

ALGEBRA I, PART I
GRADE LEVELS 8-10

#	Lesson	Lesson Content
1	Expressions & Equations	Students identify variables, numerical expressions, algebraic expressions and equations, coefficients and constants. Students evaluate algebraic expressions and calculate numerical expressions and identify open equations.
2	Exponents & Factors	Students evaluate expressions with exponents and expressions with repeated factors in exponential form. Students identify base, exponent, and use zero as exponent. Students write numbers in exponential form.
3	Properties	Identification and examples of commutative properties of addition and multiplication, identity properties of addition and multiplication, associative properties of addition and multiplication, and distributive property of multiplication over addition.
4	Order of Operations	Students use standard and scientific calculators to perform operations and compare answers. Students identify order of operations and practice simplifying expressions using order of operations.
5	Number & Sets	Identification and examples of whole numbers, integers, rational numbers, real numbers, odd and even numbers, and the number line. Students use set notation and Venn diagrams to answer questions and solve problems. Students identify intersection and union of sets, empty sets, subsets, natural numbers, and positive and negative numbers.
6	Absolute Values	Students identify absolute value and use number lines to find opposites. Students simplify and evaluate expressions with absolute values and solve for variables.
7	Problem Solving 1	Apply algebra to real world problems. Introduction of steps to solve word problems, students write let statements and use labeled diagrams as let statements. Students identify known information to solve problem.
8	Adding Real Numbers	Students use the number line to add real numbers (positive and negative). Review of additive identity and opposites. Students use additive inverse, the addition property of zero, addition property of opposites, and opposite of opposites properties to solve problems.
9	Subtracting Real Numbers	Students subtract real numbers; simplify expressions that include both sums and differences. Introduction of algebraic definition of subtraction. Students rewrite and simplify problems and evaluate expressions with given values.
10	Distributive Property	Students use distributive property to simplify expressions. Comparison of solving problems by using the distributive property and by using order of operations.
11	Like Terms	Identification and examples of like terms and solving expressions by collecting like terms. Students identify single numbers, numbers containing products of variables, and similar terms.
12	Multiplying Real Numbers	Students multiply positive and negative numbers, negative and negative numbers, multiply by zero, and use reciprocals to solve problems. Students discover products of problems containing both odd and even numbers of negatives.
13	Dividing Real Numbers	Division of real numbers by using multiplication of reciprocals. Introduction of rules for dividing positive and negative numbers. Using zero in division.
14	Evaluating Expressions	Students evaluate expressions using order of operations, distributive property, addition, subtraction, multiplication, and division of real numbers and solving for unknowns.
15	From Words to Equations	Students use words to write equations. Students identify terms used in equations and use alternative methods to solve problems.
16	Properties of Equality 1	Students solve problems using addition property of equality, equivalent equations, and isolating variables by using additive inverses. Students choose operations to solve for variables.
17	Solving Equations 1	Students use addition property of equality and inverse operations to solve problems and compare results. Students check work by substituting values for variables.
18	Properties of Equality 2	Students solve equations using multiplicative property of equality to isolate both positive and negative variables. Students solve problems using inverse operations and choose the operation to isolate variables and solve problems.

19	Solving Equations 2	Students solve equations using multiplication and division of constants and check solutions by collecting like terms.
20	Properties of Equality 3	Students solve equations involving multiple operations. Review of steps for solving equations. Importance of balance in equations.
21	Eliminating Fractions	Introduction to new concept of eliminating fractions from equations to simplify problems. Students examine both traditional and fraction elimination methods to solve equations and compare results. Students determine lowest common denominators and write equivalent equations.
22	Solving Word Problems	Students solve equations using addition, subtraction, multiplication, and division, parentheses, and fractions. Students find correct information needed to solve problems. Importance of relative value in solving problems.
23	Review Test 1	Test covering concepts and problems taught in previous lessons.
24	The Coordinate Plane	Identification and examples of x and y-axes, quadrants, origin, ordered pairs, x and y coordinates, abscissa and ordinates. Students locate points on a plane.
25	Linear Equations	Definition and examples of linear equations. Students determine if an ordered pair is a solution to an equation. Determining if an equation is linear.
26	Graphing with the T-table	Given linear equations, students determine multiple solutions and graph equations. T-tables. Introduction of steps for determining solutions.
27	The x and y Intercepts	Students locate x and y intercepts for linear equations from graphs and from equations. Students graph by determining x and y intercepts. Graphing with constants.
28	Slope of a Line	Definition and examples of positive, negative, and zero slopes. Given 2 points in a line, students find slope. Students find slope of line when line is graphed on a coordinate plane. Definition and examples of positive and negative rise and run, importance of order of graphing points.
29	Slope-Intercept Equations	Slope-intercept form of linear equations. Students rewrite linear equations in slope-intercept form and use slope-intercept equations to solve problems. Given 2 points on a line, students find equation.
30	Fitting Equations to Data	Students study and identify mathematical relationships between 2 variables as used in real world situations. Students find equations of a line that model given data. Identification and examples of dependent and independent events. Use linear equations to make predictions.
31	Rules of Exponents	Multiplication and division in exponential form. Students determine powers of products and quotients. Multiplying and dividing powers with like bases. Students identify patterns in exponents and express numbers in exponential form. Rules for raising a power to a power, a product to a power, and a quotient to a power.
32	Polynomial Types	Identification and examples of polynomials, binomials, and trinomials. Students determine degree of terms and degree of polynomials and write polynomials in descending order.
33	Polynomial Operations 1	Finding opposites of polynomials. Students add and subtract polynomials by collecting like terms and by inverse operations.
34	Polynomial Operations 2	Multiplying and dividing monomials by using properties of rational numbers and properties of exponents.
35	Scientific Notation	Students convert numbers in scientific form to standard form and vice versa. Students use scientific notation in multiplication and division. Relating decimals to scientific notation in positive and negative numbers.
36	Polynomial Operations 3	Students use the distributive property to multiply polynomials by using rules of multiplying variables with exponents.
37	Polynomial Operations 4	Using the FOIL method for multiplying a binomial by a binomial. Relating the distributive property to polynomial multiplication. Students multiply binomials by trinomials and arrange polynomials in descending order.
38	Equations & Polynomials	Students use polynomials to solve word equations. Review of guidelines for solving word problems.

39	Factoring Out Monomials	Guidelines for factoring polynomials by determining greatest common factors. Factoring monomials from polynomials.
40	Difference of Squares	Review guidelines for factoring polynomials. Importance of number of terms in factors. Determining square terms. Factoring binomials. Determining difference of squares. Students choose terms that are difference of squares.
41	Trinomial Squares	Students factor trinomials by factoring out monomials. Identification and traits of trinomial squares. Patterns in trinomial factoring. Students write trinomials in factored form.
42	Factoring Trinomials	Factoring trinomials that are not square. Quadratic trinomials with positive or negative constants. Factoring quadratic trinomials with coefficient integers other than one.
43	Factoring by Grouping	Rules for factoring polynomials with more than three terms by grouping. Students use distributive property to factor polynomials and check work.
44	Methods of Factoring	Students determine steps to take in factoring and solve problems by factoring polynomials in descending order.
45	Solving by Factoring	Identification and examples of quadratic equations. Solving quadratic equations by factoring. Zero product rule in factoring.
46	Factoring Word Problems	Students solve word problems by writing and factoring quadratic equations. Students identify viable solutions in polynomial equations.
47	Comprehensive Exam	Comprehensive test covering content of entire course.