Math 8 (2 of 2)

Course Description:

In this course, students work with properties of integer exponents to rewrite and evaluate expressions and perform operations on numbers in scientific notation. They learn to solve systems of two linear equations by graphing and algebraic methods. Then they learn how to represent and interpret bivariate data in scatter plots and tables. The students also work with geometric concepts which include using and performing rigid and similarity transformations, defining congruence and similarity with transformations, using and proving relationships between angles, finding lengths using the Pythagorean Theorem, and solving problems related to volumes of circular solids.

Course Objectives:

- Evaluate and rewrite expressions that involve integer exponents.
- Compare, interpret, and perform calculations with numbers that are written in scientific notation.
- Solve mathematical and real-world problems that involve systems of two linear equations.
- Represent and interpret bivariate data using scatter plots and two-way frequency tables.
- Identify and use lines to model and interpret data presented in scatter plots.
- Describe and identify properties of transformations.
- Identify transformations and transform figures in the coordinate plane.
- Define congruence and similarity in relation to transformations.
- Explain and use geometric relationships in informal proofs and problem-solving.
- Solve problems using the Pythagorean theorem and its converse.
- Solve problems using the volumes of cylinders, cones, and spheres.

Required Materials:

In course.

Course Overview:

Unit 1: Exponents

- Direct Instruction Activities (Lessons 1-5)
    - Key Terms
    - Texts (lesson titles): Integer Exponents, Zero Exponents and the Product of Powers Rule, The Quotient of Powers and Power of Powers Rules, Very Large and Very Small Numbers, Operations with Scientific Notation
    - Step-by-Step Example and Practice Problems
    - Workbooks
- Checkpoint (Lessons 1-4)
- Unit 1 Exam (Lesson 5)

Unit 2: Systems of Equations

- Direct Instruction Activities (Lessons 6-10)

- Key Terms
- Texts (lesson titles): Introduction to Systems of Equations, The Number of Solutions, Solve Systems by Substitution, Solve Systems by Elimination, Models for Systems of Equations
- Step-by-Step Example and Practice Problems
- Workbooks

- Checkpoint (Lessons 6-9)
- Unit 2 Exam (Lesson 10)

Unit 3: Data with Two Variables

- Direct Instruction Activities (Lessons 11-14)
  - Key Terms
  - Texts (lesson titles): Bivariate Data and Scatter Plots, The Line of Best Fit, Frequency Tables, Interpret Frequency Tables
  - Step-by-Step Example and Practice Problems
  - Workbooks
- Checkpoint (Lessons 11-13)
- Unit 3 Exam (Lesson 14)

Unit 4: Rigid Transformations

- Direct Instruction Activities (Lessons 15-19)
  - Key Terms
  - Texts (lesson titles): Translations, Reflections, Rotations, Transformations of Angles, Transformations of Parallel Lines
  - Step-by-Step Example and Practice Problems
  - Workbooks
- Checkpoint (Lessons 15-18)
- Project (Lessons 15-17)
- Unit 4 Exam (Lesson 19)

Unit 5: Relationships in Geometric Figures

- Direct Instruction Activities (Lessons 20-24)
  - Key Terms

- Texts (lesson titles): Congruence, Dilations, Similarity, Angle Relationships in Triangles, Angle Pair Relationships and Parallel Lines
- Step-by-Step Example Problems
- Workbooks

- Checkpoint (Lessons 20-23)
- Unit 5 Exam (Lesson 24)

Unit 6: Length and Volume

- Direct Instruction Activities (Lessons 25-28)
  - Key Terms
  - Texts (lesson titles): Investigate the Pythagorean Theorem, Cylinders, Cones, Spheres
  - Step-by-Step Example and Practice Problems
  - Workbooks
- Discussion (Lesson 25)
- Checkpoint (Lessons 25-27)
- Unit 6 Exam (Lesson 28)
- Unit 1-Unit 6 Reviews (Lesson 29)
- Course Final Exam (Lesson 30)