

## Chapter Summary

- The expression  $b^n$  is an abbreviation for  $\underbrace{b \cdot b \cdot b \cdot \dots \cdot b}_{n \text{ factors}}$ .  
The base is  $b$  and the exponent is  $n$ .
- To simplify expressions that contain powers, follow the steps listed on page 142.
- To add (or subtract) polynomials, you add (or subtract) their similar terms.  
Similar terms are monomials that are exactly alike or that differ only in their numerical coefficients.
- Rules of exponents:  $a^m \cdot a^n = a^{m+n}$      $(a^m)^n = a^{mn}$      $(ab)^m = a^m b^m$
- Polynomials can be multiplied in a vertical or horizontal form by applying the distributive property (page 66). Before multiplying, it is wise to rearrange the terms of each polynomial in order of increasing or decreasing degree in one variable.
- A formula may be transformed to express a particular variable in terms of the other variables.
- A chart can be used to solve problems about distances or areas. Formulas to use are:  
$$\text{rate} \times \text{time} = \text{distance}$$
$$\text{length} \times \text{width} = \text{area of a rectangle}$$
- To solve problems involving area, you may find it helpful to make a sketch.
- Problems may fail to have solutions because of lack of information, contradictory facts, or unrealistic results.

## Chapter Review

Give the letter of the correct answer.

- Express the cube of the sum of  $a$  and  $b$  in exponential form. 4-1  
a.  $a^3 + b^3$                       b.  $(a + b)^3$                       c.  $a^3 b^3$                       d.  $3a^3 b^3$
- Simplify  $9 - 4^3$ .  
a. 125                      b. -125                      c. -55                      d. -7
- Simplify  $(xy^2 + 4x^2y - 6) + (5xy^2 - 5x^2y - 7)$ . 4-2  
a.  $6xy - 9x^2y - 1$                       b.  $6xy^2 - x^2y - 13$   
c.  $5xy^2 - 13$                       d.  $6xy^2 - x^2y - 1$
- Solve  $x - (15x - 6) = 104$ .  
a.  $\{-7\}$                       b.  $\left\{-6\frac{1}{8}\right\}$                       c.  $\left\{-6\frac{7}{8}\right\}$                       d.  $\{7\}$
- Simplify  $3x^6\left(-\frac{1}{3}x^6\right)$ . 4-3  
a.  $-9x^6$                       b.  $-x^6$                       c.  $-x^{36}$                       d.  $-x^{12}$

6. Simplify  $(3a^4b)(5a^2b^2)(2a^3)$ .  
 a.  $60a^{11}b^3$       b.  $30a^{10}b^2$       c.  $150a^{10}b^3$       d.  $30a^9b^3$
7. Simplify  $(-3x^2y^4)^3$ . 4-4  
 a.  $9x^5y^7$       b.  $-9x^5y^7$       c.  $27x^6y^{12}$       d.  $-27x^6y^{12}$
8. Simplify  $9n^2\left(\frac{1}{3}n\right)^4$ .  
 a.  $3n^8$       b.  $3n^6$       c.  $\frac{1}{9}n^6$       d.  $36n^3$
9. Simplify  $-6[16a - 8(2a - 2)]$ . 4-5  
 a. 12      b.  $-96a$       c. 0      d.  $-96$
10. Solve  $6 - 2(n - 3) = 12$ .  
 a.  $\{0\}$       b.  $\{6\}$       c.  $\{-6\}$       d.  $\left\{-4\frac{1}{2}\right\}$
11. Multiply  $(4x - 3)(x - 4)$ . 4-6  
 a.  $4x^2 - 19x - 12$       b.  $4x^2 - 7$       c.  $4x^2 - 12$       d.  $4x^2 - 19x + 12$
12. Multiply  $(c - 6)(c^2 + 2c + 3)$ .  
 a.  $c^3 + 4c^2 - 15c + 18$       b.  $c^3 - 12c - 18$   
 c.  $c^3 - 4c^2 - 9c - 18$       d.  $c^3 - 17c - 18$
13. Multiply  $(a - b)(a^2 + ab + b^2)$ .  
 a.  $a^3 - b^3$       b.  $a^3 + a^2b + ab^2$   
 c.  $a - a^2b - ab^2 - b^3$       d.  $a^3 + 2a^2b + 2ab^2 - b^3$
14. Solve for  $b$  in the equation  $c + by = a$ . 4-7  
 a.  $b = \frac{c + a}{y}$       b.  $b = \frac{a - y}{c}$   
 c.  $b = \frac{a - c}{y}$       d.  $b = \frac{a + y}{c}$
15. Solve for  $y$  in the equation  $\frac{xy + z}{2} = a$ .  
 a.  $y = \frac{2a + z}{x}$       b.  $y = \frac{2a - z}{x}$   
 c.  $y = 2ax - zx$       d.  $y = 2ax + zx$
16. Laurie left home and ran to the lake at 10 mi/h. She ran back home at 8 mi/h. If the entire trip took 27 min, how far did she run in all? 4-8  
 a. 0.4 mi      b. 4 mi      c. 4.4 mi      d. 2.4 mi
17. A picture is 1 in. longer than it is wide. It is put into a frame  $\frac{1}{2}$  in. wide. 4-9  
 If the area of the frame itself is  $8 \text{ in.}^2$ , how big is the picture?  
 a. 3 in. by 4 in.      b. 4 in. by 5 in.      c. 5 in. by 6 in.      d. 7 in. by 8 in.
18. Esteban has 16 coins that total \$3.00. If he has only nickels and quarters, how many quarters does he have? 4-10  
 a. No solution—not enough facts      b. No solution—facts contradict  
 c. 5      d. 11