

Chapter 6 Prerequisite Skills**Collect Like Terms**

1. Simplify.

- a) $4x + 9y + (4x - y)$
 b) $-5s - t - (7s + 2t)$
 c) $(7p - 2q + 4r) - (2p + 3q - r)$
 d) $3x^2 + 6x - 9 - (8x^2 - 7x + 12)$
 e) $(9x^2 - 2x + 9) - (x^2 - 5x) + (x^2 - 11)$

2. Expand and simplify.

- a) $2(x - 3) + 5(x + 2)$
 b) $-8(x^2 - 3x + 7)$
 c) $4(3r^2 + 2r) - 6(r - 2r^2)$

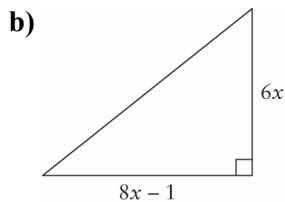
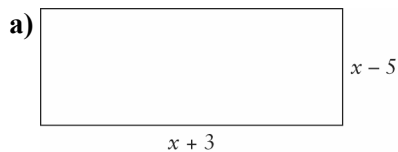
Simplify Expressions

3. Expand and simplify.

- a) $x(x + 3)$ b) $p(2p - 7)$
 c) $(2w - 3)(w + 2)$ d) $k(4k + 3) + k(2k - 1)$
 e) $(3s - 5)(s + 4)$ f) $(5x - 1)(3x + 1)$
 g) $(6t - 5)(t - 4)$ h) $(4n - 3)(n^2 + 2n - 4)$

Solve Area and Volume Problems

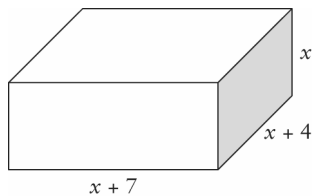
4. Write a simplified expression for the area of each of the following shapes.



5. Consider the rectangular prism below.

Write a simplified expression for the

- a) surface area
 b) volume

**Factor Expressions**

6. Factor by determining the greatest common factors.

- a) $t^2 + 4t$ b) $6q^2 - 3q$
 c) $4m^3 - 2m^2 + 12m$ d) $9x^3 + 6x^2 - 15x$
 e) $8w^4 - 12w^3 - 20w^2$

7. Factor fully.

- a) $x^2 + 5x + 4$ b) $x^2 + 7x - 18$
 c) $k^2 - 12k + 36$ d) $t^2 - 8t + 15$
 e) $3a^2 + 21a + 18$ f) $4x^2 - 28x + 48$
 g) $-2y^2 + 26y - 60$ h) $5h^3 + 50h^2 + 120h$

Solve Quadratic Equations

8. Solve.

- a) $x^2 - 5x + 6 = 0$ b) $n^2 + 9n + 20 = 0$
 c) $p^2 + 3p - 10 = 0$ d) $s^2 - 12s + 35 = 0$
 e) $2w^2 + 6w - 56 = 0$

Use Exponent Rules

9. Simplify using exponent rules. Then, evaluate. Express answers as integers or fractions.

- a) $(2^2)(2^4)$ b) $(5^7)(5^{-4})$
 c) $\left(\frac{1}{3}\right)^{-1} \times \left(\frac{1}{3}\right)^5$ d) $(6^3)(6^{-4})$
 e) $(-2)^5 \div (-2)^2$ f) $9^2 \div 9^4$
 g) $(4^3)^{-1}$ h) $\left[\left(-\frac{1}{3}\right)^{-2}\right]^3$

10. Simplify using exponent rules.

- a) $x^3(x^2)$ b) $p^5 \times p^{-2}$
 c) $m^6 \div m^3$ d) $z^4 \div z^{-5}$
 e) $a^3 \times a^{-1} \div a^2$ f) $(b^8)^{-4}$
 g) $\frac{(x^5)^{-3}}{x^{-7}}$

Solve by Substitution

11. Solve each for the variable indicated.

- a) $P = 2l + 2w$; w b) $A = \frac{(a+b)h}{2}$; a
 c) $S = 2\pi r^2 + 2\pi rh$; h d) $V = \frac{1}{3}\pi r^2 h$; r

