Course Number

Instructor

Date

Section 1.3 Modeling with Linear Equations

Objective: In this lesson you learned how to write and use mathematical models to solve real-life problems.

I. Introduction to Problem Solving (Pages 98–99)

What you should learn
How to use a verbal model in a problem-solving plan

The process of translating phrases or sentences into algebraic expressions or equations is called _____.

A good approach to mathematical modeling is to use two stages.

Begin by . . .

Then, after assigning labels to the quantities in the verbal model, . . .

Some key words or phrases that represent equality are . . .

Some key words or phrases that represent addition are . . .

Some key words or phrases that represent subtraction are . . .

Some key words or phrases that represent multiplication are . . .

Some key words or phrases that represent division are . . .

II. Using Mathematical Models (Pages 99–101)

What you should learn
How to write and use mathematical models to solve real-life problems

Example 1: Describe a strategy for solving and then solve the following problem: Tuition payments make up 67% of a college student's annual income. If the student pays $8375 for tuition in a single year, what is her annual income?

III. Mixture Problems (Page 102)

What you should learn
How to solve mixture problems

Give an example of a mixture problem.

Describe a general strategy for solving mixture problems.

IV. Common Formulas (Pages 103–104)

What you should learn
How to use common formulas to solve real-life problems

Many common types of geometric, scientific, and investment problems use ready-made equations called _____.

Complete the following list of common formulas for basic geometric figures.

Perimeter/Circumference

Square with side length s: $P =$ _____

Rectangle with width w and length l: $P =$ _____

Triangle with sides a, b, and c: $P =$ _____

Circle with radius r: $C =$ _____

Area

Square with side length s: $A =$ _____

Rectangle with width w and length l: $A =$ _____

Triangle with base b and height h: $A =$ _____

Circle with radius r: $A =$ _____

Volume

Cube with side length s: $V =$ _____

Rectangular solid with width w, length l, and height h: $V =$ _____

Circular cylinder with radius r and height h $V =$ _____

Sphere with radius r: $V =$ _____

Complete the following list of miscellaneous common formulas.

Temperature
where F = degrees Fahrenheit and C = degrees Celsius

$F =$ _____

Simple Interest
where I = interest, P = principal, r = annual interest rate, and
t = time in years

$I =$ _____

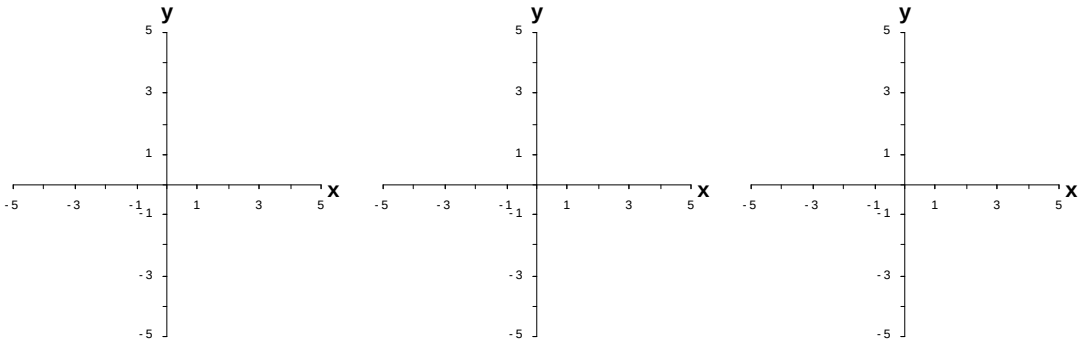
Compound Interest
where A = balance, P = principal, r = annual interest rate,
n = compoundings per year, and t = time in years

$A =$ _____

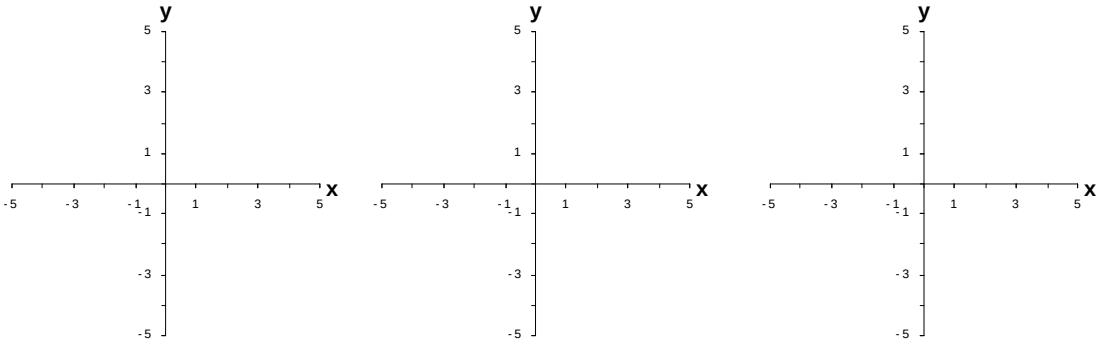
Distance
where d = distance traveled, r = rate, and t = time

$d =$ _____

Additional notes



Additional notes



Homework Assignment

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Exercises