Name _____ Date _____

**Additional Exercises 6.1**
**Form I**
Adding and Subtracting Polynomials

Identify the polynomial as a monomial, binomial, or trinomial. Give the degree of the polynomial.

1. $18x$ 1. _____

2. $-6y^4 - 3y^3 - 1$ 2. _____

3. $9x^5 + 8x^4 + 6x^3$ 3. _____

4. $-15$ 4. _____

Add the polynomials.

5. $(2y^5 - 7y^3) + (3y^5 - 8y^3)$ 5. _____

6. $(8y^7 + 6y^6 + 9y) + (4y^7 + 2y^6 + 4y)$ 6. _____

7. $5y^6 - 3y^3 - 5$
$\underline{9y^6 + 9y^3 - 2}$ 7. _____

8. $6y^5 + 9y^3$
$\underline{6y^5 - 7y^3}$ 8. _____

9. $12y^4 - 8y^3 + 3y^2 + y$
$\underline{9y^4 + 6y^3 - 2y^2 - 2y}$ 9. _____

Name _____ Date _____

Subtract the polynomials.

10. $(-8x+12)-(4x+6)$ 10. _____

11. $(2y^3+6y^2)-(-5y^3+19y^2)$ 11. _____

12. $(4x^5-16x^4+17)-(8x^5-5x^4+20)$ 12. _____

13. $3x^4-4x^2$
$-(15x^4-7x^2)$ 13. _____

14. $5y^5-18y^3+20$
$-(9y^5-13y^3-15)$ 14. _____

15. If the cost, $y$, for manufacturing $x$ units of a certain product is given by $y=x^2-60x+4000$, find the cost of manufacturing 90 units. 15. _____

Name _____ Date _____

**Additional Exercises 6.1**
**Form II**
Adding and Subtracting Polynomials

Identify the polynomial as a monomial, binomial, or trinomial. Give the degree of the polynomial.

1. $8x^3 - 6$ 1. _____

2. $2$ 2. _____

3. $5x^6 - 3x^4 + 9$ 3. _____

4. $4x^2 + 5x$ 4. _____

Add the polynomials.

5. $(3x^3 + 2x^2) + (-4x^2 - 5)$ 5. _____

6. $(7x^5 - 4x^3 + 2) + (-3x^5 + 2x - 1)$ 6. _____

7. $\begin{array}{r} 8x^4 - 3x^3 - 4 \\ -4x^4 + 2x^3 - 5x \\ \hline \end{array}$ 7. _____

8. $(-3x^5 + 4x^4 + 7x^3) + (2x^4 - 6x^3 + 1)$ 8. _____

9. $\begin{array}{r} 10x^3 - 5x^2 + 7x - 3 \\ 2x^3 + 4x^2 - 6x + 5 \\ \hline \end{array}$ 9. _____

Name _____ Date _____

Subtract the polynomials.

10. $(-4x^2 + 5x - 3) - (3x + 1)$ 10. _____

11. $(5x^5 + 3x^2 - 2x + 1) - (4x^2 + 7x - 4)$ 11. _____

12. $(6x^4 - 3x - 7) - (2x^3 + 5x^2 - x)$ 12. _____

13. $7x^3 - 2x^2$
$-(21x^3 - x^2)$ 13. _____

14. $8x^4 + 6x^3 - 2x^2$
$-(3x^4 - x^3 + 7x^2)$ 14. _____

15. The force in newtons needed to stretch a certain spring x centimeters from its resting position is given by the polynomial function $y = 10x^2$ where 10 is the spring constant. Find the force needed to stretch the spring 6 centimeters. 15. _____

Name _____ Date _____

**Additional Exercises 6.1**
**Form III**
Adding and Subtracting Polynomials

Identify the polynomial as a monomial, binomial, or trinomial. Give the degree of the polynomial.

1. $-12x^9 - 18x^7$ 1. _____

2. $4x^3 - 2x^2 + 5x$ 2. _____

3. $11$ 3. _____

4. $12x^5 - 18x + 11$ 4. _____

Add the polynomials.

5. $\left(\frac{1}{4}x^3 + \frac{2}{7}x^2 - \frac{1}{3}x\right) + \left(-\frac{3}{4}x^3 + \frac{1}{3}x + \frac{7}{9}\right)$ 5. _____

6. $\left(\frac{5}{7}x^3 - \frac{2}{3}x^2 + \frac{1}{5}\right) + \left(-\frac{4}{7}x^3 + x^2 - \frac{3}{4}x\right)$ 6. _____

7. $\left(-\frac{3}{5}x^2 + \frac{1}{2}x + \frac{4}{5}\right) + \left(\frac{4}{5}x^2 + \frac{1}{4}x + \frac{3}{4}\right)$ 7. _____

8. $\frac{3}{7}x^2 - \frac{1}{4}x + \frac{3}{5}$
$\underline{\frac{2}{7}x^2 - \frac{3}{4}x + \frac{1}{5}}$ 8. _____

Name _____ Date _____

9. $\frac{4}{5}x^2 - \frac{2}{5}x - \frac{2}{5}$
$\underline{-\frac{1}{5}x^2 + \frac{2}{3}x - \frac{3}{5}}$ 9. _____

Subtract the polynomials.

10. $(4x^5 - 16x^4 + 17) - (-5x^4 + 2x^3 - 8)$ 10. _____

11. $\left(\frac{3}{8}x^4 + \frac{2}{5}x^3 - \frac{3}{7}\right) - \left(\frac{1}{8}x^4 - \frac{1}{5}x^3 - \frac{2}{7}\right)$ 11. _____

12. $\left(\frac{3}{4}x^3 + \frac{2}{3}x^2 - \frac{2}{5}x\right) - \left(\frac{1}{4}x^3 + \frac{1}{3}x^2 - \frac{1}{5}x + \frac{3}{8}\right)$ 12. _____

13. $\frac{9}{8}x^3 + \frac{2}{5}x^2 \quad -8$
$\underline{-\left(\frac{1}{8}x^3 - \frac{2}{5}x^2 - x\right)}$ 13. _____

14. $7y^6 + 7y^4 + 17y$
$\underline{-(5y^6 + 16y^4 + 19y)}$ 14. _____

15. The number of fires in a county for the years 1994-1998, where 1 represents 1994, 2 represents 1995, and so on can be approximated using the third-degree polynomial $y = -0.53x^3 + 0.55x^2 + 56.34x + 3126.4$. Use this function to predict the number of fires in 2003. 15. _____

Name _____ Date _____

**Additional Exercises 6.2**
**Form I**
Multiplying Polynomials

Perform the indicated operations.

1. $y \cdot y^7$ 1. _____

2. $3^6 \cdot 3^8$ 2. _____

3. $x^4 \cdot x^7 \cdot x^5$ 3. _____

4. $(5^6)^4$ 4. _____

5. $(y^8)^6$ 5. _____

6. $(-3x)^2$ 6. _____

7. $(-4x^6)^3$ 7. _____

8. $(2x^8)(-7x^5)$ 8. _____

9. $\left(\frac{1}{8}x^3\right)\left(-\frac{1}{7}x^9\right)$ 9. _____

10. $x(x+11)$ 10. _____

11. $4x^2(-3x-12)$ 11. _____

12. $-7x^4(-8x^6-7x^4)$ 12. _____

Name _____ Date _____

13. $8x^2(4x^7 + 10x^6 + 11)$ 13. _____

14. $(3x + 10)(x - 11)$ 14. _____

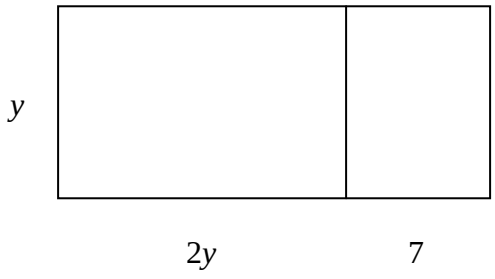
15. $(x - 8)(x + 4)$ 15. _____

16. $(x - 2)(x^2 + 2x + 10)$ 16. _____

17. $(x^2 + x - 10)(x^2 + x - 7)$ 17. _____

18. Multiply: $(x^2 + 8x + 2)(7x + 6)$ 18. _____

19. Write an expression for the area of the larger rectangle below in two different ways. 19. _____




20. Find the area of a triangle with a base of $6x$ inches and a height of $(8x + 4)$ inches. 20. _____

Name _____ Date _____

**Additional Exercises 6.2**
**Form II**
Multiplying Polynomials

Perform the indicated operations.

1. $x \cdot x^9$ 1. _____

2. $4^4 \cdot 4^6$ 2. _____

3. $y^5 \cdot y^8 \cdot y^3$ 3. _____

4. $(6^2)^6$ 4. _____

5. $(y^4)^9$ 5. _____

6. $(-2x)^3$ 6. _____

7. $(-5x^4)^2$ 7. _____

8. $(3x^9)(-6x^5)$ 8. _____

9. $\left(\frac{3}{4}x^4\right)\left(-\frac{6}{7}x^5\right)$ 9. _____

10. $x(2x-5)$ 10. _____

11. $3x^3(-2x-5)$ 11. _____

12. $-5x^6(-3x^4-2x^3)$ 12. _____

Name _____ Date _____

13. $7x^3(2x^5 + 4x^4 + 14)$ 13. _____

14. $(4x - 3)(x + 7)$ 14. _____

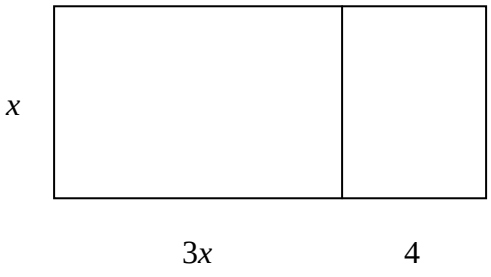
15. $(x - 3)(x + 9)$ 15. _____

16. $(2x - 3)(x^2 - 4x + 6)$ 16. _____

17. $(x^2 - x + 9)(x^2 + 2x - 3)$ 17. _____

18. Multiply: $(3x^2 - 2x + 4)(5x - 1)$ 18. _____

19. Write an expression for the area of the larger rectangle below in two different ways. 19. _____




20. Find the area of a triangle with a base of $4x$ inches and a height of $(9x + 3)$ inches. 20. _____

Name _____ Date _____

**Additional Exercises 6.2**
**Form III**
Multiplying Polynomials

Perform the indicated operations.

1. $x^5 \cdot x^9$ 1. _____

2. $4^5 \cdot 4^8$ 2. _____

3. $x^6 \cdot x \cdot x^9$ 3. _____

4. $(6^5)^8$ 4. _____

5. $(y^8)^6$ 5. _____

6. $(-4x)^3$ 6. _____

7. $(-5x^5)^2$ 7. _____

8. $(3x^6)(-8x^5)$ 8. _____

9. $\left(\frac{2}{7}x^5\right)\left(-\frac{3}{5}x^4\right)$ 9. _____

10. $x^2(x-8)$ 10. _____

11. $9x^3(-2x-12)$ 11. _____

12. $-5x^5(-4x^8-6x^2)$ 12. _____

Name _____ Date _____

13. $9x^4(3x^5 + 7x^4 - 10)$ 13. _____

14. $(2x - 8)(3x - 4)$ 14. _____

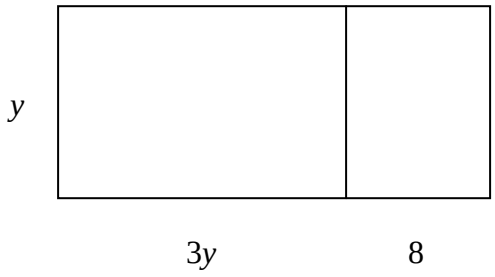
15. $(x - 5)(x + 8)$ 15. _____

16. $(3x - 4)(x^2 - 2x - 8)$ 16. _____

17. $(x^2 + x - 11)(x^2 - x + 5)$ 17. _____

18. Multiply: $\begin{array}{r} x^2 - 3x + 5 \\ \times \quad 4x + 7 \end{array}$ 18. _____

19. Write an expression for the area of the larger rectangle below in two different ways. 19. _____




20. Find the area of a triangle with a base of $8x$ inches and a height of $(3x + 7)$ inches. 20. _____

Name _____ Date _____

**Additional Exercises 6.3**
**Form I**
Special Products

Perform the indicated operations.

1. $(x+4)(x-3)$ 1. _____

2. $(2x-1)(x+4)$ 2. _____

3. $(3x-5)(4x+7)$ 3. _____

4. $(5-x)(7-2x)$ 4. _____

5. $(x+5)(x^2-25)$ 5. _____

6. $(a+2)(a-2)$ 6. _____

7. $(3+m)(3-m)$ 7. _____

8. $(5-7r)(5+7r)$ 8. _____

9. $\left(3x+\frac{1}{3}\right)\left(3x-\frac{1}{3}\right)$ 9. _____

10. $(x^2+1)(x^2-1)$ 10. _____

Name _____ Date _____

11. $(n+11)^2$ 11. _____

12. $(w-8)^2$ 12. _____

13. $(3a-7)^2$ 13. _____

14. $\left(2x+\frac{1}{2}\right)^2$ 14. _____

15. $\left(7x-\frac{1}{7}\right)^2$ 15. _____

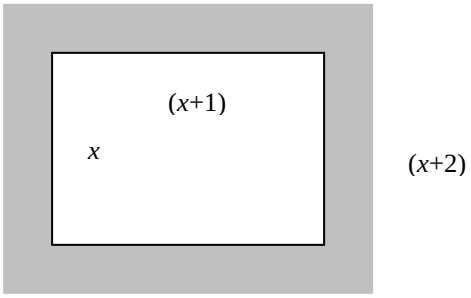
16. $(8-4m)^2$ 16. _____

17. $(n^3+9)^2$ 17. _____

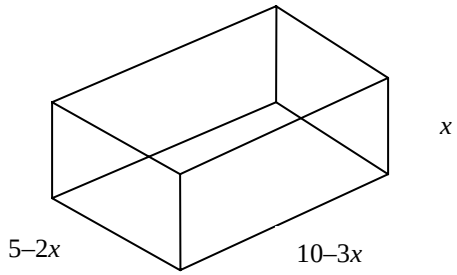
18. Find the area of the shaded region. Write the answer as a polynomial in descending powers of $x$. 18. _____

Name _____ Date _____

19. Find the area of the shaded region. Write the answer as a polynomial in descending powers of $x$. 19. _____




20. Express the volume of the box as a polynomial in standard form. 20. _____



Name _____ Date _____

**Additional Exercises 6.3**
**Form II**
Special Products

Perform the indicated operations.

1. $(x+2)(x+8)$ 1. _____

2. $(4x+9)(x-6)$ 2. _____

3. $(2x-8)(6x+11)$ 3. _____

4. $(7-2x)(6-4x)$ 4. _____

5. $(x+3)(x^2-9)$ 5. _____

6. $(a-1)(a+1)$ 6. _____

7. $(4+m)(4-m)$ 7. _____

8. $(3-10r)(3+10r)$ 8. _____

9. $\left(5x+\frac{1}{5}\right)\left(5x-\frac{1}{5}\right)$ 9. _____

10. $(x^2+5)(x^2-5)$ 10. _____

Name _____ Date _____

11. $(n+16)^2$ 11. _____

12. $(w-10)^2$ 12. _____

13. $(8a-9)^2$ 13. _____

14. $\left(3x+\frac{1}{3}\right)^2$ 14. _____

15. $\left(5x-\frac{1}{5}\right)^2$ 15. _____

16. $(11-10m)^2$ 16. _____

17. $(n^3+12)^2$ 17. _____

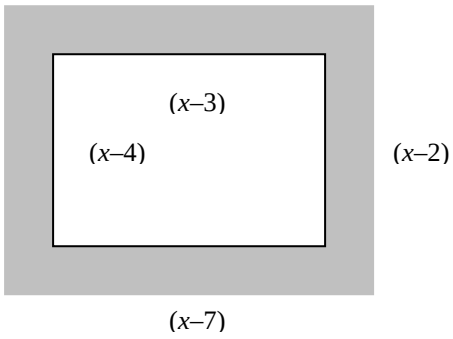
18. Find the area of the area of the shaded region Write the answer as a polynomial in descending powers of $x$. 18. _____

(8$x$–10)

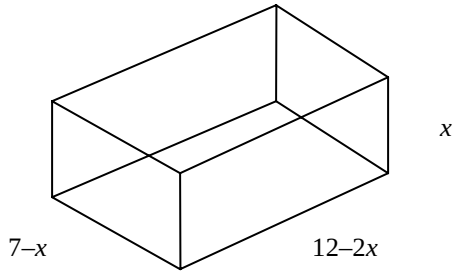
(4$x$–10)

Name _____ Date _____

19. Find the area of the shaded region. Write the answer as a polynomial in descending powers of $x$. 19. _____




20. Express the volume of the box as a polynomial in standard form. 20. _____



Name _____ Date _____

**Additional Exercises 6.3**
**Form III**
Special Products

Perform the indicated operations.

1. $(x+9)(x+4)$ 1. _____

2. $(5x+8)(x-7)$ 2. _____

3. $(3x-7)(4x+12)$ 3. _____

4. $(9-3x)(8-5x)$ 4. _____

5. $(x+5)(x^2-7)$ 5. _____

6. $(a-13)(a+13)$ 6. _____

7. $(7+m)(7-m)$ 7. _____

8. $(5-11r)(5+11r)$ 8. _____

9. $\left(8x+\frac{1}{8}\right)\left(8x-\frac{1}{8}\right)$ 9. _____

10. $(x^2+7)(x^2-7)$ 10. _____

Name _____ Date _____

11. $(n+21)^2$ 11. _____

12. $(w-14)^2$ 12. _____

13. $(9a-11)^2$ 13. _____

14. $\left(7x+\frac{1}{7}\right)^2$ 14. _____

15. $\left(9x-\frac{1}{9}\right)^2$ 15. _____

16. $(12-8m)^2$ 16. _____

17. $(n^3+15)^2$ 17. _____

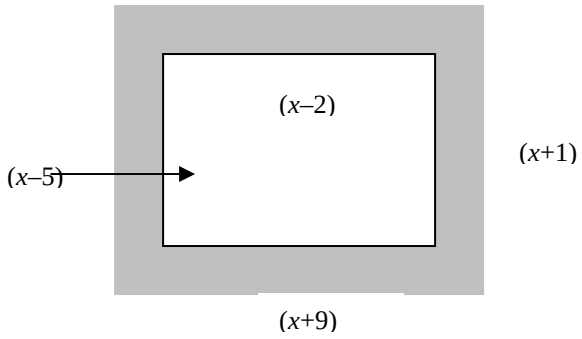
18. Find the area of the area of the rectangle Write the answer as a polynomial in descending powers of $x$. 18. _____

(9*x*–11)

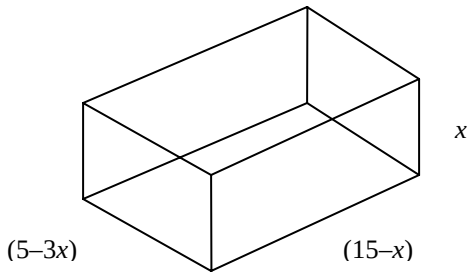
(5*x*–2)

Name _____ Date _____

19. Find the area of the shaded region. Write the answer as a polynomial in descending powers of $x$. 19. _____




20. Express the volume of the box as a polynomial in standard form. 20. _____



Name _____ Date _____

**Additional Exercises 6.4**
**Form I**
Polynomials in Several Variables

Evaluate the polynomial for the given values of $x$ and $y$.

1. $2x+5y-4$; $x = -2$ and $y = -5$ 1. _____

2. $x^2+3y^2$; $x = -1$ and $y = 3$ 2. _____

3. $2y^2-xy$; $x = 2$ and $y = 3$ 3. _____

4. $4x^2-2y^3$; $x = 2$ and $y = -1$ 4. _____

5. $x^3+2x^2y+2xy^2+y^3$; $x = -2$ and $y = -3$ 5. _____

Add or subtract as indicated.

6. $\left(-2x^2y^2-4y^4\right)+\left(6x^2y^2+8y^4\right)$ 6. _____

7. $\left(18x^2y^2+7y^4\right)-\left(-5x^4-7x^2y^2+5y^4\right)$ 7. _____

8. $\left(3x^2-xy-y^2\right)+\left(x^2+2xy+4y^2\right)$ 8. _____

9. Add: 9. _____
$$\begin{array}{r} 6x^2-xy-y^2 \\ \underline{2x^2+4xy+8y^2} \end{array}$$

10. Subtract: 10. _____
$$\begin{array}{r} \left(3x^5+5x^4y+2y^2\right) \\ \underline{-\left(2x^5-3x^4y-10y^2\right)} \end{array}$$

Name _____ Date _____

Find the product.

11. $(-3x^3y)(-2x^4y^7)$ 11. _____

12. $(6xy^4)(-2x^3y^5)$ 12. _____

13. $4ab^5(-3ab^3+8b^2)$ 13. _____

14. $(x+7y)(3x+5y)$ 14. _____

15. $(5x+2y)(4x-8y)$ 15. _____

16. $(2x+7y)^2$ 16. _____

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

18. $(5x-4y)(3x-6y+2)$ 18. _____

19. $(2a+b)(2a-b)$ 19. _____

20. $(2x-y+1)(2x-y-1)$ 20. _____

Name _____ Date _____

**Additional Exercises 6.4**
**Form II**
Polynomials in Several Variables

Evaluate the polynomial for the given values of $x$ and $y$.

1. $3x + 7y - 3$; $x = -2$ and $y = -5$ 1. _____

2. $-x^2 + 4y^2$; $x = -1$ and $y = 3$ 2. _____

3. $4y^2 - 3xy$; $x = 2$ and $y = 3$ 3. _____

4. $7x^2 - 4y^3$; $x = 2$ and $y = -1$ 4. _____

5. $x^3 + 3x^2y + 3xy^2 + y^3$; $x = -2$ and $y = -3$ 5. _____

Add or subtract as indicated.

6. $\left(-6x^2y^2 - 6y^4\right) + \left(11x^2y^2 + 16y^4\right)$ 6. _____

7. $\left(24x^2y^2 + 13y^4\right) - \left(8x^4 - 12x^2y^2 + 13y^4\right)$ 7. _____

8. $\left(4x^2 - xy - y^2\right) + \left(x^2 + 6xy + 11y^2\right)$ 8. _____

9. Add: 9. _____
$$\begin{array}{r} 9x^2 - xy - y^2 \\ \underline{x^2 + 7xy + 9y^2} \end{array}$$

10. Subtract: 10. _____
$$\begin{array}{r} \left(2x^5 + 6x^4y + 5y^2\right) \\ \underline{-\left(5x^5 - 4x^4y - 15y^2\right)} \end{array}$$

Name _____ Date _____

Find the product.

11. $(-8x^4y)(-8x^3y^6)$ 11. _____

12. $(8xy^5)(-4x^2y^3)$ 12. _____

13. $6ab^7(-6ab^4+11b^2)$ 13. _____

14. $(x+11y)(4x+6y)$ 14. _____

15. $(7x+4y)(5x-10y)$ 15. _____

16. $(3x+5y)^2$ 16. _____

17. $(7x-9y)^2$ 17. _____

18. $(7x-12y)(6x-12y+1)$ 18. _____

19. $(4a+b)(4a-b)$ 19. _____

20. $(3x-y+5)(3x-y-5)$ 20. _____

Name _____ Date _____

**Additional Exercises 6.4**
**Form III**
Polynomials in Several Variables

Evaluate the polynomial for the given values of $x$ and $y$.

1. $-6x-4y-2$; $x = -2$ and $y = -5$ 1. _____

2. $-x^2+6y^2$; $x = -1$ and $y = 3$ 2. _____

3. $5y^2-6xy$; $x = 2$ and $y = 3$ 3. _____

4. $9x^2-5y^3$; $x = 2$ and $y = -1$ 4. _____

5. $2x^3-3x^2y-4xy^2+y^3$; $x = -2$ and $y = -3$ 5. _____

Add or subtract as indicated.

6. $\left(8x^2y^2-7y^4\right)+\left(15x^2y^2+20y^4\right)$ 6. _____

7. $\left(36x^2y^2+15y^4\right)-\left(-9x^4-15x^2y^2-17y^4\right)$ 7. _____

8. $\left(8x^2-2xy-6y^2\right)+\left(3x^2+9xy+15y^2\right)$ 8. _____

9. Add: 9. _____

$$\begin{array}{r} 11x^2-4xy-7y^2 \\ -3x^2+8xy+11y^2 \\ \hline \end{array}$$

10. Subtract: 10. _____

$$\begin{array}{r} \left(7x^5+9x^4y+6y^2\right) \\ -\left(6x^5-3x^4y-12y^2\right) \\ \hline \end{array}$$

Name _____ Date _____

Find the product.

11. $(-9x^5y)(-9x^2y^7)$ 11. _____

12. $(6xy^6)(-8x^2y^3)$ 12. _____

13. $7ab^6(-6a^2b^4+12b^2)$ 13. _____

14. $(x+19y)(3x+2y)$ 14. _____

15. $(6x-7y)(5x-11y)$ 15. _____

16. $(4x+8y)^2$ 16. _____

17. $(8x-9y)^2$ 17. _____

18. $(4x-11y)(5x-13y+7)$ 18. _____

19. $(5a+2b)(5a-2b)$ 19. _____

20. $(4x-2y+6)(4x-2y-6)$ 20. _____

Name _____ Date _____

**Additional Exercises 6.5**
**Form I**
Dividing Polynomials

Perform the indicated operation.

1. $\frac{2^5}{2^3}$ 1. _____

2. $\frac{x^{11}}{x^9}$ 2. _____

3. $\frac{x^4 y^6}{x^2 y^2}$ 3. _____

4. $2^0$ 4. _____

5. $-3^0$ 5. _____

6. $(-5^0)$ 6. _____

7. $7y^0$ 7. _____

8. $(8x)^0$ 8. _____

9. $\left(\frac{-2}{a}\right)^2$ 9. _____

10. $\left(\frac{3x^2}{y}\right)^3$ 10. _____

Name _____ Date _____

11. $\left(\frac{2pv^2}{s^3}\right)^2$ 11. _____

12. $\frac{-20x^6}{5x^2}$ 12. _____

13. $\frac{15x^5y^2z^3}{3x^2yz^2}$ 13. _____

14. $\frac{-36x^7y^5}{6x^2y^2}$ 14. _____

15. $\frac{-2x^5}{6x^4}$ 15. _____

16. $\frac{7x^5y^7}{15x^5y^7}$ 16. _____

17. $\frac{21r^6 - 14r^3}{7}$ 17. _____

18. $\frac{-5x^{10} + 10x^7}{-5x^5}$ 18. _____

19. $\frac{30x^7 + 40x^6}{10x^3}$ 19. _____

20. $\frac{18x^5y^4 - 27x^7y^5 + 36x^3y^3}{9x^3y^3}$ 20. _____

Name _____ Date _____

**Additional Exercises 6.5**
**Form II**
Dividing Polynomials

Perform the indicated operation.

1. $\frac{4^6}{4^4}$ 1. _____

2. $\frac{x^{15}}{x^{10}}$ 2. _____

3. $\frac{x^{13}y^7}{x^2y^3}$ 3. _____

4. $3^0$ 4. _____

5. $-2^0$ 5. _____

6. $(-4)^0$ 6. _____

7. $12y^0$ 7. _____

8. $(9y)^0$ 8. _____

9. $\left(\frac{-3}{a}\right)^2$ 9. _____

10. $\left(\frac{4x^3}{y^2}\right)^4$ 10. _____

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11. $\left(\frac{2p^3v^4}{s^4}\right)^2$ 11. _____

12. $\frac{-40x^{13}}{5x^4}$ 12. _____

13. $\frac{20x^{12}y^{11}z^3}{4x^4y^2z^2}$ 13. _____

14. $\frac{-64x^{12}y^5}{8x^2y^2}$ 14. _____

15. $\frac{-3x^{11}}{12x^7}$ 15. _____

16. $\frac{8x^6y^{13}}{11x^6y^{13}}$ 16. _____

17. $\frac{15r^7-25r^4}{5}$ 17. _____

18. $\frac{-8x^{10}+4x^7}{-2x^4}$ 18. _____

19. $\frac{20x^{12}+50x^8}{5x^4}$ 19. _____

20. $\frac{16x^7y^8-32x^5y^6-36x^3y^4}{4x^3y^4}$ 20. _____

Name _____ Date _____

**Additional Exercises 6.5**
**Form III**
Dividing Polynomials

Perform the indicated operation.

1. $\dfrac{11^8}{11^2}$ 1. _____

2. $\dfrac{x^{21}}{x^{17}}$ 2. _____

3. $\dfrac{x^{11}y^5}{x^9y^2}$ 3. _____

4. $9^0$ 4. _____

5. $-11^0$ 5. _____

6. $(-8)^0$ 6. _____

7. $18y^0$ 7. _____

8. $(15y)^0$ 8. _____

9. $\left(\dfrac{-7}{a^5}\right)^2$ 9. _____

10. $\left(\dfrac{5x^5}{y^3}\right)^4$ 10. _____

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11. $\left(\frac{5p^6v^8}{s^7}\right)^2$ 11. _____

12. $\frac{-80x^{17}}{-10x^5}$ 12. _____

13. $\frac{45x^{18}y^{13}z^{12}}{15x^7y^5z}$ 13. _____

14. $\frac{-98x^{15}y^4}{49x^{12}y}$ 14. _____

15. $\frac{-7x^{10}}{12x^5}$ 15. _____

16. $\frac{17x^7y^{12}}{23x^7y^{12}}$ 16. _____

17. $\frac{34x^8-51x^5}{17}$ 17. _____

18. $\frac{-49x^7+42x^5}{-7x^3}$ 18. _____

19. $\frac{55x^8+33x^5}{11x^2}$ 19. _____

20. $\frac{50x^7y^8-40x^5y^6-90x^3y^4}{10x^3y^4}$ 20. _____

Name _____ Date _____

**Additional Exercises 6.6**
**Form I**
Dividing Polynomials by Binomials

Divide using long division.

1. $\dfrac{x^2+11x+30}{x+6}$ 1. _____

2. $\dfrac{x^2-4x-5}{x+1}$ 2. _____

3. $\dfrac{x^2+4x+4}{x+2}$ 3. _____

4. $\dfrac{x^2-9}{x-3}$ 4. _____

5. $\dfrac{x^2+x-6}{x+3}$ 5. _____

6. $\dfrac{x^2-x-20}{x-5}$ 6. _____

7. $\dfrac{x^2-6x-27}{x+3}$ 7. _____

8. $\dfrac{x^2+15x+56}{x+7}$ 8. _____

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9. $\dfrac{x^2 - x - 30}{x - 6}$ 9. _____

10. $\dfrac{x^2 + 8x - 9}{x + 9}$ 10. _____

11. $\dfrac{6x^2 - x - 2}{2x + 1}$ 11. _____

12. $\dfrac{7m^2 + 42m - 49}{m + 7}$ 12. _____

13. $\dfrac{7m^3 + 11m^2 + 2m + 16}{m + 2}$ 13. _____

14. $\dfrac{6r^3 - 43r^2 - 36r - 32}{r - 8}$ 14. _____

15. $\dfrac{-20x^3 + 27x^2 + 7x - 12}{-4x + 3}$ 15. _____

Name _____ Date _____

**Additional Exercises 6.6**
**Form II**
Dividing Polynomials by Binomials

Divide using long division.

1. $\dfrac{x^2-4x-5}{x-1}$ 1. _____

2. $\dfrac{x^2-10x-25}{x-5}$ 2. _____

3. $\dfrac{x^2+4x-14}{x+6}$ 3. _____

4. $\dfrac{x^3+6x-9}{x-3}$ 4. _____

5. $\dfrac{x^3+8}{x+2}$ 5. _____

6. $\dfrac{27x^3+64}{3x+4}$ 6. _____

7. $\dfrac{p^2+4p-27}{p+8}$ 7. _____

8. $\dfrac{x^2+11x+21}{x+3}$ 8. _____

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9. $\dfrac{6x^2+7x-20}{3x-4}$ 9. _____

10. $\dfrac{6y^3-8y+5}{2y-4}$ 10. _____

11. $\dfrac{x^4-2x+5}{x-2}$ 11. _____

12. $\dfrac{3x^3-5x^2+2x-1}{x-2}$ 12. _____

13. $\dfrac{y^3-1}{y+1}$ 13. _____

14. $\dfrac{r^4-16}{r+2}$ 14. _____

15. $\dfrac{x^3+3x^2+5x+3}{x+1}$ 15. _____

Name _____ Date _____

**Additional Exercises 6.6**
**Form III**
Dividing Polynomials by Binomials

Divide using long division.

1. $\dfrac{5x^2-12x+16}{5x-2}$ 1. _____

2. $\dfrac{8y^3-22y^2-5y+12}{4y+3}$ 2. _____

3. $\dfrac{y^6-13y^3+42}{y^3-7}$ 3. _____

4. $\dfrac{a^4+9a^2+20}{a^2+4}$ 4. _____

5. $\dfrac{y^4-6y^2+9}{y-3}$ 5. _____

6. $\dfrac{2y^3-9y^2+11y-3}{2y-3}$ 6. _____

7. $\dfrac{3x^4-4x^3-x^2-16x-12}{3x+2}$ 7. _____

8. $\dfrac{x^3-7x+10}{x+3}$ 8. _____

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9. $\dfrac{x^3 - x^2 + x - 1}{x - 1}$ 9. _____

10. $\dfrac{y^4 + 2y^3 - y - 2}{y + 2}$ 10. _____

11. $\dfrac{x^4 - x^3 + 3x^2 - 2x + 2}{x^2 + 2}$ 11. _____

12. $\dfrac{6x^3 - 8x^2 - 2x + 21}{3x + 2}$ 12. _____

13. $\dfrac{x^3 - 64}{x - 4}$ 13. _____

14. $\dfrac{a^4 - a^3 + 3a^2 - 2a + 2}{a^2 + 2}$ 14. _____

15. $\dfrac{15x^3 - 25x^2 - 2x + 26}{-3x + 2}$ 15. _____

Name _____ Date _____

**Additional Exercises 6.7**
**Form I**
Negative Exponents and Scientific Notation

Write the expression with positive exponents only. Then simplify, if possible.

1. $-3^{-2}$ 1. _____

2. $3^{-1}+2^{-1}$ 2. _____

3. $\dfrac{3^{-3}}{4^{-2}}$ 3. _____

4. $\dfrac{1}{2x^{-2}}$ 4. _____

Simplify the expression.

5. $x^{-8}\cdot x^{3}$ 5. _____

6. $2x^{-1}$ 6. _____

7. $\dfrac{6p^{-6}}{5}$ 7. _____

8. $x^{4}y^{-10}$ 8. _____

9. $\dfrac{8}{x^{-2}}$ 9. _____

Name _____ Date _____

Write the number in decimal notation with the use of exponents.

10. $1.25\times10^{3}$ 10. _____

11. $3.957\times10^{-2}$ 11. _____

12. $2.0351\times10^{-4}$ 12. _____

13. $4.7\times10^{0}$ 13. _____

Write the number in scientific notation.

14. 34.18 14. _____

15. 19,000 15. _____

16. 0.0014 16. _____

17. $\dfrac{6\times10^{5}}{2\times10^{3}}$ 17. _____

18. $(1\times10^{2})(2\times10^{-3})$ 18. _____

19. $(3\times10^{2})^{2}$ 19. _____

20. A bacterium measures 0.000000251 centimeters. Rewrite the number in scientific notation. 20. _____

Name _____ Date _____

**Additional Exercises 6.7**
**Form II**
Negative Exponents and Scientific Notation

Write the expression with positive exponents only. Then simplify, if possible.

1. $-(4)^{-2}$ 1. _____

2. $\frac{1}{23} \cdot \frac{1}{(4)^{-2}}$ 2. _____

3. $\frac{(4)^{-2}}{(5)^{-2}}$ 3. _____

4. $\frac{1}{3x^{-3}}$ 4. _____

Simplify the expression.

5. $x^{-7} \cdot x^{5}$ 5. _____

6. $\frac{12x^{2}}{6x^{6}}$ 6. _____

7. $\frac{5p^{-7}}{2p^{3}}$ 7. _____

8. $(x^{-1}y^{6})^{-2}$ 8. _____

9. $\frac{(3x^{4})^{3}}{x^{15}}$ 9. _____

Name _____ Date _____

Write the number in decimal notation with the use of exponents.

10. $1.18\times10^{7}$ 10. _____

11. $7.36\times10^{-4}$ 11. _____

12. $1.0483\times10^{-7}$ 12. _____

13. $4.48\times10^{0}$ 13. _____

Write the number in scientific notation.

14. 697.35 14. _____

15. 65,000,000 15. _____

16. 0.00007948 16. _____

17. $\dfrac{8\times10^{-9}}{2\times10^{-6}}$ 17. _____

18. $(4\times10^{3})(2\times10^{-6})$ 18. _____

19. $(2\times10^{3})^{2}$ 19. _____

20. A bacterium measures 0.0000000896 centimeters. Rewrite the number in scientific notation. 20. _____

Name _____ Date _____

**Additional Exercises 6.7**
**Form III**
Negative Exponents and Scientific Notation

Write the expression with positive exponents only. Then simplify, if possible.

1. $-6^{-3}$ 1. _____

2. $8^{-1}+11^{-1}$ 2. _____

3. $\dfrac{5^{-3}}{7^{-3}}$ 3. _____

4. $\dfrac{1}{8x^{-6}}$ 4. _____

Simplify the expression.

5. $x^{-11}\cdot x^{9}$ 5. _____

6. $\dfrac{18x^{5}}{3x^{9}}$ 6. _____

7. $\dfrac{7p^{-9}}{3p^{2}}$ 7. _____

8. $(x^{-3}y^{4})^{-2}$ 8. _____

9. $\dfrac{(5x^{6})^{3}}{x^{12}}$ 9. _____

Name _____ Date _____

Write the number in decimal notation with the use of exponents.

10. $3.05\times10^{4}$ 10. _____

11. $9.18\times10^{-3}$ 11. _____

12. $1.1936\times10^{-8}$ 12. _____

13. $5.7\times10^{0}$ 13. _____

Write the number in scientific notation.

14. 1045.7 14. _____

15. 29,000,000,000 15. _____

16. 0.0000057 16. _____

17. $\dfrac{16\times10^{-8}}{4\times10^{-6}}$ 17. _____

18. $(6\times10^{4})(3\times10^{-2})$ 18. _____

19. $(5\times10^{-3})^{4}$ 19. _____

20. A bacterium measures 0.00000077 centimeters. Rewrite the number in scientific notation. 20. _____