

### GUIDED PRACTICE

Find each product.

SEE EXAMPLE 1

1.  $-4c^2d^3(5cd^2 + 3c^2d)$

2.  $3x^2(2y + 5x)$

3.  $xy(5x^2 + 8x - 7)$

4.  $2xy(3x^2 - xy + 7)$

SEE EXAMPLE 2

5.  $(x - y)(x^2 + 2xy - y^2)$

6.  $(3x - 2)(2x^2 + 3x - 1)$

7.  $(x^3 + 3x^2 + 1)(3x^2 + 6x - 2)$

8.  $(x^2 + 9x + 7)(3x^2 + 9x + 5)$

SEE EXAMPLE 3

9. **Business** A businessman models the number of items (in thousands) that his company sold from 1998 through 2004 as  $N(x) = -0.1x^3 + x^2 - 3x + 4$  and the average price per item (in dollars) as  $P(x) = 0.2x + 5$ , where  $x$  represents the number of years since 1998. Write a polynomial  $R(x)$  that can be used to model the total revenue for this company.

SEE EXAMPLE 4

Find each product.

10.  $(x + 2)^3$

11.  $(x + y)^4$

12.  $(x + 1)^4$

13.  $(x - 3y)^3$

SEE EXAMPLE 5

Expand each expression.

14.  $(x - 2)^4$

15.  $(2x + y)^4$

16.  $(x + 2y)^3$

17.  $(2x - y)^5$

### PRACTICE AND PROBLEM SOLVING

#### Independent Practice

For Exercises	See Example
18–21	1
22–25	2
26	3
27–30	4
31–34	5

#### Extra Practice

See Extra Practice for more Skills Practice and Applications Practice exercises.

Find each product.

18.  $7x^3(2x + 3)$

19.  $3x^2(2x^2 + 9x - 6)$

20.  $xy^2(x^2 + 3xy + 9)$

21.  $2r^2(6r^3 + 14r^2 - 30r + 14)$

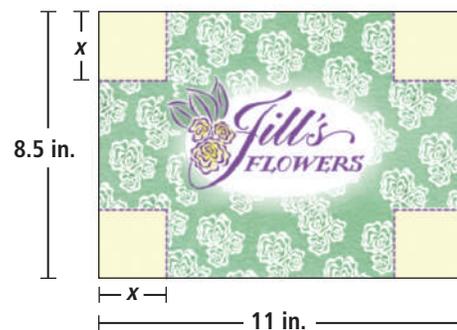
22.  $(x - y)(x^2 - xy + y^2)$

23.  $(2x + 5y)(3x^2 - 4xy + 2y^2)$

24.  $(x^3 + x^2 + 1)(x^2 - x - 5)$

25.  $(4x^2 + 3x + 2)(3x^2 + 2x - 1)$

26. **Measurement** A bottom for a box can be made by cutting congruent squares from each of the four corners of a piece of cardboard. The volume of a box made from an 8.5-by-11-inch piece of cardboard would be represented by  $V(x) = x(11 - 2x)(8.5 - 2x)$ , where  $x$  is the side length of one square.



a. Express the volume as a sum of monomials.

b. Find the volume when  $x = 1$  inch.

Find each product.

27.  $(2x - 2)^3$

28.  $(x + \frac{1}{3})^4$

29.  $(x - y)^4$

30.  $(4 + y)^3$

Expand each expression.

31.  $(x - 3y)^4$

32.  $(x - 2)^5$

33.  $(x + y)^5$

34.  $(2x - 3y)^4$