M7/8 (Math for Grade 7/8)

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. Equations

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

2. Transformations

- Translations, Reflections, Rotations
- Congruent Figures, Dilations, Similar Figures
- Perimeters and Areas of Similar Figures

3. Angles and Triangles

- Parallel Lines and Transversals
- Angles of Triangles & Polygons
- Using Similar Triangles

4. Graphing and Writing Linear Equations

- Graphing Linear Equations and Slope of a Line
- Graphing Proportional Relationships
- Graphing Linear Equations in Slope-Intercept Form
- Graphing Linear Equations in Standard Form
- Writing Equations in Slope-Intercept Form
- Writing Equations in Point-Slope Form

5. 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

6. Data Analysis and Displays

- Scatter Plots
- Lines of Fit
- Two-Way Tables
- Choosing a Data Display

7. Functions

- Relations and Functions
- Representations of Functions
- Linear Functions
- Comparing Linear and Nonlinear Functions
- Analyzing and Sketching Graphs
- Word Problems

8. Exponents and Scientific Notation

- Exponents
- Product of Powers Property
- Quotient of Powers Property
- Zero and Negative Exponents
- Estimating Quantities
- Scientific Notation
- Operations in Scientific Notation
- Word Problems

9. Real Numbers and the Pythagorean Theorem

- Finding Square Roots
- The Pythagorean Theorem
- Finding Cube Roots
- Rational Numbers
- Irrational Numbers
- The Converse of the Pythagorean Theorem

10. Volume and Similar Solids

- Volumes of Cylinders
- Volumes of Cones
- Volumes of Spheres
- Surface Areas and Volumes of Similar Solids

11. Equations and Inequalities

- Solving Equations Using Addition or Subtraction
- Solving Equations Using Multiplication or Division
- Solving Two-Step Equations
- Writing and Graphing Inequalities
- Solving Inequalities Using Addition or Subtraction
- Solving Inequalities Using Multiplication or Division
- Solving Two-Step Inequalities

12. Probability

- Probability
- Experimental and Theoretical Probability
- Compound Events
- Simulations
- Word Problems

13. Statistics

- Samples and Populations
- Using Random Samples to Describe Populations
- Comparing Populations
- Using Random Samples to Compare Populations

14. Geometric Shapes and Angles

- Circles and Circumference
- Areas of Circles
- Perimeters and Areas of Composite Figures
- Constructing Polygons
- Finding Unknown Angle Measures

15. Surface Area and Volume

- Surface Areas of Prisms
- Surface Areas of Cylinders
- Surface Areas of Pyramids
- Volumes of Prisms
- Volumes of Pyramids
- Cross Sections of Three-Dimensional Figures

16. Advance Topics

- Advance Factoring Expressions
- Area of Polygons
- Intro To Monomials & Trinomials
- Overview OF Polynomials
- Relations And Functions
- Radical & Quadratic Equations
- Ratios & Proportions
- Rational Expressions

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.