Algebra 2 Sem 2

1. Exponential and Logarithmic Functions
   1. Graphing Exponential Functions
      1. Instruction
         1. What are the key features of the graph of an exponential function?
      2. Assignment
         1. Practice identifying the domain and range of an exponential function.
      3. Quiz
   2. Solving Exponential Equations by Rewriting the Base
      1. Instruction
         1. How can you solve equations that have variable exponents?
      2. Assignment
         1. Practice solving exponential equations with a common base.
      3. Quiz
   3. Graphing Logarithmic Functions
      1. Instruction
         1. What methods can you use to graph the inverses of exponential functions?
      2. Assignment
         1. Identify the graph of a logarithmic function.
      3. Quiz
   4. Evaluating Logarithmic Expressions
      1. Instruction
         1. How do inverse relationships help you evaluate logarithmic expressions and solve equations?
      2. Assignment
         1. Solve problems about the Richter scale.
      3. Quiz
   5. Solving Logarithmic Equations using Technology
      1. Instruction
         1. How can you solve logarithmic equations both numerically and graphically?
      2. Assignment
         1. Practice using the change of base formula.
      3. Quiz
   6. Properties of Logarithms
      1. Instruction
         1. How can you use properties of logarithms to rewrite or evaluate logarithmic expressions?
      2. Assignment
         1. Use the product property.
      3. Quiz
   7. Solving Equations using Properties of Logarithms
      1. Instruction
         1. Can the properties of logarithms be used to solve equations?
      2. Assignment
         1. Solve logarithmic equations using the definition of a logarithm.
      3. Quiz
   8. Base e
      1. Instruction
         1. What other common bases are used for exponential and logarithmic functions?
      2. Assignment
         1. Practice graphing exponential functions in base e.
      3. Quiz
   9. Geometric Series
      1. Instruction
         1. How can you find the sum of the terms of a finite or infinite geometric sequence?
      2. Assignment
         1. Solve a geometric series problem.
      3. Quiz
   10. **Unit Test - (Must be taken in Person)**
       1. Unit Test Review
2. Statistics and Probability
   1. Designing a Study
      1. Instruction
         1. How can you collect data?
      2. Assignment
         1. Practice determining the sampling method.
      3. Quiz
   2. Representing Data
      1. Instruction
         1. How can you describe a set of data?
      2. Assignment
         1. Solve and write about graphs and reports.
      3. Quiz
   3. Standard Deviation
      1. Instruction
         1. How can you use standard deviationto represent the spread of data?
      2. Assignment
         1. Calculate the variance.
      3. Quiz
   4. Properties of Probability Distributions
      1. Instruction
         1. What are probability distributions and how are they used to solve problems?
      2. Assignment
         1. Identify the probability distribution.
      3. Quiz
   5. Expected Value
      1. Instruction
         1. How can you find the average value of a random variable?
      2. Assignment
         1. Calculate expected value.
      3. Quiz
   6. Binomial Distribution
      1. Instruction
         1. When you flip a coin n times, how many heads can you get, and how likely is each outcome?
      2. Assignment
         1. Practice Identifying a Binomial Experiment
      3. Quiz
   7. Introduction to Normal Distributions
      1. Instruction
         1. How can you describe normal distributions and use them to learn about data?
      2. Assignment
         1. Practice Interpreting Z-Scores
      3. Quiz
   8. Applications with Standard Normal Distribution
      1. Instruction
         1. How can a standard normal table be used to find any probabilities of any normally distributed data?
      2. Assignment
         1. Practice using the standard normal table.
      3. Quiz
   9. Statistical Inferences
      1. Instruction
         1. How confidently can you predict a parameter of a population, given data from a random sample?
      2. Assignment
         1. Practice making a statistical inference.
      3. Quiz
   10. Hypothesis Testing
       1. Instruction
          1. How can you test claims about a population using a sample?
       2. Assignment
          1. Practice identifying the null and alternative hypotheses for a statistical claim.
       3. Quiz
   11. **Unit Test - (Must be taken in Person)**
       1. Unit Test Review
3. Trigonometric Functions
   1. Angles in Standard Position
      1. Instruction
         1. How can we define and analyze angles using their characteristics?
      2. Assignment
         1. Identify negative angle measure.
      3. Quiz
         1. Radian Measure
      4. Instruction
         1. What is radian measure and how is it related to degree measure?
      5. Assignment
         1. Practice converting radians to degrees.
      6. Quiz
   2. Right Triangle Trigonometry
      1. Instruction
         1. How can you find unknown side lengths and angle measures of right triangles?
      2. Assignment
         1. Practice using the Pythagorean theorem.
      3. Quiz
   3. The Unit Circle
      1. Instruction
         1. Can trigonometric functions be extended to any angle measure?
      2. Assignment
         1. Identify the coordinates of points on the unit circle.
      3. Quiz
   4. Reciprocal Trigonometric Functions
      1. Instruction
         1. What are the reciprocal trigonometric functions?
      2. Assignment
         1. Practice simplifying trigonometric expressions.
      3. Quiz
   5. Evaluating the Six Trigonometric Functions
      1. Instruction
         1. How can you use the relationships among trigonometric functions to evaluate them?
      2. Assignment
         1. Practice evaluating trigonometric functions given a point on the terminal ray.
      3. Quiz
   6. Graphing Sine and Cosine
      1. Instruction
         1. Why do the graphs of the sine and cosine functions have wave shapes, and how can you change those waves?
      2. Assignment
         1. Solve and write about problems involving periodic movements and wheels.
      3. Quiz
   7. Changes in Period and Phase Shift of Sine and Cosine Functions
      1. Instruction
         1. How is a transformation of the graph related to the equation of a sine or cosine function?
      2. Assignment
         1. Practice identifying transformations from a graph.
      3. Quiz
   8. Modeling with Periodic Functions
      1. Instruction
         1. How can sine and cosine help you solve real-world problems involving cycles?
      2. Assignment
         1. Explore using a periodic function to model a rope swing.
      3. Assignment
         1. Practice identifying situations that can be modeled by a periodic function.
      4. Quiz
   9. **Unit Test - (Must be taken in Person)**
      1. Unit Test Review
4. Mathematical Modeling
   1. Linear Programming
      1. Instruction
         1. How can you find the maximum or minimum values of a function, given constraints?
      2. Assignment
         1. Choose appropriate constraints and write the objective function.
      3. Quiz
   2. Modeling with Systems
      1. Instruction
         1. How can you solve real-world problems using systems of equations?
      2. Assignment
         1. Model a linear-quadratic system of equations.
      3. Quiz
   3. Piecewise Defined Functions
      1. Instruction
         1. How do you define and analyze a function when it cannot be described by a single rule?
      2. Assignment
         1. Practice evaluating piecewise defined functions.
      3. Quiz
   4. Joint and Combined Variation
      1. Instruction
         1. How do you solve a variation problem with more than one independent variable?
      2. Assignment
         1. Identify joint variations.
      3. Quiz
   5. Transformations of Functions
      1. Instruction
         1. How are function rules and their graphs related?
      2. Assignment
         1. Identify the equation of the transformed function.
      3. Quiz
   6. Modeling with Functions
      1. Instruction
         1. How can you find the equation of a function that best models a data set?
      2. Assignment
         1. Practice identifying the type of function that best models a data set.
      3. Quiz
   7. Performance Task: Production Schemes
      1. Instruction
         1. How do piecewise functions help you model and analyze production schemes?
   8. **Unit Test - (Must be taken in Person)**
      1. Unit Test Review
5. Cumulative Exam - (Must be taken in Person)
   1. Cumulative Exam Review