Middle School Math

This course covers most topics of Middle School Math and it is designed for current 6^{th} – 8^{th} graders. We will learn/review these topics at a very fast pace. The basic concepts, operations and rules will be taught in the class for those who are not familiar with these topics, and efficient problem solving strategies for those who are already familiar with them. The lessons in the first semester will prepare students for the 5 meets of Minnesota Junior High Math Leagues (7^{th} and 8^{th} grade), week 1– 4 of the second semester for Math Counts of School Round, week 5 – 7 of the second semester for UMTYMP (University of Minnesota Talented Youth Mathematics Program) qualification exams (Quantitative Comparisons are also in SAT and ACT). The last 8 lessons will introduce Elementary Geometry in a formal way -- proofs and mathematical reasoning, which is typically not taught in regular math classes of middle school.

First Semester

Week 1 – 3

- Fractions and decimal
- Prime and composite numbers, LCM, LCD, GCF
- Divisibility Rules
- Metric system, English system
- Operations with integers and fractional numbers
- Converting written statements to algebraic statements

Week 4 – 6

- Absolute value
- Exponents, Scientific Notation
- Factorials
- Midpoint and other distances on a number line
- Sequences
- Solving linear equations

Week 7 – 10

- Logic problems
- Distance equals rate times time problems
- Perimeter of polygons, circles, sectors
- Ratios and proportions
- Percent applications
- Midterm exam
- Creating linear equations
- Writing linear equations in many forms

Week 11 -13

Solving inequalities, graphing inequalities on a number line
Similar figures with applications of similarity
Pythagorean Theorem
Square roots, simplifying radicals
Surface area of prisms, pyramids, and cylinders
Graphs of linear equations
Slopes and intercepts of lines

Week 14 – 16

Operations with polynomials (+ - x /)
Probability and Statistics (Mean, median, mode)
Systems of linear equations
Stem and leaf plots
Box and Whisker Plots
Volume of prisms, pyramids, cones, cylinders, spheres

Week 17

Final exam

Second Semester

Week 1 – 4

Any topics covered in Math Counts of School Round but not covered by our lessons in the first semester

Week 5 - 7

Quantitative Comparisons

Week 8

Midterm exam

Week 9 – 16

Introduction to Geometry

Week 17

Final exam