



Reseda High School Police Academy Magnet Algebra 1 A/B

Instructor: Mr. Ethington

Course Description:

In Algebra 1 A/B, while integrating *law enforcement themes*, we will learn symbolic reasoning and how to interpret, set up, and perform calculations with symbols. We will also develop logical thought processes with emphasis on reasoning and logical arguments.

Topics of Instruction:

Unit 1: A solid mathematical foundation

CA Content Standards: 1.0, 1.1, 2.0, 4.0, 10.0, 16.0, 17.0, 24.0, 24.1, 24.2, 24.3, 25.0, 25.1, 25.3

Arithmetic properties of rational numbers including the Associative, Commutative, and Distributive properties, as well as the closure properties of addition, subtraction, multiplication, and division

Opposites, reciprocals, roots, rational exponents, and rules of exponents

Radius of a search area

Functions, functional notation, substitution, order of operations, and domain and range of functions

Graphing on a number line

Unit 2: Single variable equations and inequalities

CA Content Standards: 4.0, 5.0, 15.0, 24.3, 25.1, 25.2, 25.3

Simplifying expressions

Balancing equations

The Scales of Justice

Solving linear equations in one variable

Solving and graphing linear inequalities in one variable

Working with compound inequalities

Solving and graphing absolute value equations and inequalities in one variable

Unit 3: Lines

CA Content Standards: 6.0, 7.0, 8.0, 16.0, 17.0, 24.1, 24.3, 25.1

Solutions to multivariable equations

The Cartesian plane and its components

Linear equations and their forms
Relationship between poverty and crime
Relationship between education and crime
Graphing linear equations and x- and y-intercepts
Slope, parallel lines, and perpendicular lines
Graphing linear inequalities in two variables

Unit 4: Systems of linear equations and inequalities

CA Content Standards: 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 15.0, 17.0, 24.3, 25.1, 25.2, 25.3

Solutions to systems of equations
Solving systems by graphing
Solving systems by substitution
Solving systems by elimination
Systems of equations word problems
Where to station police effectively
High speed pursuits: are they worth it and how to catch them quickly

Unit 5: Polynomials and factoring

CA Content Standards: 2.0, 10.0, 11.0, 14.0

Adding, subtracting, and simplifying polynomials
Multiplying polynomials
Factoring polynomials
Key suspects method
Solving polynomial equations by factoring
Simplifying rational expressions

Unit 6: The Quadratic Formula

CA Content Standards: 14.0, 19.0, 20.0, 21.0, 22.0, 23.0

Completing the square to solve equations
Prove the Quadratic Formula by completing the square
Using the quadratic formula
Path of a bullet
Graphing quadratic equations and determining x-intercepts

Unit 7: Logic and reasoning

CA Content Standards: 24.0, 24.1, 24.2, 24.3

Logical arguments and their forms
"Stop or I'll shoot" vs. "If you don't stop then I will shoot"
Counterexamples to disprove arguments
Inductive reasoning vs. deductive reasoning

Grading

Standard grade cutoffs are used, A: 90% and up, B: 80% to 89%, C: 70% to 79%, D:60% to 69%, F: 59% and below.

Attendance, Cooperation and Work Habits

You are required to follow the attendance policy of the school. Your attendance will have a direct connection to your semester grade. You will receive participation points that are determined on whether you are in class or not. If you are not in class you cannot participate. Attending class is very important, especially since the institution of block schedule. Absent students will miss opportunities to receive in class participation and classwork points, as well as missing out on instructional time, and each day of instruction with block schedule is equivalent to two traditional days of class. In order to be successful, you must attend class on a regular basis.

Exams must be made up the day you return to school. Missed quizzes will result in a zero with the following quiz counting double. Missing more than two quizzes in a semester will result in a written and oral report on the quiz subject matter for each missed quiz. Quiz make-ups must be turned in within one day of returning to school.

Cooperation and respect are expected at all times. Compliance with school and classroom rules is required. Deviation from behavior requirements will result in class suspension.

Assignment Types

Students will be graded by tests, quizzes, classwork, homework, projects, and participation as follows:

Tests -	50%	Classwork -	15%
Projects -	12%	Homework -	5%
Quizzes -	10%	Participation -	8%

Homework and Classwork Policy

All classwork and homework will be assigned during class, and is due the first day of the following week, at which time the teacher will select one assignment to collect and grade. To receive full credit for an assignment, the assignment must be complete, written neatly in pencil, with all steps shown, and most of the work correct. In the event that a student does not have the required assignment on the date due, they may receive up to 60% of the original grade by turning in all of the assignments issued during the previous week within ten school days of the original due date. Students who are absent on the date the work was collected may receive 100% of the original grade by turning in all of the assignments issued during the previous week within ten school days of the original due date. Students who are absent for any reason are expected to get all missed notes and assignments from the teacher or from other students.

All student work must be that of the individual student. CHEATING of any type will not be tolerated. This applies to ANY and ALL assignments. Any incidence of cheating will

result in parent conferencing, a zero on the assignment (for all students(s) involved) and a “U” in both work habits and cooperation on the 5, 10, 15 and 20 week report cards.

Reseda High School ESLRS

In my class, students do much of their work in cooperative learning groups. I believe this type of activity helps students to learn from each other, and helps students achieve the

Reseda High School ESLRS:

*Effective Communicators

*Critical Thinkers

*Self-Directed Learners

*Responsible Citizens

*Healthy Individuals

CA State Content Standards:

1.0 Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:

1.1 Students use properties of numbers to demonstrate whether assertions are true or false.

2.0 Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.

3.0 Students solve equations and inequalities involving absolute values.

4.0 Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.

5.0 Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.

6.0 Students graph a linear equation and compute the x - and y -intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).

7.0 Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula.

8.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.

9.0 Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.

10.0 Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.

11.0 Students apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.

12.0 Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.

- 13.0** Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.
- 14.0** Students solve a quadratic equation by factoring or completing the square.
- 15.0** Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.
- 16.0** Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.
- 17.0** Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.
- 18.0** Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.
- 19.0** Students know the quadratic formula and are familiar with its proof by completing the square.
- 20.0** Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.
- 21.0** Students graph quadratic functions and know that their roots are the x -intercepts.
- 22.0** Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x -axis in zero, one, or two points.
- 23.0** Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.
- 24.0** Students use and know simple aspects of a logical argument:
- 24.1** Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.
- 24.2** Students identify the hypothesis and conclusion in logical deduction.
- 24.3** Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.
- 25.0** Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:
- 25.1** Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.
- 25.2** Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.
- 25.3** Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.