Algebra 2 Sem 1

1. Relationships Between Quantities
   1. Real Numbers
      1. Instruction
         1. What are the properties of real numbers?
      2. Assignment
         1. Practice classifying real numbers.
      3. Quiz
   2. Inequalities
      1. Instruction
         1. How do you obtain the solution set for a linear inequality in one variable?
      2. Assignment
         1. Practice identifying errors in solutions.
      3. Quiz
   3. Word Problems
      1. Instruction
         1. How can problem-solving strategies be used to simplify complicated word problems?
      2. Assignment
         1. Practice solving a mixture problem.
      3. Quiz
   4. Relations and Functions
      1. Instruction
         1. How can you describe a relationship between x and y?
      2. Assignment
         1. Find the domain and range of relations.
      3. Quiz
   5. Function Operations
      1. Instruction
         1. How are operations on functions like operations on real numbers?
      2. Assignment
         1. Practice adding and subtracting functions.
      3. Quiz
   6. Composition of Functions
      1. Instruction
         1. How can you write a new function that uses the output of one function as the input of another?
      2. Assignment
         1. Evaluate a composite function from a table.
      3. Quiz
   7. Symmetry
      1. Instruction
         1. How can you tell if a relation has symmetry?
      2. Assignment
         1. Recognize symmetry in functions.
      3. Quiz
   8. Function Inverses
      1. Instruction
         1. What does it look like when one relation “undoes” another?
      2. Assignment
         1. Practice function inverses.
      3. Quiz
   9. Rate of Change
      1. Instruction
         1. How can you measure the way one variable changes in relation to another?
      2. Assignment
         1. Solve and write about rate of change problems involving water slides.
      3. Quiz
   10. Performance Task: Going on a Round Trip
       1. Instruction
          1. Why can't rates be added the same way as times or distances?
   11. **Unit Test - (Must be taken in Person)**
       1. Unit Test Review
2. Quadratics and Complex Numbers
   1. Complex Numbers
      1. Instruction
         1. Are all numbers “real” numbers?
      2. Assignment
         1. Simplify powers of i.
      3. Quiz
   2. Operations with Complex Numbers
      1. Instruction
         1. How is operating with complex numbers similar to or different from operating with real numbers?
      2. Assignment
         1. Practice using properties of complex numbers.
      3. Quiz
   3. Completing The Square
      1. Instruction
         1. How can you combine factoring and the square root property of equality to solve a quadratic equation?
      2. Assignment
         1. Identify perfect-square trinomials.
      3. Quiz
   4. The Quadratic Formula
      1. Instruction
         1. How can a formula be used to solve a quadratic equation or to predict the nature of the solutions?
      2. Assignment
         1. Substitute values in the quadratic formula.
      3. Quiz
   5. Transformations of Quadratic Functions
      1. Instruction
         1. Can graphing a quadratic function be made easier by changing its form?
      2. Assignment
         1. Practice what you learned about quadratic equations.
      3. Quiz
   6. Square Root Functions
      1. Instruction
         1. What are some properties and uses of the square root function?
      2. Assignment
         1. Find the inverse of a quadratic.
      3. Quiz
   7. Mixed Degree Systems
      1. Instruction
         1. How do you solve systems of equations with mixed degrees?
      2. Assignment
         1. Understand solutions to mixed-degree systems.
      3. Quiz
   8. **Unit Test - (Must be taken in Person)**
      1. Unit Test Review
3. Polynomials
   1. Factoring Polynomials Completely
      1. Instruction
         1. How can a polynomial expression be factored completely?
      2. Assignment
         1. Practice determining factoring techniques.
      3. Quiz
   2. Division of Polynomials
      1. Instruction
         1. How can you use long division to find quotients of polynomials?
      2. Assignment
         1. Practice dividing polynomials.
      3. Quiz
   3. The Binomial Theorem
      1. Instruction
         1. How can you quickly expand a binomial raised to a power?
      2. Assignment
         1. Practice expanding binomials using Pascal’s triangle.
      3. Quiz
   4. Synthetic Division and the Remainder Theorem
      1. Instruction
         1. How can you divide polynomials in a systematic way, and what conclusions can be drawn from that division?
      2. Assignment
         1. Practice interpreting synthetic division
      3. Quiz
   5. The Rational Roots Theorem
      1. Instruction
         1. How can you identify possible rational roots of a polynomial function?
      2. Assignment
         1. Practice identifying potential roots using the rational root theorem.
      3. Quiz
   6. The Fundamental Theorem of Algebra
      1. Instruction
         1. How can you most efficiently use the properties and theorems associated with polynomials to find all the zeroes?
      2. Assignment
         1. Practice using the fundamental theorem of algebra.
      3. Quiz
   7. Writing Polynomial Functions from Complex Roots
      1. Instruction
         1. How can you write polynomial equations from given roots?
      2. Assignment
         1. Write a polynomial function from its graph.
      3. Quiz
   8. Quadratic in Form Polynomials
      1. Instruction
         1. How can you solve higher degree polynomial equations that are quadratic in form?
      2. Assignment
         1. Practice writing as a quadratic.
      3. Quiz
   9. Graphing Polynomial Functions
      1. Instruction
         1. How do you graph a polynomial function from its given rule?
      2. Assignment
         1. Explore the effect of the roots on the graph of a polynomial by building your own rollercoaster!
      3. Assignment
         1. Identify the key features of a polynomial function.
      4. Quiz
   10. Solving Polynomial Equations using Technology
       1. Instruction
          1. How can using technology help you solve a polynomial equation?
       2. Assignment
          1. Practice using a system to solve a polynomial equation with rational roots.
       3. Quiz
   11. **Unit Test - (Must be taken in Person)**
       1. Unit Test Review
4. Rational Functions
   1. Negative Exponents
      1. Instruction
         1. How can you simplify expressions containing negative exponents?
      2. Assignment
         1. Simplify expressions with negative exponents.
      3. Quiz
   2. Simplifying Rational Expressions
      1. Instruction
         1. How can you simplify rational expressions containing multiple variables?
      2. Assignment
         1. Practice simplifying rational expressions with negative exponents.
      3. Quiz
   3. Multiplying and Dividing Rational Expressions
      1. Instruction
         1. How do you multiply and divide rational expressions?
      2. Assignment
         1. Practice multiplying rational expressions.
      3. Quiz
   4. Adding and Subtracting Rational Expressions
      1. Instruction
         1. How can you find sums and differences of rational expressions?
      2. Assignment
         1. Practice adding and subtracting rational expressions with like denominators.
      3. Quiz
   5. Rational Equations
      1. Instruction
         1. How can you solve an equation containing rational expressions?
      2. Assignment
         1. Practice solving rational equations.
      3. Quiz
   6. Vertical Asymptotes of Rational Functions
      1. Instruction
         1. How can you identify the vertical asymptotes and holes in the graph of a rational function?
      2. Assignment
         1. Identify asymptotes.
      3. Quiz
   7. Graphing Rational Functions
      1. Instruction
         1. How do you graph rational functions that have vertical and horizontal asymptotes?
      2. Assignment
         1. Identify asymptotes.
      3. Quiz
   8. Modeling with Rational Functions
      1. Instruction
         1. How are rational functions used to model and solve problems?
      2. Assignment
         1. Write a rational function given a table.
      3. Quiz
   9. **Unit Test - (Must be taken in Person)**
      1. Unit Test Review
5. Radical Functions
   1. Graphing Radical Functions
      1. Instruction
         1. How do you graph radical functions?
      2. Assignment
         1. Practice graphing radical functions.
      3. Quiz
   2. Simplifying Nonperfect Roots
      1. Instruction
         1. How can you write a radical in simplest form?
      2. Assignment
         1. Practice simplifying nonperfect roots.
      3. Quiz
   3. Rational Exponents
      1. Instruction
         1. Can exponents be fractions?
      2. Assignment
         1. Explore an equation that relates the distance from the Sun to its orbital period.
      3. Assignment
         1. Convert between radical and exponential forms.
      4. Quiz
   4. Adding and Subtracting Radicals
      1. Instruction
         1. How is adding and subtracting radical expressions similar to combining like terms?
      2. Assignment
         1. Identify like radicals.
      3. Quiz
   5. Multiplying Radicals
      1. Instruction
         1. How can you multiply radical expressions?
      2. Assignment
         1. Multiply radicals with like indices.
      3. Quiz
   6. Dividing Radicals
      1. Instruction
         1. How can you write a ratio of radical expressions in simplest form?
      2. Assignment
         1. Use the quotient property of radicals.
      3. Quiz
   7. Radical Equations and Extraneous Roots
      1. Instruction
         1. How do you solve an equation when the variable is under a radical symbol?
      2. Assignment
         1. Solve radical equations.
      3. Quiz
   8. Performance Task: Roller Coaster Design
      1. Instruction
         1. How can radical equations be used to model support systems?
   9. **Unit Test - (Must be taken in Person)**
      1. Unit Test Review
6. Cumulative Exam - (Must be taken in Person)
   1. Cumulative Exam Review