Quadratic Equations in Word Problems Students Can Relate To

by Nancy Rudolph

This unit is based on a collection of quadratic word problems that are intended to be relevant to teenagers, and are organized differently from traditional math textbooks. Progressing through the problems, students' quadratic-solving skills should improve, and they should gain a better understanding of how each small change affects the solution and/or the choice of solution method. The unit begins with projectile motion problems that relate to sports since most teenagers can relate to them, and because the parabolic path of objects in flight, as a function of time, is visually represented by the graph of the quadratic function. They move on to geometry problems where they will gain much-needed practice in setting up and solving area and volume equations based on information given in word problems. And finally, they study the effects of dilations (changes in scale factor) on area. While the dilation problems are written specifically for vocational students, many of them address interests of typical high school students. The unit assumes students are able to find x-intercepts and coordinates of the vertex of a quadratic function by factoring, using the Quadratic Formula, or examining a graph or table on a graphing calculator.

(Developed for Integrated Math III, grades 10-11; recommended for Algebra I and Algebra II, grades 9-12)