

DEPARTMENT: MATH	COURSE TITLE: ALGEBRA COURSE NUMBER: 312
GRADE(S): 9-12	PRE-REQUISITES (IF ANY): C- IN MATH 8, TRANSFORMATIONAL GEOMETRY, PARAMETER GRAPHING, OR NUMBER PATTERNS

UNIT	LENGTH	CONTENT	SKILLS	METHODS OF ASSESSMENT	FRAMEWORK STRAND(S) & STANDARD(S)
Introduction to Variable and Single Variable Equations	2 weeks	<ul style="list-style-type: none"> • Order of operations/calculation • Translate, evaluate expressions 	<ul style="list-style-type: none"> • Compute with whole numbers, decimals, fractions, integers • Simplify expressions • Understand and apply properties (commutative, associative, distributive) • Understand properties of equality 	<ul style="list-style-type: none"> • Tests • Lab Reports • Homework • Notebook • Papers • In-class projects • Portfolio 	Algebra 1, 2, 6
Introduction to Graphing	2-3 weeks	<ul style="list-style-type: none"> • Qualitative graphing • Coordinate plane • Creating data tables and graphs from equations • Trend lines • Introduction to linear and non-linear graphs • Direct and inverse variation • Solving equations • Writing equations to model situations 	<ul style="list-style-type: none"> • Distinguish between independent and dependent variable • Plot points • Know vocabulary of coordinate plane • Graph and find equations of direct and inverse variation functions • Use graphing calculator 	<ul style="list-style-type: none"> • Tests • Lab Reports • Homework • Notebook • Papers • In-class projects • Portfolio 	8, 14, 18, 19
Slope and Linear Equations	3-4 weeks	<ul style="list-style-type: none"> • Definition of slope • The meaning of slope in situations • Finding slope from a graph, data table, equation • Positive, negative, zero, undefined slope • Linear vs. non-linear data tables • Standard form • Slope-intercept form • Point-slope form • Writing equations to model linear situations • X and y-intercepts • Applications—gathering data and determining equation of the trend line 	<ul style="list-style-type: none"> • Find slope using two points • Compare slopes (positive vs. negative, parallel vs. intersecting, zero vs. undefined) • Translate data table growth rate into slope • Graph from equations, data tables, or situations • Interpret graphs • Transform equations from one form to another • Find slope and intercepts from any form of linear equation • Check whether a point is on a graph • Find equations of lines given information about the graph 	<ul style="list-style-type: none"> • Tests • Lab Reports • Homework • Notebook • Papers • In-class projects • Portfolio 	4, 5, 8, 9, 10, 14, 16

Systems of Equations	2-3 weeks	<ul style="list-style-type: none"> Recognizing what a system is Solving by graphing Solving by substitution Solving by addition, subtraction Writing and solving systems to model situations 	<ul style="list-style-type: none"> Graph two equations on the same set of axes Estimate points of intersection Solve systems algebraically Check solutions to systems Interpret a graph of a system 	<ul style="list-style-type: none"> Tests Lab Reports Homework Notebook Papers In-class projects Portfolio 	4, 8
Inequalities	1-2 weeks	<ul style="list-style-type: none"> Inequalities with one variable Inequalities with two variables Systems of inequalities 	<ul style="list-style-type: none"> Understand the inequality symbols Solve and graph inequalities with one variable Graph inequalities with two variables Graph the feasible region of a system of inequalities 	<ul style="list-style-type: none"> Tests Homework Notebook In-class projects Portfolio 	6, 16
Absolute Value and Quadratic Equations in Vertex Form	1-2 weeks	<ul style="list-style-type: none"> Solving and graphing absolute value functions and quadratic functions in vertex form 	<ul style="list-style-type: none"> Understand vertex form Graph a function in vertex form Find the equation in vertex when given information about the graph Solve the function for the independent variable 	<ul style="list-style-type: none"> Tests Lab Reports Homework Notebook Papers In-class projects Portfolio 	15
Quadratic Equations	4 weeks	<ul style="list-style-type: none"> Standard form Factored form Writing equations to model quadratic situations Solving quadratic equations using graphing, factoring, completing the square, and the quadratic formula Applications Domain and range 	<ul style="list-style-type: none"> Simplify polynomials Multiply binomials Factor quadratics Convert from standard form to vertex form by completing the square Understand the use of and apply the quadratic formula Use quadratic functions to model real life problems Identify domain and range of a quadratic function 	<ul style="list-style-type: none"> Tests Lab Reports Homework Notebook Papers In-class projects Portfolio 	4, 5, 7, 8, 13, 14
Exponential Equations and Laws of Exponents	2-3 weeks	<ul style="list-style-type: none"> Recognizing an exponential set of data Laws of exponents Negative exponents Zero exponent Domain and range 	<ul style="list-style-type: none"> Perform computations with exponents Simplify expressions involving exponents Complete exponential data tables Make graphs from equations Find patterns in exponential data 	<ul style="list-style-type: none"> Tests Lab Reports Homework Notebook Papers In-class projects Portfolio 	3, 5, 7, 8, 14
Polynomials	1-2 weeks	<ul style="list-style-type: none"> Operations with polynomials Factoring polynomials 	<ul style="list-style-type: none"> Add and subtract polynomials Multiply polynomials Divide polynomials Factor polynomials 	<ul style="list-style-type: none"> Tests Lab Reports Homework Notebook Papers In-class projects 	11, 12

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Rational Expressions	2 weeks	<ul style="list-style-type: none"> • Operations with rational expressions 	<ul style="list-style-type: none"> • Simplify rational expressions • Multiply and divide rational expressions • Add and subtract rational expressions • Solve equations involving rational expressions 	<ul style="list-style-type: none"> • Tests • Lab Reports • Homework • Notebook • Papers • In-class projects • Portfolio 	12