ALGEBRA II, PART I
GRADE LEVELS 10-12

#	Lesson	Lesson Content
1	Rules of Algebra	Review of the real number system including rational numbers, integers, whole numbers, counting numbers, and irrational numbers; rules for combining and multiplying real numbers, and order of operations
2	Real Number Properties	Review of properties of real numbers' associative property of multiplication and division, distributive property, substitution property; terms associated with real number properties and operations, and review of inequalities
3	Algebraic Expressions	Connecting words and numbers through expressions, students practice writing and simplifying expressions
4	Algebraic Equations	Difference between expressions and equations, symbols used in writing equations, identifying unknowns
5	Solving Equations	Rules for solving equations, combining like terms, step-by-step examples of simplifying and solving equations
6	Problem Solving 1	Developing equations to solve for unknowns, developing a plan to solve problems, and working related problems that develop from one original problem and checking answers for reasonability
7	Rewriting Formulas	Solving for variables with more than one unknown, converting Celsius to Fahrenheit and vice versa, isolating variables, multiplying by reciprocals
8	Solving & Graphing	Definition and examples of ordered pairs, x and y axes, and the coordinate plane, students write equations from information on grids, positive and negative slope
9	Properties of Inequality	Rules and properties of inequalities, review of divisibility and multiplication properties
10	Inequalities	Relating inequalities to variables, intersection and union, examples of solving and graphing inequalities
11	Absolute Value Equations	Review of absolute values, determining the absolute values as related to equations, comparing absolute values as solutions to equations, checking answers for reasonableness
12	Absolute Value Inequality	Examples of positive and negative numbers in inequalities, inequalities having no solution
13	Problem Solving 2	Converting words in problems into symbols, converting answers to similar terms, various problem solving examples and strategies
14	Relations & Functions	Review of coordinate plane, quadrants, identifying origin, abscissa, ordinate, domain, range, and function, representing relations in graphs
15	Graph Linear Functions	Defining linear equations, rise, run, slope, writing linear equations in standard forms, graphs as linear functions, constant functions, x and y intercepts
16	Slope of a Line	Identification of positive, negative, zero, and undefined slopes, rise run, relating slope to graphs
17	Graph Linear Inequalities	Half planes and boundaries; writing equations and graphing in slope-intercept form, double checking linear equality graphs
18	Parallel & Perpendicular	Defining and graphing parallel and perpendicular lines on the coordinate plane, solving for parallel lines from points and slope, negative reciprocals as slopes
19	Identify Linear Equations	Difference of slop-intercept form and standard form for linear equations, determining when to use point-slope, slope-intercept, x-intercept, or y-intercept to graph linear equations, review of relations and functions
20	Problem Solving 3	Identifying relationships between variables, checking answers for reasonableness, using equations to solve problems, using charts or other visual tools as aids in solving problems
21	Direct Variation	Definition of direct variations and examples of graphs of direct variations,

		proportionality constants, means as a product of extremes, using proportions to solve problems
22	Graphing Equation Systems	Characteristics of intersecting, coinciding, and parallel planes and systems of equations for each, comparing equations that have the same slope, different slope, and different intercepts
23	Graphing Systems	Solving equations by graphing intersecting, coinciding, and parallel lines in planes, equations with infinite solutions, equations that have no solution
24	Addition & Subtraction	Solving linear systems by addition and substitution, comparing solutions to problems worked using both methods, practicing using linear equations to solve everyday problems, hints for evaluating problems to find the best way to solve
25	Solving Inequalities	Illustrating inequalities with graphs and using them to find solutions, the effect of absolute value on graphs, adding and subtracting numbers inside and outside absolute value symbols
26	Linear Progamming	Identifying variables, various constraints, and feasible regions in graphs, determining maximum and minimum values within feasible regions, the importance of linear programming as it relates to various careers
27	Three-Variable Equations	Using matrices, Cramer's rule, and/or addition to solve equations with three variables, graphing ordered triples, three-dimensional thinking in solving problems
28	Data in Matrices	Identifying and labeling data in matrices, performing operations using matrices, dimensions of matrices
29	Matrix Multiplication	Checking the dimensions of matrices before multiplication, products of matrices, step-by-step examples of multiplying matrices
30	Size and Reflections	Changes in size or magnitude and scale factor, examples using matrices in everyday life situations, coordinates of reflected images, graphing reflections
31	Transformation	Definition of transformation, formula, point, and matrix transformations, commutative, associative, and identity properties with matrix multiplication, closed sets
32	Rotation	Definition and examples of rotation, relating rotation to angles, negative and positive magnitude, algebraic formulas for rotation, finding the images of rotations
33	Matrix Addition	Discussions of rules of matrix addition and subtraction of elements, addition properties in matrices, adding three matrices, multiplying elements in matrices, subtracting matrices, using matrices to solve problems in everyday life
34	Exponents	How to utilize exponents as a shortcut method when multiplying variables and simplifying fractions
35	Polynomial Types	Definition and examples of monomials, binomials and polynomials, examples of like and unlike terms, determining the degree of polynomials
36	Polynomial Operations	Graphing and factoring quadratic trinomials, linear terms, ascending and decreasing order of polynomial
37	Factoring Quadratics	Graphing and factoring quadratic trinomials, linear terms, ascending and decreasing order of polynomials
38	Polynomial Equations	Solving problems using polynomials equations, 5-step approach to solving problems, formulas computations for solving problems
39	Negative Exponents	Review of exponents and their uses, zero as an exponent, negative exponents, simplifying problem using positive and negative exponents
40	Scientific Notation	Definition and examples of scientific notation, using negative and positive exponents, converting expressions from decimal form to scientific notation, significant digits
41	Rational Operations 1	Common denominators, finding higher variables, step by step factoring and

		solving, adding subtracting, rationals by simplifying
42	Rational Operations 2	Products of rational expressions, factoring numerators, and denominators of polynomials solving problems using rational expressions to solve practical problems
43	Simplifying Rationals	Formula for quotient of 2 polynomial, factoring polynomials review of ACF, quadratic trinomials, perfect squares and difference of squares
44	Complex Rationals	Definition and examples of complex rationals using shortcuts to simplify and solve complex rationals