OVERVIEW:

1. Number Theory
2. Operations with Fractions
3. Decimals
4. Introduction to Rational Numbers
5. Geometry
7. Integers

OUTLINE:

Notes: Each class is 50 minutes and meets 4 times per week.
Time frames are approximate and include assessments.
Asterisks (*) indicate optional topics.

Quarter 1

UNIT 1: NUMBER THEORY

Approx. 15 classes

1. Review Number Line using Geometer’s Sketchpad (collaboration with English/History)
2. Review Number Properties.
3. Review and apply divisibility rules.
4. Find multiples and factors of counting/natural numbers using the “list method”,
   prime factorization and number sense to find the GCF and LCM of a set of
   numbers.
5. Determine if a number is prime or composite.
6. Write a composite number as the product of its prime factors in exponential
   notation.
7. Solve story problems related to the above topics.
UNIT 2: OPERATIONS WITH FRACTIONS

1. Estimate sums, differences, products and quotients of fractions.
2. Add and subtract fractions and mixed numbers.
3. Multiply fractions and mixed numbers.
4. Divide fractions and mixed numbers.
5. Order of Operations with fractions
6. Solve story problems related to the above topics.

Quarter 2

UNIT 3: DECIMALS

1. Estimate using rounding and using compatible numbers.
2. Compare and order decimal numbers.
3. Round a decimal to a given place.
4. Add and subtract decimals using the properties of addition with both mental math and paper/pencil.
5. Multiply decimals using the properties of multiplication with both mental math and paper/pencil.
6. Divide decimals.
7. Analyze and solve multiple-step story problems involving operations with decimals.
8. Multiply and divide a decimal by a power of ten.
10. Optional: Convert between metric units of measure.

UNIT 4: INTRODUCTION TO RATIONAL NUMBERS

1. Compare and order fractions.
2. Write mixed numbers and improper fractions.
3. Write ratios and use them to compare quantities.
4. Find unit rates and unit costs using proportional reasoning.
5. Model percents and write percents using equivalent ratios.
6. Convert between fractions, decimals and percents.
7. Convert between fractions, decimals, and percents greater than 100% and less than 1%.
8. Find and estimate the percent of a number.
9. Find and estimate solutions to application problems involving percent.
Quarter 3

UNIT 5: GEOMETRY
Approx. 16 classes

1. Identify segments, rays, and lines.
2. Classify angles and work with pairs of angles.
3. Classify triangles and find the angle measures of triangles.
4. Classify polygons and special quadrilaterals.
5. Identify the parts of a circle.
6. Calculate the area of parallelograms.
7. Calculate the area of a triangle.
8. Analyze and construct circle graphs both by hand and with Excel.
9. Optional: Identify angles formed by transversals and parallel lines.
11. 6th grade simulation activity of Silk Road (collaboration with History, incorporating math, geography, and History skills to complete trade and travel-related activities).
12. Optional: Identify the relationships of angles formed by transversals and parallel lines.
13. Optional: Identify congruent figures and use them to find missing measures.

UNIT 6: STATISTICS: ANALYZING AND REPRESENTING DATA
Approx. 20 classes

1. Represent data using frequency tables, line plots, and histograms.
2. Interpret spreadsheets, double bar graphs, and double line graphs.
4. Interpret and display data using a Venn diagram.
5. Create a spreadsheet in Excel.
6. Create a line graph/double line graph from a spreadsheet data table using the chart function in Excel.
7. Use measures of central tendency to analyze data.
8. Optional: Graphing coordinates in a coordinate plane.
Quarter 4

UNIT 7: ORDER OF OPERATIONS AND INTEGERS  
Approx. 16 classes

1. Evaluate numerical expressions using properties of addition and multiplication.
2. Use distributive property to compute products mentally.
3. Use absolute value to compare and order integers.
4. Graph integers on number lines.
5. Add and subtract integers.
6. Multiply and divide integers.
7. Analyze and solve one-step story problems involving operations with integers.
8. Use order of operations to simplify expressions containing integers.
9. Simplify expressions containing positive exponents and integers.
10. Evaluate simple variable expressions by substituting in values.
11. Graphing integers in the coordinate plane.

UNIT 8: SILK ROAD PROJECT  
Approx. 8 classes

Interdisciplinary unit with history and music. The project is a culmination of many of the skills and concepts from both math and history. The mathematics will specifically come in when figuring out what traveling along the Silk Road would be like. Students use technology to map a route and are challenged with incorporating some of the factors that impacted travel time.

UNIT 9: PROBLEM SOLVING UNIT  
Approx. 8 classes

We made a packet of CML and Math Olympiad problems where students worked in pairs or small groups and presented certain problems and strategies as experts to the class. The focus for these two weeks during class and homework was only on these challenging problems.