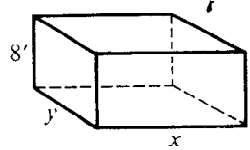


**EXAMPLE 11** The cubicles in a large office have 8-foot ceilings. To calculate the amount of paint needed to paint a cubicle, we add the areas of the ceiling and of each wall and subtract the area of the door. If the cubicle is  $x$  feet long and  $y$  feet wide, then the ceiling has an area of  $xy$  square feet, two of the walls have areas of  $8x$  square feet each, and the remaining two walls have areas of  $8y$  square feet each. The door is 7 feet tall by 3 feet wide, so its area is 21 square feet. Thus, we need enough paint to cover



$$xy + 2 \cdot 8x + 2 \cdot 8y - 21, \text{ or } xy + 16x + 16y - 21,$$

square feet.

**EXAMPLE 12** The profit earned by a company through the sale of a product or service is calculated by subtracting its costs from its revenue (the amount of money obtained from sales). Thus,

$$\text{profit} = \text{revenue} - \text{cost}.$$

Usually these quantities depend on the number of items sold. A furniture company finds that it costs  $30x + 2000$  dollars to produce  $x$  coffee tables, and the sale of the tables brings in  $120x - 0.02x^2$  dollars in revenue. The profit earned from the coffee tables is then

$$(120x - 0.02x^2) - (30x + 2000)$$

or  $-0.02x^2 + 90x - 2000$  dollars. If the company produces and sells 100 tables, its profit is

$$-0.02(100)^2 + 90(100) - 2000 = \$6800.$$

## EXERCISE 1.2

### A

■ Identify each polynomial as a monomial, a binomial, or a trinomial. Give the degree of each polynomial and the coefficient of each term. See Examples 1 and 2.

1.  $2x^3 - x^2$

2.  $x^2 - 2x + 1$

3.  $5n^4$

4.  $3n + 1$

5.  $3r^2 - r + 2$

6.  $r^3$

7.  $y^3 - 2y^2 - y$

8.  $3y^2 + 1$