Reteaching

3.6 Using Formulas and Literal Equations

◆ Skill A  Rewriting a formula or a literal equation

Recall  A literal equation is an equation that contains different variables. Sometimes a formula is called a literal equation when the variables represent specific quantities.

◆ Example 1  
Given the formula \( A = P + I \), write a formula for the principal, \( P \), based on the interest, \( I \), and amount, \( A \).

◆ Solution  
\[
A = P + I \quad \text{Given} \\
A - I = P + I - I \\
A - I = P \\
P = A - I
\]

◆ Example 2  
Solve the equation \( 6x + 2y = 8 \) for \( y \).

◆ Solution  
\[
6x + 2y = 8 \quad \text{Given} \\
6x + 2y - 6x = 8 - 6x \\
2y = 8 - 6x \\
\frac{2y}{2} = \frac{8 - 6x}{2} \\
y = 4 - 3x \quad \text{Simplify.}
\]

Solve each equation for the indicated variable.

1. \( x - y = 10 \), for \( x \)  
2. \( x + y = z \), for \( y \)  
3. \( x - z = -y \), for \( z \)  
4. \( a + x = 2y \), for \( x \)  
5. \( x + y - z = 32 \), for \( y \)  
6. \( d = rt \), for \( t \)  
7. \( A = \frac{1}{2}bh \), for \( h \)  
8. \( 3x + 5y = 15 \), for \( x \)  
9. \( 12x - 6y = 18 \), for \( y \)  
10. \( p = 2(l + w) \), for \( l \)
Solve each problem.

11. Use the formula for perimeter, \( p = 2l + 2w \). Find \( w \) when \( p = 30 \) and \( l = 12 \).

12. Use the formula for circumference of a circle, \( C = 2\pi r \). Find \( r \) when \( C = 14\pi \).

13. The formula for the area of a triangle is \( A = \frac{1}{2}bh \). If the area of a triangle is 75 square meters and the base has a length of 15 meters, find the height.

14. The formula for distance is \( d = rt \), where \( d \) is distance, \( r \) is rate, and \( t \) is time. If you travel at 80 kilometers per hour, find the amount of time that it will take to travel 320 kilometers.

15. The formula for profit is \( P = R - C \), where \( P \) is profit, \( R \) is revenue, and \( C \) is cost. If a company makes $15,000 in revenue and $8000 in profit, find the cost.

16. The formula \( P_1V_1 = P_2V_2 \) is called Boyle's Law. \( P_1 \) and \( P_2 \) represent the pressure applied to a gas at two different times, and \( V_1 \) and \( V_2 \) represent the volume of the gas at those times. If the volume of the gas is 4 liters when the pressure is 8kPa, find the pressure when the volume is 2 liters. (kPa is the unit that measures pressure.)
Lesson 3.5

1. $x = -6$
2. $t = 5$
3. $z = 3$
4. $k = -13.5$
5. $x = 4$
6. $m = 2$
7. $h = 3$
8. $n = -3$
9. $t = 3$
10. $c = -5$
11. $f = -1$
12. $y = 7$
13. $3(x - 1.50) = 35.97; \text{ the original cost is } $13.49.$
14. $12x = 2(x + 6); x = 1.2$
15. $4(x - 2) = 20; \text{ the original average cost was } $7.$
16. $29 + 0.15x = 20 + 0.25x; \text{ the rates are equal when you drive 90 miles in one day.}$

Lesson 3.6

1. $x = y + 10$
2. $y = z - x$
3. $z = x + y$
4. $x = 2y - a$
5. $y = 32 - x + z$
6. $t = \frac{d}{r}$
7. $h = \frac{2A}{b}$
8. $x = 3y + 5$
9. $y = 2x - 3$
10. $l = \frac{p}{2} - w$
11. $w = 3$
12. $r = 7$
13. 10 meters
14. 4 hours
15. $7000$
16. 16 kPa

Reteaching—Chapter 4

Lesson 4.1

1. $\frac{2}{5}$
2. $\frac{5}{1}$
3. $\frac{9}{8}$
4. $\frac{3}{2}$
5. $\frac{6}{17}$