

**LESSON**  
**6-3**

**Practice A**  
**Dividing Polynomials**

**Divide by using long division.**

1.  $x - 3 \overline{)x^2 + 2x + 6}$

2.  $x + 2 \overline{)3x^2 + 3x - 12}$

3.  $2x + 1 \overline{)4x^3 + 6x^2 + 3x}$

4.  $5x^2 \overline{)10x^4 - 20x^3 + 25x^2}$

**Complete using synthetic division.**

5.  $(x^2 + 4x + 1) \div (x - 5)$

$$\begin{array}{r|rrrr} 5 & 1 & 4 & & 1 \\ & & 5 & 45 & \\ \hline & A & B & & C \end{array}$$

a.  $A =$  \_\_\_\_\_      b.  $B =$  \_\_\_\_\_      c.  $C =$  \_\_\_\_\_

d. What is the remainder? \_\_\_\_\_

e. Write the quotient. \_\_\_\_\_

**Divide by using synthetic division.**

6.  $(x^2 - 8x + 6) \div (x + 2)$

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

**Use synthetic substitution to evaluate the polynomial for the given value.**

8.  $P(x) = x^2 - 4x + 5$  for  $x = 4$

9.  $P(x) = 2x^2 + 7x - 1$  for  $x = -3$

0.  
 6. 800; 972; 1024; 980; 864  
 7. a. 4  
 b. Possible answer: The volume increases up to  $x = 4$  and then decreases after that.  
 c. 4 by 16 by 16 inches

### Reading Strategies

1. Yes;  $3x^2$   
 2. No;  $2x^2 + x - 3$   
 3. a.  $6x^4 + 3x^3 - 9x^2$   
 b. 3  
 c. 4  
 4.  $x^n x^m = x^{n+m}$

### LESSON 6-3

#### Practice A

1.  $x + 5 + \frac{21}{x-3}$   
 2.  $3x - 3 - \frac{6}{x+2}$   
 3.  $2x^2 + 2x + \frac{x}{2x+1}$   
 4.  $2x^2 - 4x + 5$   
 5. a. 1  
 b. 9  
 c. 46  
 d. 46  
 e.  $x + 9 + \frac{46}{x-5}$   
 6.  $x - 10 + \frac{26}{x+2}$   
 7.  $x + 7 + \frac{19}{x-3}$   
 8.  $P(4) = 5$   
 9.  $P(-3) = -4$

#### Practice B

1.  $x + 2$   
 2.  $2x^2 + 1$   
 3.  $-3x + 2$   
 4.  $3x^2 - \frac{14}{x+3}$   
 5.  $3x - 2$   
 6.  $5x - 19 + \frac{69}{x+3}$   
 7.  $9x + 2 + \frac{5}{x-1}$   
 8.  $-6x + 47 - \frac{339}{x+7}$   
 9.  $P(3) = 11$   
 10.  $P(-2) = -36$

11.  $2t + 10$

#### Practice C

1.  $x^2 + 5x - 12$   
 2.  $x^2 + 15x + 45 + \frac{131}{x-3}$   
 3.  $4x^3 + 9x^2 + 5 + \frac{9}{3x-1}$   
 4.  $-x^2 + 6x - 7$   
 5.  $9x + 51 + \frac{317}{x-6}$   
 6.  $3x^3 - 6x^2 + 10x - 20 + \frac{41}{x+2}$   
 7.  $6x^4 + 6x^3 + 6x^2 + 3x + 4 + \frac{2}{x-1}$   
 8.  $-x^3 - 10x^2 - 24x - 72 - \frac{217}{x-3}$   
 9.  $P(5) = 438$   
 10.  $P(-2) = -79$   
 11.  $2t^2 + 100$

#### Reteach

1.  $4x - 1 + \frac{8}{x+2}$   
 2.  $2x + 1 + \frac{5}{x+4}$   
 3.  $3x + 10$   
 4.  $2x + 1 - \frac{8}{3x+2}$   
 5.  $4x - 1 + \frac{12}{x+2}$   
 6.  $a = 5$   
 $2x + 4 + \frac{8}{x-5}$

#### Challenge

1.  $2x - 2 + \frac{1}{x+3}$   
 2.  $x^2 + 7x + 16 + \frac{53}{x-3}$   
 3.  $5x^2 - 10x + 26 - \frac{44}{x+2}$   
 4.  $\frac{1}{2}x^3 + \frac{1}{4}x^2 + \frac{1}{8}x + \frac{1}{16}$