

Notes for 1.5 Applications and Modeling of Quadratic Equations (pp. 125 – 130)

Name:
Date:
Instructor:

Topics: Using quadratic equations to solve geometric, Pythagorean Theorem, propelled object and general modeling problems

I. Solving Geometric Problems (pp.125 – 126)

Example #7, page 131:

* Draw picture and label everything.

* Define the variables: $x =$
length of the rug =
width of the rug =

*Use the x value that makes sense in the problem.

*Substitute back into the definitions of the length and width of the problem to get the final answer.

II. Pythagorean Theorem Problems (p. 127)

Memorize $a^2 + b^2 = c^2$, where a and b are the lengths of the sides that make the right angle and c is the hypotenuse (longest side).

Recall: $(a + b)^2 = (a + b)(a + b)$ that is FOILED, *not* $a^2 + b^2$!!

Example #17, page 132:

III. Height of a Propelled Object Problems (p. 128) There are 2 types of problems:

Example, Problem #27a, page 133: When will an object **reach 80 feet**?

For these problems, the independent variable is t = time and answers a “how long will it take” question. The S represents the height of the object in feet.

Example, Problem #27b, page 133: When will an object **hit the ground**?

These problems always = 0 and always have a common factor of (at least) t , and probably a numerical common factor, too.

IV. General Modeling (pp. 129 – 130)

Example #35, page 135:

* Often we change the calendar year to a single value.

* Make sure that you know how the variables are defined in the problem’s story, so that you’ll be finding the right one.

Assignments:

Text: pp. 130 – 135 #1, 3, 5, 17, 18, 25, 29 – 35 odd