Course Description:

Algebra 1 Honors (2 of 2) explores functions through different families of functions and introduces and expands on statistical concepts. Topics include: identifying functions in different forms; relating arithmetic and geometric sequences to functions; identifying key features of functions from graphs, equations, and descriptions; comparing linear, quadratic, and exponential functions; transforming functions; graphing and interpreting step functions, absolute value functions, and square root functions; measures of central tendency and spread in different data displays; and two-way relative frequencies.

Course Objectives:

- Rewrite and analyze expressions and equations in different forms.
- Identify, evaluate, and represent functions in different forms.
- Identify, interpret, and compare properties of functions given in different forms.
- Relate arithmetic and geometric sequences to functions.
- Solve problem situations using functions in different forms.
- Calculate, estimate, interpret, and compare how function values change over intervals.
- Combine and modify functions using arithmetic operations and transformations.
- Identify inverses of functions and how to find them.
- Represent and interpret data in different types of displays.
- Find, interpret, and compare statistics for data sets related to measures of center and spread of data.
- Identify and interpret relationships in data.
- Identify and interpret functions that model data, and use the functions to solve problems.
- Identify relationships in sets and use the relationships to find probabilities.

Required Materials:

In course.

Course Overview:

Unit 1: Exploring Functions

- Prepare to Learn (Lessons 1–5)

- Learn (Lessons 1–5)

  - Key Terms

  - Text: Introduction to Functions; Properties of Functions; Working with Functions; Sequences; Formulas of Sequences

  - Videos

  - Step-by-Step Example Problem(s)

- Practice: (Lessons 1–5)

- Discussion (Lessons 2 & 4)

- Checkpoint (Lessons 1–4)

QM QUALITY MATTERS

- Notes Upload (Lessons 1–5)
- Unit 1 Exam (Lesson 5)

Unit 2: More About Functions

- Prepare to Learn (Lessons 6–10)
- Learn (Lessons 6–10)
  - Key Terms
  - Text: Geometric Sequences; Exponential Functions; Growth vs. Decay; Variables in Exponents; Rate of Change
  - Videos
  - Step-by-Step Example Problem(s)
- Practice: (Lessons 6–10)
- Discussion (Lessons 7 & 9)
- Notes Upload (Lessons 6–10)
- Checkpoint (Lessons 6–9)
- Unit 2 Exam (Lesson 10)

Unit 3: Using Functions

- Prepare to Learn (Lessons 11–15)
- Learn (Lessons 11–15)
  - Key Terms
  - Text: Applying Functions; Quadratic Functions; Problem Solving with Functions; More Than One Function (or Relation); Other Types of Functions
  - Videos
  - Step-by-Step Example Problem(s)
- Practice (Lessons 11–15)
- Discussion (Lessons 12 & 14)
- Notes Upload (Lessons 11–15)
- Checkpoint (Lessons 11–14)
- Unit 3 Exam (Lesson 15)

Unit 4: Transformations of Functions

- Prepare to Learn (Lessons 16–20)

- Learn (Lessons 16–20)
  - Key Terms
  - Text: A Few More Functions; Performing Operations on Functions; Translating Functions; Dilating and Reflecting Functions; Inverse Functions
  - Videos
  - Step-by-Step Example Problem(s)
- Practice (Lessons 16–20)
- Discussion (Lessons 17 & 19)
- Notes Upload (Lessons 16–20)
- Checkpoint (Lessons 16–19)
- Unit 4 Exam (Lesson 20)

Unit 5: Data and Statistics

- Prepare to Learn (Lessons 21–25)
- Learn (Lessons 21–25)
  - Key Terms
  - Text: Obtaining Data; The Center of Data and Symmetry; The Spread of Data; Comparing Data; Two-Way Frequency Tables
  - Videos
  - Step-by-Step Example Problem(s)
- Practice (Lesson 21–25)
- Discussion (Lessons 22 & 24)
- Notes Upload (Lessons 21-25)
- Checkpoint (Lessons 21–24)
- Unit 5 Exam (Lesson 25)

Unit 6: Statistics and Probability

- Prepare to Learn (Lessons 26–29)
- Learn (Lessons 26–29)
  - Key Terms
  - Text: Fitting Functions to Data; Choosing a Good Model; Introduction to Probability; More About Probability
  - Videos

- Step-by-Step Example Problem(s)
- Practice: Lessons 26–29
- Unit 1–Unit 6 Reviews (Lesson 30)
- Discussion (Lessons 27 & 29)
- Notes Upload (Lessons 26–29)
- Checkpoint (Lessons 26–28)
- Unit 6 Exam (Lesson 29)
- Course Final Exam (Lesson 30)
- Course Summary (Lesson 30)