

Integrated Algebra Sequence

1. Real numbers and Operations - Review
 - a. Order of Operations
 - b. Advanced operations:
 - i. Absolute value
 - ii. Square roots
 - c. Evaluation of an expressions with one and multiple variables
 - d. Real numbers and the number line
 - e. Properties of real Numbers
2. Solving linear Equations
 - a. Combining like terms
 - b. Linear equations with variables on both sides
 - c. Distributive Property
 - d. Graphing solutions to linear equations in one variable
 - e. Solving literal Equations
 - f. Linear word problems in one variable (less than, more than.. etc)
 - g. Consecutive integer word problems (easy – no polynomial multiplication)
3. Solving Linear Inequalities in one variable
 - a. Set & interval notation
 - b. Graphing Inequalities in one variable
 - c. Inequality word problems
4. Functions vs. relations
5. Coordinate Plane and Linear Graphs
 - a. Interpretation of graphs (i.e. distance vs. time)
 - b. Slope as rate of change
 - c. X and Y intercepts
 - d. Writing and graphing linear equations
 - i. Using x- and y- intercepts
 - ii. In slope-intercept form
 - iii. In Standard form
 - iv. In point-slope form
 - e. Writing linear equations using a set of data
6. Parallel and Perpendicular Lines
 - a. Determine whether lines are parallel
 - b. Determine whether lines are perpendicular
 - c. Write the equation of parallel and perpendicular lines
7. Horizontal and Vertical Lines

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8. Modeling real world situations with linear graphs
9. Graphing Linear inequalities in two variables
10. Scatter Plots and Lines of best fit
 - a. Correlation coefficient
11. Systems of Linear Equations
 - a. Solving Graphically
 - b. Solving with Substitution
 - c. Solving with Elimination
 - d. Word Problems using linear Systems
 - e. Systems of Linear inequalities
12. Operations with Exponential Expressions
 - a. Addition/subtraction/multiplication/division
 - b. Zero and negative exponents
13. Scientific Notation
 - a. Operations with numbers in Scientific notation
14. Irrational Numbers
 - a. The use of the radical sign
 - b. Simplest radical form
 - c. Addition/subtraction
 - d. Rationalize the denominator
15. Operations with Polynomials
 - a. Adding polynomials
 - b. Subtracting polynomials
 - c. Multiplying polynomials
 - d. Dividing monomials
 - e. Dividing polynomials by a monomial
16. Ratio, Proportion, Percent
 - a. Ratios, rates
 - b. Proportions as equivalent ratios
 - c. Solving verbal problems using ratios
 - d. Direct variation
 - e. Percent as a proportion
 - f. Percent as a decimal
 - g. Percent Increase and decrease
 - h. Relative Error
17. Problem Solving
 - a. Arithmetic Problems with coins, rate, and distance
 - b. Algebraic problems coins, rate, and distance
 - c. Conversion problems

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18. Factoring

- a. Greatest Common Factor
- b. Factoring the difference of two perfect squares
- c. Factoring quadratic trinomials with leading coefficient = 1
- d. Factoring quadratic trinomials with leading coefficient $\neq 1$
- e. Perfect Square Trinomials
- f. Factoring Completely

19. Graphing Quadratic Functions

- a. Properties of a the graph of quadratic function
 - i. Vertex
 - ii. Axis of symmetry
- b. Graphing a quadratic function with a calculator
- c. Graphing a quadratic function without a calculator
 - i. Standard form
 - ii. Vertex form

20. Solving Quadratic Functions

- a. Finding roots/zeros/solutions
- b. Graphically
- c. Algebraically by factoring
 - i. Zero Product Property

21. Applications of Quadratic functions

- a. Solving algebraic proportions with one variable that result in quadratic equations
- b. Solving consecutive integer problems using quadratic equations
- c. Word problems involving quadratic equations
- d. Interpreting quadratic graphs of real world situations

22. Linear – Quadratic Systems of Equations

- a. Solving graphically and algebraically
- b. Solving with Calculator

23. Absolute Value Function

- a. Graphing
- b. Similarities and differences to quadratic functions

24. Rational Expressions:

- a. Writing equivalent rational expressions
- b. Operations on algebraic fractions containing monomial denominators
- c. Reducing fractions containing polynomials
- d. Multiplying and dividing fractions containing polynomials
- e. Adding/Subtracting fractions with polynomial denominators
- f. Solving rational expressions

25. Polygons

- a. Area and perimeter
- b. Area formulas for Triangles, Circles, quadrilaterals

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- c. Area of the bounded region (easy)
- d. Area of polygons on a graph
- e. Volume of prisms, cylinders, and spheres
- f. Similar figures
- g. Error in measurement

26. Pythagorean Theorem and Trig

- a. Solving for a side using Pythagorean Theorem
- b. Identifying relevant sides of a right triangle
- c. Trig and the calculator
- d. Solving for missing sides using trig
- e. Solving for missing angles using trig
- f. Applied trig word problems

27. Statistics

- a. Mean, Median and Mode
- b. Exercises with the mean given unknown numbers
- c. The 5 number summary
- d. Box-n-Whisker Plots
- e. Percentiles
- f. Frequency Histograms
- g. Cumulative Frequency Histograms
- h. Bivariate Data analysis

28. Sets

- a. Introduction to sets
- b. Interval notation and infinite sets
- c. Subset, empty set, complement
- d. Union and intersection
- e. Venn diagrams
- f. Fundamental counting principal
- g. Permutations and counting
- h. Permutations and repetition

29. Probability

- a. Basic probability concepts
- b. Independent events
- c. Dependent events
- d. Mutually exclusive events
- e. Non-mutually exclusive events

30. Exponential Growth and Decay

- a. Analyze and solve problems that involve exponential growth and decay
- b. Expressions, equations and word problems
- c. Graph exponential growth and decay