Algebra II CP Unit 1 Plan

Direct Variation with Ratio Review

Welcome to Algebra II. In this course we will be exploring linear, quadratic, exponential, and polynomial functions and their applications in a wide range of areas: business, the sciences, sports, and medicine, to name a few. The emphasis will be on improving problem solving skills through using new tools and learning how to apply them in unfamiliar situations.

Our first unit focuses on solving problems involving ratios and proportions. Problems involving ratios show up in a wide variety of situations. Some of these problems are straightforward and can be solved intuitively. By looking closely at the patterns involved in solving these problems we can develop techniques that are useful in solving less familiar and more complicated problems.

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| Day | Objectives | Activities | Homework |
| 1 | Solve direct variation problems  Represent direct variation situations with equations | Direct variation  Review multiplying and reducing fractions  Algebra I review | Day 1 |
| 2 | Use direct variation equations to solve problems  Solve direct variation equations for one variable | Direct variation formulas  Review dividing fractions  Basic Skills pretest | Day 2 |
| 3 | Use the language and notation of functions  Create graphs for direct and other linear functions | Quiz on Direct Variation  Function and Graphs  Review adding and subtracting fractions  Basic Skills practice | Day 3 |
| 4 | Create equations to represent direct variation and linear data | Equations from tables and graphs  Basic Skills practice | Day 4 |
| 5 | Set up and solve multi-step problems | Unit analysis for multi-step problems  Basic Skills Test | Day 5 |
| 6 | Review and practice | Performance Task  Practice | Day 6 |
| 7 | Demonstrate knowledge and skills | Unit 1 Skills Test | none |

Teacher notes:

Objectives

Represent a situation involving direct variation with an appropriate equation

Correctly and accurately use decimals and fractions in direct variation problems

Solve direct variation equations in one variable

Solve a multi-variable direct equation for one of its variables

Graph direct variation and other linear functions

Set up and solve multi-step problems involving direct variation

Write linear equations to represent data presented in a table or graph

Use basic problem solving skills to explore unfamiliar problems involving direct variation: trying an example to better understand what is going on, drawing a picture, trying multiple example problems to create a pattern of data.

This unit also reviews the rules for working with fractions. A majority of students tend to be very weak on this. However, being able to work with problems involving ratios requires facility with multiplying and reducing fractions. In unit 2 students will work with geometric sequences and need to be able to multiply and divide fractions to determine growth ratios. Working with exponents students will be introduced to negative exponents, which represent fractions, as well as fractional exponents. Finally, in working with polynomials students will be exposed to the rational root theorem. Because of all these subsequent uses it is imperative that all students are fluent in working with fractions by the end of unit 1.