Course Description:

In this course, students work with rational and irrational numbers and perform operations with them. They also focus on algebra-related topics, including solving equations and learning to identify and describe the special relationships between two variables, also known as functions. Following this, they discover the various ways that they can represent these special relationships.

Course Objectives:

- Rewrite numbers and expressions using properties and operations.
- Identify and classify rational and irrational numbers.
- Write and solve equations in one or two variables and describe the solutions.
- Represent, interpret, and compare proportional relationships given in different forms including graphs, tables, and equations.
- Describe slope and derive equations for linear situations using similar triangles.
- Represent, interpret, and compare linear relationships in different forms, including graphs and equations.
- Graph and compare irrational numbers and expressions.
- Define, identify, describe, evaluate, and compare functions.

Required Materials:

In Course.

Course Overview:

Unit 1: Rational Numbers

- Direct Instruction Activities (Lessons 1-5)
    - Key Terms
    - Text and Videos: Classifying Numbers; Operations with Rational Numbers; Equivalent Forms of Rational Numbers; Squares and Square Roots; Cubes and Cube Roots
    - Step-by-Step Example Problems
    - Workbooks
- Checkpoint (Lessons 1-4)
- Unit 1 Exam (Lesson 5)

Unit 2: Exploring Irrational Numbers

- Direct Instruction Activities (Lessons 6-8)
    - Key Terms
    - Text and Videos: Irrational Numbers; Estimating Values of Irrational Numbers, Part 1; Estimating Values of Irrational Numbers, Part 2

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- Step-by-Step Example Problems
- Workbooks

- Checkpoint (Lessons 6-7)
- Unit 2 Exam (Lesson 8)

Unit 3: Working with Equations

- Direct Instruction Activities (Lessons 9-13)
  - Key Terms
  - Text and Videos: Solving One- and Two-Step Equations; Different Methods of Solving; Solving Multi-Step Equations; Number of Solutions; Equations for Situations
  - Step-by-Step Example Problems
  - Workbooks
- Discussion (Lesson 13)
- Checkpoint (Lessons 9-12)
- Unit 3 Exam (Lesson 13)

Unit 4: Visualizing Relationships

- Direct Instruction Activities (Lessons 14-19)
  - Key Terms
  - Text and Videos: Two-Dimensional Solutions; Two-Dimensional Relationships; Analyzing Graphs of Situations; Proportional Relationships; Linear Relationships; Slopes of Lines
  - Step-by-Step Example Problems
  - Workbooks
- Checkpoint (Lessons 14-18)
- Unit 4 Exam (Lesson 19)

Unit 5: Linear Equations

- Direct Instruction Activities (Lessons 20-24)
  - Key Terms
  - Text and Videos: Comparing Proportional Relationships; Slope-Intercept Form; Writing Linear Equations from Graphs and Tables; Other Ways to Write Linear Equations; Functions
  - Step-by-Step Example Problems

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- Workbooks

- Checkpoint (Lessons 20-23)
- Project (Lessons 21-23)
- Unit 5 Exam (Lesson 24)

Unit 6: Exploring Linear Functions

- Direct Instruction Activities (Lessons 25-28)
    - Key Terms
    - Text and Videos: Linear Functions; Properties of Linear Functions; Linear vs. Nonlinear Functions; Comparing Properties of Linear Functions
    - Step-by-Step Example Problems
    - Workbooks
- Checkpoint (Lessons 25-27)
- Unit 6 Exam (Lesson 28)
- Unit 1-Unit 6 Reviews (Lesson 29)
- Course Final Exam (Lesson 30)
- Course Summary (Lesson 30)

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