Academia Santa Rosa
Bayamón, PR
academiasantarosa@asrpr.org

Syllabus 2023-2024
Mathematics 8B

Course: Math Eighth Grade
Teacher: Mrs. T. Morales
Platform: 8th Algebra from Edu System

Office hours: (Only by appointment)
Email:tmorales@asrpr.org

I. Course description and introduction:

The Algebra I course encompasses the development of the five Mathematics standards of the Puerto Rico Department of Education, with particular attention to the algebra standard. Conceptual connections of each standard will be emphasized, focusing on solving real-life situations. This prepares students for higher-level studies, as well as university life and the workforce.

In the Number and Operation standard, exponents and scientific notation will be used to describe large and small numbers. In Geometry and Measurement, fundamental data on distance and angle measurements will be emphasized to analyze two-dimensional and three-dimensional space and figures. The reasoning of similar triangles will be applied to measure angles formed by transversals cutting parallel lines, and students will reason about the measures of interior angles of various polygons while solving relevant social context situations.

Through analyzing measures of dispersion from various data resulting from research, scatter plots will be constructed to show the data and test conjectures while estimating the best-fit line.

In the Algebra standard, topics of linear functions, linear equations, and systems of linear equations will be present to represent, analyze, and solve mathematical problems involving slope. The student will work with nonlinear functions whose rates of change contrast with the constant rate of change in linear functions. Promoting the use and mastery of technology as tools for accessing, analyzing, and applying information is essential. Central themes should address cross-cutting issues.

The primary focus of the EduSystem Algebra I course is to teach mathematics with an emphasis on problem-solving and the cultivation of critical thinking skills as essential aspects of holistic human development. The course places special emphasis on connecting the curriculum to real-life problem-solving scenarios, making the topics discussed more meaningful and sparking students' interest in mathematics. Moreover, the course integrates content from various disciplines, such as Science, Technology,

and Engineering, among others, to broaden students' knowledge and demonstrate the universal significance of mathematics as a fundamental discipline.

II. General Objectives:

- Identify and apply fundamental mathematical concepts.
- Create and develop confidence in your mathematical ability.
- Analyze and resolve non-routine situations.
- Formulate and express your mathematical ideas clearly and accurately.
- Assess the importance of mathematics in your daily life.

III. Specific objectives:

The student will:

- Learn to describe real numbers as the set of all decimal numbers. They will use scientific notation, estimation, and properties to represent and solve problems involving real numbers.
- Apply appropriate terminology when discussing algebraic situations. They will represent algebraic situations, such as equations, tables, verbal representations, and graphs. The student will learn to recognize linear equations in various forms. They will solve systems of linear equations and inequalities while explaining the reasoning behind each step in the solution.
- Learn to distinguish between exponents and their properties. They will study and apply the properties of integer exponents, including negative exponents and zero exponents. The student will also simplify algebraic expressions and expressions with numbers in scientific notation.
- Learn to add, subtract, divide, and multiply polynomials. They will evaluate polynomial expressions and represent perimeter, area, and volume through polynomial expressions. While factoring, the student will take the product of a polynomial and rewrite it as a product of two or more factors to simplify and divide rational expressions.
- Explore and apply the Pythagorean Theorem to solve mathematical problems involving measurement. They will prove and verify the Pythagorean Theorem to measure the area of rectangles with the sides of a right triangle and other methods that aid in understanding the perimeter, area, and volume of geometric figures. The student will model real-life problems on a coordinate graph and use the distance formula to solve problems.
- Learn population sampling methods and study random samples in-depth. They will create questionnaires, conduct interviews, and perform statistical analysis. The student will also analyze and identify proper and improper statistical data and data collection methods.

IV. Content outline:

UNITS	THEMES
Unit 1: Elements of Arithmetic, Geometry, Measurement, and Statistics	• Problem Solving • The Real Number Set • Operations Using Whole Numbers • Adding and Subtracting Rational Numbers • Multiplying and Dividing Rational Numbers • Ratios, Proportions, and Percentages • Perimeter • Area • Volume • Surface Area • The Principles of Probability • Data Representation • Principles of Statistics
Unit 2: Elements of Algebra	• Introduction to Algebra • Order of Operations • Introduction to Mathematical Translation • Mathematical Statements • Properties of Real Numbers • Set Theory
Unit 3: Solving First Degree Equations and Inequalities	• Solving Equations with Addition and Subtraction • Solving Equations with Multiplication and Division • Solving Equations with Several Operations • Solving Equations with an Absolute Value • Solving Inequalities with One Variable • Solving Inequalities with an Absolute Value
Unit 4: Polynomials	• Introduction to Addition and Subtraction of Polynomials • Multiplying Monomials • Multiplying Polynomials • Laws of Dividing Exponents • Dividing Polynomials
Unit 5: Factoring	• Introduction to Factoring • Factoring Through the Distributive Property • Factoring the Difference of Two Squares • Factoring Quadratic Trinomials • Factoring by Grouping • Factoring the Sum or Difference of Two Cubes
Unit 6: Relations and Functions	• Rectangular Coordinate System • Introduction to Functions • Graphing Functions
Unit 7: The Linear Model	• Graph of a Linear Equation • Slope of a Line • Equation of a Line • Parallel and Perpendicular Line
Unit 8: System of Equations and Inequalities	• Solving Systems of Linear Equations Using the Graphical Method • Solving Systems of Linear Equations Using the Substitution Method • Solving Systems of Linear Equations Using the Elimination Method • Solving Systems of Linear Equations in Three Variables (3X3) • Determinants and Systems of Linear Equations

	• Solving Systems of Linear Inequalities
Unit 9: Rational Expressions and Equations	• Introduction to Rational Expressions • Simplifying Rational Expressions • Multiplying and Dividing Rational Expressions • Adding and Subtracting Rational Expressions • Mixed Expressions and Complex Fractions • Equations with Rational Expressions
Unit 10: Quadratic Equations	• Introduction to Solving Quadratic Equations • Solving Quadratic Equations by Factoring • Solving Quadratic Equations by Completing the Square • Solving Quadratic Equations Using the Quadratic Formula
Unit 11: The Quadratic Model	• Introduction to the Quadratic Model • Graph of a Quadratic Model • Graphing the Quadratic Model in the form $\boldsymbol{f(x) = a(x - h)}$ • $\mathbf{2}$ + K • Graph of the Quadratic Model in the Form $\boldsymbol{f(x) = ax}$ • $\mathbf{2} + \boldsymbol{bx}$ + C
Unit 12: Rational and Radical Exponents	• Whole Exponents • Fractional Exponents • Radicals • Operations with Radicals
Unit 13: Algebra and Geometry	• Algebra, Segments, and Angles • Ratios, Proportions, and Similar Figures • Pythagorean Theorem and the Formula for Distance • Area and Quadratic Expressions • Volume and Algebraic Expressions • Trigonometric Ratios

V. Didactic materials:
1. Technological equipment
2. Curricular framework
3. Content Standards: Mathematics
4. Printed material.
5. Educational links
6. Technology equipment (computer, radio, projector) Physical facilities (Laboratory and Library)
7. Google Classroom Platform

VI. Teaching strategies, techniques, methods:

Strategies:
- ECA
- Teamwork
- Reasonable accommodations: All reasonable accommodations for the particular needs of these students will be made in accordance with the Americans with Disabilities Act (ADA).

Techniques:
- Socialized discussion
- Demo

- Laboratory
- Virtual laboratory
- Excursion

Methods:

- Explore
- Acquire
- Discover
- Problem solution
- Worksheets
- Calculator
- Comment and analyze situations in daily life.
- Projects and Homework's online.

VII. Evaluation Method:

Criteria and instruments:

- Exams – Approximately 3 per quarter
- Short tests
- Worksheets - Appraisal (value will depend on skill)
- Online Assignments - Vary by skill
- Assessments and dictations of the tables – weekly
- Projects - Appraisal carried out in class.

VIII. Course requirements

- Checkered notebook; 6 or 7 mm
- Sharpened pencils
- Eraser
- Rule
- Compass
- Colored pencils or crayons
- Ballpoint pen (for self-correction)
- Ring and construction paper
- Bring a written excuse when you are absent.
- Make up assignments covered when absent.
- Comply with the Cell Phone Policy.
- Comply with the Plagiarism Policy.

* This syllabus is subject to change according to the needs of the students, given learning experiences, and other factors that may arise.

ACKNOWLEDGEMENT OF RECEIPT OF THE SYLLABUS AND STUDENT EVALUATION PLAN		
Student's Name	Parent's signature	Date