LESSON 2.5

Exercise Set A

MM1A2f Factor expressions by greatest common factor, grouping, trial and error, and special products.

Solve the equation.

1. $(x + 14)(x - 3) = 0$

2. $(m - 12)(m + 5) = 0$

3. $(p + 15)(p + 24) = 0$

4. $(n - 8)(n - 9) = 0$

5. $(d + 8)\left(d - \frac{1}{2}\right) = 0$

6. $\left(c + \frac{3}{4}\right)(c - 6) = 0$

7. $(2z - 8)(z + 5) = 0$

8. $(y - 3)(5y + 10) = 0$

9. $(6b - 4)(b - 8) = 0$

10. $(8x + 4)(6x - 3) = 0$

11. $(3x + 9)(6x - 3) = 0$

12. $(4x + 5)(4x - 5) = 0$

Factor out the greatest common monomial factor.

13. $10x - 10y$

14. $8x^2 + 20y$

15. $18a^2 - 6b$

16. $4x^2 - 4x$

17. $r^2 + 2rs$

18. $2m^2 + 6mn$

19. $5p^2q + 10q$

20. $9a^5 + a^3$

21. $6w^3 - 14w^2$

Solve the equation.

22. $m^2 - 10m = 0$

23. $b^2 + 14b = 0$

24. $5w^2 - 5w = 0$

25. $24k^2 + 24k = 0$

26. $8r^2 - 24r = 0$

27. $9p^2 + 18p = 0$

28. $6n^2 - 15n = 0$

29. $-8y^2 - 10y = 0$

30. $-10b^2 + 25b = 0$

31. $8c^2 = 4c$

32. $30r^2 = -15r$

33. $-24y^2 = 9y$

34. Diving Board A diver jumps from a diving board that is 24 feet above the water. The height of the diver is given by

$$h = -16(t - 1.5)(t + 1)$$

where the height h is measured in feet, and the time t is measured in seconds. When will the diver hit the water? Can you see a quick way to find the answer? *Explain.*

35. Dog To catch a frisbee, a dog leaps into the air with an initial vertical velocity of 14 feet per second.

a. Write a model for the height of the dog above the ground.

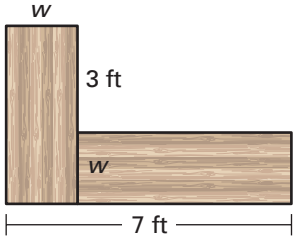
b. After how many seconds does the dog land on the ground?

36. Desktop Areas You have two components to the desktop where you do your homework that fit together into an L-shape. The two components have the same area.

a. Write an equation that relates the areas of the desktop components.

b. Find the value of w.

c. What is the combined area of the desktop components?



UNIT 2

LESSON 2.5

Exercise Set B

MM1A2f Factor expressions by greatest common factor, grouping, trial and error, and special products.

Solve the equation.

1. $(x + 3)\left(x - \frac{2}{5}\right) = 0$
2. $\left(m - \frac{5}{2}\right)\left(m + \frac{3}{2}\right) = 0$
3. $(4b + 16)(b - 6) = 0$
4. $(7a - 14)(a + 8) = 0$
5. $(2y + 3)(y - 9) = 0$
6. $(5z - 8)(3z + 2) = 0$
7. $(9w - 2)(7w - 3) = 0$
8. $(8 - 2c)(5c + 1) = 0$
9. $(9 - 8r)(10 - 4r) = 0$

Factor out the greatest common monomial factor.

10. $9x^2 - 21y$
11. $4m^3 + 24m$
12. $10p^2q - 5pq^2$
13. $6x^3y + 9y^2$
14. $35a^2b^2 - 5ab$
15. $12m^2n - 8mn^2$
16. $w^4 - 2w^3 + w$
17. $-3p^4 + 15p^2 + 6p$
18. $8r^5 - 20r^4 - 12r^2$

Solve the equation.

19. $12a^2 - 9a = 0$
20. $18x^2 + 12x = 0$
21. $6z^2 - 8z = 0$
22. $20p^2 = -24p$
23. $-28m^2 = 14m$
24. $-30r^2 = -25r$
25. $100m^2 = -6m$
26. $15y - 50y^2 = 0$
27. $26w + 34w^2 = 0$

28. **Error Analysis** *Describe* and correct the error in solving $(z - 24)(z + 9) = 0$.

$(z - 24)(z + 9) = 0$

$z = -24$ or $z = 9$ ✗

Find the zeros of the function.

29. $f(x) = -28x^2 + 7x$
30. $f(x) = -9x^2 + 4x$
31. $f(x) = 5x^2 - 3x$

32. **Fish** A fish jumps out of the water while swimming. The height h (in feet) of the fish can be modeled by $h = -16t^2 + 3.5t$ where t is the time (in seconds) since the fish jumped out of the water.
   - **a.** Find the zeros of the function. *Explain* what the zeros mean in this situation.
   - **b.** What is a reasonable domain for the function? *Explain* your answer.

33. **Multiple Representations** An arch frames the entrance to a garden. The shape of the arch is modeled by the graph of the equation $y = -3x^2 + 12x$ where x and y are measured in feet. On a coordinate plane, the ground is represented by the x-axis.
   - **a. Making a Table** Make a table of values that shows the height of the arch for $x = 0, 1, 2, 3$, and 4 feet.
   - **b. Drawing a Graph** Plot the ordered pairs in the table as points in a coordinate plane. Connect the points with a smooth curve that represents the arch.
   - **c. Interpreting a Graph** How wide is the base of the arch?