

Algebra 1 (High School Math)

Course Curriculum (MPSL Academy)

Each Session: 1 hour 15 minutes

(First 10 min review of last week topics/HW, 50 min new topics, 15 min critical thinking Qs)

1. Solving Linear Equations

- Solving Simple Equations
- Solving Multi-Step Equations
- Solving Equations with Variables on Both Sides
- Solving Absolute Value Equations
- Rewriting Equations and Formulas

2. Solving Linear Inequalities

- Writing and Graphing Inequalities
- Solving Inequalities Using Addition or Subtraction
- Solving Inequalities Using Multiplication or Division
- Solving Multi-Step Inequalities
- Solving Compound Inequalities
- Solving Absolute Value Inequalities

3. Graphing Linear Functions

- Functions
- Linear Functions
- Function Notation
- Graphing Linear Equations in Standard Form
- Graphing Linear Equations in Slope-Intercept Form
- Transformations of Graphs of Linear Functions
- Graphing Absolute Value Functions
- Word Problems

4. Writing Linear Functions

- Writing Equations in Slope-Intercept Form
- Writing Equations in Point-Slope Form
- Writing Equations of Parallel and Perpendicular Lines
- Scatter Plots and Lines of Fit
- Analyzing Lines of Fit
- Arithmetic Sequences & Piecewise Functions

5. Solving Systems of Linear Equations

- Solving Systems of Linear Equations by Graphing
- Solving Systems of Linear Equations by Substitution
- Solving Systems of Linear Equations by Elimination
- Solving Special Systems of Linear Equations
- Graphing Linear Inequalities in Two Variables
- Systems of Linear Inequalities

6. Exponential Functions and Sequences

- Properties of Exponents
- Radicals and Rational Exponents
- Exponential Functions
- Exponential Growth and Decay
- Solving Exponential Equations
- Geometric Sequences
- Recursively Defined Sequences

7. Polynomial Equations and Factoring

- Adding and Subtracting Polynomials
- Multiplying Polynomials
- Special Products of Polynomials

- Solving Polynomial Equations in Factored Form
- Factoring $x^2 + bx + c$
- Factoring $ax^2 + bx + c$
- Factoring Special Products
- Factoring Polynomials Completely

8. Graphing Quadratic Functions

- Graphing $f(x) = ax^2$
- Graphing $f(x) = ax^2 + c$
- Graphing $f(x) = ax^2 + bx + c$
- Graphing $f(x) = a(x - h)^2 + k$
- Using Intercept Form
- Comparing Linear, Exponential, and Quadratic Functions

9. Solving Quadratic Equations

- Properties of Radicals
- Solving Quadratic Equations by Graphing
- Solving Quadratic Equations Using Square Roots
- Solving Quadratic Equations by Completing the Square
- Solving Quadratic Equations Using the Quadratic Formula
- Solving Nonlinear Systems of Equations

10. Radical Functions and Equations

- Graphing Square Root Functions
- Graphing Cube Root Functions
- Solving Radical Equations
- Inverse of a Function
- Word Problems

11. Data Analysis and Displays

- Measures of Center and Variation
- Box-and-Whisker Plots
- Shapes of Distributions
- Two-Way Tables
- Choosing a Data Display

16. ADVANCE TOPICS

- ADVANCE FACTORING EXPRESSIONS
- AREA OF POLYGONS – WORD PROBLEMS
- ADVANCE MONOMIALS & TRINOMIALS
- POLYNOMIALS FUNCTIONS - ADVANCE
- RELATIONS AND FUNCTIONS
- RADICAL & QUADRATIC EQUATIONS
- RATIOS & PROPORTIONS
- RATIONAL EXPRESSIONS
- QUADRATICS
- EXPONENTIAL & LOGARITHMIC FUNCTIONS
- MATH MODELING
- INTERFERENCES & CONCLUSIONS FROM DATA

NOTE: STUDENTS WILL PARTICIPATE IN VARIOUS STATE & NATIONAL LEVEL MATH COMPETITIONS LIKE MATHCOUNTS, MATH OLYMPIAD, MATH KANGAROO, CONTINENTAL MATH LEAGUE AND SO ON. OUR GOAL IS TO BUILD CONFIDENCE IN MATH IN AN EFFICIENT WAY RESULTING IN IMPROVING SCORES IN SCHOOL EXAM & SUCCEED IN NATIONAL/INTERNATIONAL MATH COMPETITIONS.