NAME

Module 9 Using Functions
Lesson 5 Solving Problems Using Functions

Solve. **Variables may vary.**

1a. Write an equation for the function that can be used to find the volume of a shed with a square floor, and a height of 10 feet.

$V(s) = 10s^2$

1b. Use the function from exercise 1a to find the volume of a shed with a floor whose length is nine feet.

$V(9) = 810 \text{ ft}^3$

2a. Write an equation for the function that can be used to find the number of light bulbs in p packages, if each package contains four light bulbs.

$f(p) = 4p$

2b. Use the function from exercise 2a to find the number of light bulbs included in seven packages.

$f(7) = 28$

3a. Write an equation for the function that can be used to find the number of cans of paint needed to paint four walls and the ceiling of a cube-shaped room x feet long. Each can of paint covers 100 square feet.

$p(x) = \frac{5x^2}{100}$

3b. Use the function from exercise 3a to find the number of cans of paint needed if the cube-shaped room is 10 feet long.

$f(10) = 5$

4a. Newt opened a checking account with a $500 deposit. Each month, he withdraws $20. Write a function to show Newt's balance after m months.

$b(m) = 500 - 20m$

4b. Use the function from exercise 4a to find Newt's balance after 12 months.

$b(12) = \$260$

5a. A piano teacher started with two students. At the end of each year, he takes on three additional students. Write a function to show the number of students the piano teacher has after r years.

$s(r) = 2 + 3r$

5b. Use the function from exercise 5a to determine when the teacher will have 26 students.

The teacher will have 26 students at the end of 8 years.

6a. Write a function to show the number of cards remaining in a 52-card deck after d cards have been dealt.

$c(d) = 52 - d$

6b. Use the function from exercise 6a to determine the number of cards remaining after 27 cards have been dealt.

There will be 25 cards remaining in the deck.

7a. Write a function to show the number of eggs remaining in a crate of 144 eggs after x 3-egg omelets have been made.

$g(x) = 144 - 3x$

7b. Use the function from exercise 7a to determine how many 3-egg omelets can be made if 20 eggs must be reserved for other uses.

Forty-one 3-egg omelets can be made.

8a. The cost of a long-distance phone call can be described by a linear equation. A 10-minute phone call costs \$0.70. A 15-minute phone call costs \$0.95. Write the equation for the function.

$c(m) = 0.05m + 0.20$

8b. Use the function from exercise 8a to determine the cost of a 5-minute phone call.

It will cost \$0.45 for a 5-minute phone call.

9a. The cost of purchasing and operating a refrigerator can be described by a linear function. It costs \$357 to purchase and operate the refrigerator for four months, and \$373 for 6 months. Write a linear function to show the cost of purchasing and operating the refrigerator for m months.

$c(m) = 325 + 8m$

9b. Use the function from exercise 9a to determine the cost of purchasing and operating the refrigerator for two years.

$c(24) = 517$; \$517

10a. The cost of developing the pictures on a roll of film at FastPix can be described by a linear function. It costs \$4.60 to develop 13 pictures, and \$5.60 to develop 18 pictures. Write a linear function to show the cost of developing a roll of film containing p pictures.

$c(p) = 2 + 0.20p$

10b. Use the function from exercise 10a to determine the cost of developing a roll of film containing 21 pictures.

$c(21) = 6.20$; \$6.20