LESSON 2.1

Exercise Set A

MM1A2c Add, subtract, multiply, and divide polynomials.

Write the polynomial so that the exponents decrease from left to right. Identify the degree and leading coefficient of the polynomial.

1. $4n^5$

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

3. $6y^3 - 2y^2 + 4y^4 - 5$

Tell whether the expression is a polynomial. If it is a polynomial, find its degree and classify it by the number of its terms. Otherwise, tell why it is not a polynomial.

4. 10^x

5. $-6n^2 - n^3 + 4$

6. $w^{-3} + 5$

Find the sum or difference.

7. $(3z^2 + z - 4) + (2z^2 + 2z - 3)$

8. $(8c^2 - 4c + 1) + (-3c^2 + c + 5)$

9. $(2x^2 + 5x - 1) + (x^2 - 5x + 7)$

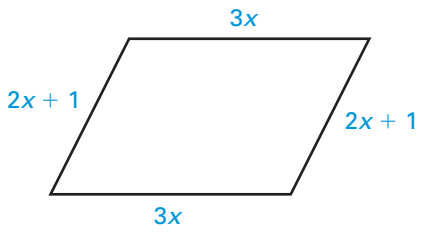
10. $(10b^2 - 3b + 2) - (4b^2 + 5b + 1)$

11. $(-4m^2 + 3m - 1) - (m + 2)$

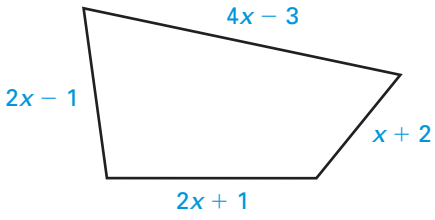
12. $(3m + 4) - (2m^2 - 6m + 5)$

Write a polynomial that represents the perimeter of the figure.

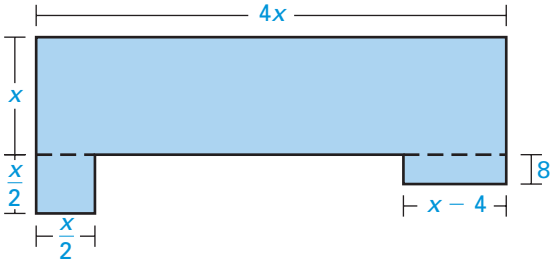
13.



14.



15. Floor Plan The first floor of a home has the floor plan shown. Find the area of the first floor.



16. Profit For 1995 through 2005, the revenue R (in dollars) and the cost C (in dollars) of producing a product can be modeled by

$$R = \frac{1}{4}t^2 + \frac{21}{4}t + 400 \quad \text{and} \quad C = \frac{1}{12}t^2 + \frac{13}{4}t + 200$$

where t is the number of years since 1995. Write an equation for the profit earned from 1995 through 2005. (*Hint:* Profit = Revenue − Cost)

UNIT 2

LESSON 2.1

Exercise Set B

MM1A2c Add, subtract, multiply, and divide polynomials.

Tell whether the expression is a polynomial. If it is a polynomial, find its degree and classify it by the number of its terms. Otherwise, tell why it is not a polynomial.

1. -8

2. $x^2 - 5x + x^{-1}$

3. $-3b^2 - 5 + \frac{1}{2}b$

Find the sum or difference.

4. $(3m^3 + 2m + 1) + (4m^2 - 3m + 1)$

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

6. $(-4c + c^3 + 8) + (c^2 - 5c - 3)$

7. $(-3z + 6) - (4z^2 - 7z - 8)$

8. $(14x^4 - 3x^2 + 2) - (3x^3 + 4x^2 + 5)$

9. $(5 - x^4 - 2x^3) - (-6x^2 + 5x + 5)$

10. Find the sum $f(x) + g(x)$ and the difference $f(x) - g(x)$ for the functions $f(x) = -5x^2 + 2x - 1$ and $g(x) = 6x^3 + 2x^2 - 5$.

Find the sum or difference.

11. $(10a^2b^2 - 7a^2b) + (-4a^3b^2 + 5a^2b^2 - 3a^2b + 5)$

12. $(6m^2n - 5mn^2 - 8n + 2m) - (6n^2m + 3m^2n)$

13. **Mineral Production** For 1997 through 2003, the amount P of peat produced (in thousand metric tons) and the amount L of perlite produced (in thousand metric tons) in the United States can be modeled by

$$P = 3.09t^4 - 36.74t^3 + 121.38t^2 - 77.65t + 663.57 \text{ and}$$
$$L = 1.84t^4 - 20.04t^3 + 56.27t^2 - 48.77t + 703.94$$

where t is the number of years since 1997.

a. Write an equation that gives the total number T of thousand metric tons of peat and perlite produced as a function of the number of years since 1997.

b. Was more peat and perlite produced in 1997 or in 2003? *Explain* your answer.

14. **Home Sales** In 1997, the median sale price for a one-family home in the Northeast was about \$187,443 and the median sale price for a one-family home in the Midwest was about \$151,629. From 1997 through 2003, the median sale price for a one-family home in the Northeast increased by about \$13,857 per year and the median sale price for a one-family home in the Midwest increased by about \$5457 per year.

a. Write two equations that model the median sale prices of a one-family home in the Northeast and Midwest as functions of the number of years since 1997.

b. How much more did a home in the Northeast cost than a home in the Midwest in 1997 and 2003? What was the change in the sale price of each area from 1997 to 2003?