

*Preparing Students to be Successful in the 21st Century
Modeling, Teaching, Practicing, and Evaluating...*

*Critical Thinking and Problem Solving Skills
Information & Communications Technology (ICT) Skills
Life Skills*

Course Title:

Algebra 1

Course Instructor:

James Hammond

James.Hammond@eu.dodea.edu

Course Description:

Major Concepts/Content:

This course may be the most common course for students who have had a rich and varied middle level mathematics program. It expands upon basic algebraic concepts previously acquired and integrates those principles with everyday life. The processes of problem solving, reasoning, communication and making connections are emphasized. Students will use formulas, functions, and equations to describe and clarify relationships, and will use geometry to represent algebraic relationships. Students will learn how to write and translate expressions into mathematical forms, solve first and second degree equations, and use the concept of a function to model real-world phenomena.

Major Instructional Activities:

Instructional activities will include tasks as well as problem solving situations that require students to experiment, collect data, search for patterns, make conjectures, and verify discoveries. Activities will be structured to allow students to work in cooperative learning techniques and appropriate technology should be utilized throughout the course. Students should have access to calculators at all times.

Major Evaluative Techniques:

Many evaluative processes will be used to assess students' written and oral work. These include multiple-choice, short answer, discussions, or open-ended interview; homework; projects; journals essays; dramatizations; and class presentation. Testing formats will include restricted-time written tests, take home tests, oral tests and student-produced tests. Assessment methods can be supplemented by student-produced analysis of problem situations, solutions to problems, reports on investigations, and journal entries. Students will be provided the opportunity to do chapter projects that capture the concepts and skills presented throughout the chapter unit that emphasizes real world situations.

Essential Expectations:

Upon successful completion of Algebra I, the student should be able to:

- Understand and use operations such as opposite, reciprocal, raising to a power, and taking a root
- Compare numbers using order relations, differences, ratios, proportions, percents, proportional change
- Use concepts such as prime, relatively prime, factor, divisor, multiple, and divisibility in solving problems involving integers
- Represent graphs of functions in standard coordinate systems
- Model given situations with formulas and functions, and interprets given formulas and functions in terms of situations
- Describe, generalize, and use linear and exponential functions and explores other function: power, rational, square and square root
- Define, use and manipulate expressions involving variables, parameters, constants, and unknowns in work with formulas, functions, equations, and inequalities
- Represent functional relationships in formulas, tables, and graphs, and translates between pairs of these
- Solve equations symbolically, graphically, and numerically, especially linear, quadratic, and exponential equations; and knows how to use the quadratic formula for solving quadratic equations
- Solve systems of linear equations symbolically, graphically, and numerically and applies them in real world situations
- Use equations to represent lines and parabolas.
- Organize, analyzes, and displays two-variable data using scatter plots, estimated regression lines, and computer-generated regression lines and correlation coefficients
- Interpret representations of data, compares distribution of data, and critiques conclusions and uses of statistics, both in school materials and public documents
- Use technology to create graphs or spreadsheets that contribute to the understanding of a problem.

Grading Policy: The grading policy will mirror the established SMS policy

Materials: Students will be issued textbooks. Pencils and notebooks are non-negotiable essentials. A classroom set of graphing calculators is available on a limited basis. Although it is not required to purchase a calculator, it will be prudent in the long term if a student intends to continue their mathematics education.