1.8.3.1.3	The student will find x and y-intercepts from a graph, table, and equation.
A1.8.3.1.4	The student will define the concept of slope (m).
A1.8.3.1.5	The student will identify positive slope, negative slope, zero slope, and undefined slope.
A1.8.3.1.6	The student will calculate the slope of a line passing through two points.
A1.8.3.1.7	The student will graph a line in slope-intercept form, standard form and point-slope form.
A1.8.3.1.8	The student will write the equation of a line in slope-intercept form, standard form and point-slope form; given slope and a point, or two points.
A1.8.3.1.9	The student will write the equation for the given graph of a line.
A1.8.3.1.10	The student will convert between slope-intercept form, point-slope form, and standard form.

Standard 2: The student writes equations of and identifies parallel and perpendicular lines.

Benchmark Code	Benchmark
A1.8.3.2.1	The student will define parallel lines and perpendicular lines.
A1.8.3.2.2	The student will write the equation of a line from a line that passes through a given point and is parallel to a given line.
A1.8.3.2.3	The student will write the equation of a line from a line that passes through a given point and is parallel to a given line.
A1.8.3.2.4	The student will determine whether a given pair of lines are parallel, perpendicular, or neither.

Strand 4: Solving and Graphing Inequalities

Standard 1: The student solves and graphs inequalities.

Benchmark Code	Benchmark
A1.8.4.1.1	The student will solve and graphs multi-step inequalities with variables on both sides.
A1.8.4.1.2	The student will solve and graphs compound (and/or) linear inequalities.
A1.8.4.1.3	The student will solve and graphs inequalities with absolute values.
A1.8.4.1.4	The student will graph the solution of a system of inequalities.

Strand 5: Solving Systems of Equations

Standard 1: The student solves systems of equations and inequalities involving two variables.

Benchmark Code	Benchmark
A1.8.5.1.1	The student will identify systems as consistent, inconsistent, dependent, and/or independent.
A1.8.5.1.2	The student will solve systems of equations (with two variables) by graphing.

| A1.8.5.1.3 | The student will solve systems of equations (with two variables) by substitution. |
| A1.8.5.1.4 | The student will solve systems of equations (with two variables) by elimination. |

Strand 6: Exponent Properties and Scientific Notation

Standard 1: The student simplifies expressions using the Properties of Exponents.

Benchmark Code	Benchmark
A1.8.6.1.1	The student will write and simplify expressions with exponents using product, quotient, zero, negative and power of a power rules.

Standard 2: The student converts Scientific Notation and Standard Form.

Benchmark Code	Benchmark
A1.8.6.2.1	The student will convert numbers from standard form to scientific notation and vice versa.
A1.8.6.2.2	The student will multiply and divide numbers in scientific notation.

Strand 7: Polynomials and Factoring

Standard 1: The student performs operations on polynomials.

Benchmark Code	Benchmark
A1.8.7.1.1	The student will write polynomials in standard form.
A1.8.7.1.2	The student will find the sum of two polynomials.
A1.8.7.1.3	The student will find the difference of two polynomials.
A1.8.7.1.4	The student will multiply polynomials using distributive property.
A1.8.7.1.5	The student will solve equations with polynomials on both sides.
A1.8.7.1.6	The student will find the special products of two binomials including: square of a sum, square of a difference, and the product of a sum and difference of same terms.

Standard 2: The student factors polynomials.

Benchmark Code	Benchmark
A1.8.7.2.1	The student will factor the greatest common factor out of a polynomial.
A1.8.7.2.2	The student will factor perfect square trinomials.
A1.8.7.2.3	The student will factor differences of squares.
A1.8.7.2.4	The student will factor trinomials with a leading coefficient of 1.
A1.8.7.2.5	The student will use factorization as a technique to solve equations.
A1.8.7.2.6	The student will know the difference between factorization as a simplification technique and as a solving technique for equations.

Strand 8: Quadratic Functions and Quadratic Equations

Standard 1: The student will solve and graph quadratic functions.

Benchmark Code	Benchmark
A1.8.8.1.1	The student will analyze the characteristics of graphs of quadratic functions in general form.
A1.8.8.1.2	The student will graph quadratic functions using a table of values.
A1.8.8.1.3	The student will identify the vertex and axis of symmetry from the graph of a

	quadratic function.
A1.8.8.1.4	The student will solve a quadratic function from the graph and using order of operations and factorization.

Strand 9: Geometry

Standard 1: The student will construct two dimensional figures and represent its area using second degree expressions.

Benchmark Code	Benchmark
A1.8.9.1.1	The student will write second degree expressions to represent area of geometric figures and verifies algebraically or geometrically the equivalence of expressions.
A1.8.9.1.2	The student will infer and use the relations between the polygon angles to construct regular polygons.
A1.8.9.1.3	The student will construct similar polygons, determine and use similar triangle properties.
A1.8.9.1.4	The student will construct circles and find the distance between two point. (center and point on the circle).

Strand 10: Data Analysis and Probability

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

Benchmark Code	Benchmark
A1.8.10.1.1	The student will find range, mean, median, and mode of a set of data and choose the best measure of central tendency.
A1.8.10.1.2	The student will collect, organize and read data using histograms, frequency polygons and linear graphs.
A1.8.10.1.3	The student will create random experiments and collects data, to find probabilities.
A1.8.10.1.4	The student will determine the probability of an event from a random experiment.