

Practice

Form G

Factoring to Solve Quadratic Equations

Use the Zero-Product Property to solve each equation.

1. $(y + 6)(y - 4) = 0$ **-6; 4**

2. $(3f + 2)(f - 5) = 0$ **5; $-\frac{2}{3}$**

3. $(2x - 7)(4x + 10) = 0$ **$\frac{7}{2}$; $-\frac{5}{2}$**

4. $(8t - 7)(3t + 5) = 0$ **$\frac{7}{8}$; $-\frac{5}{3}$**

5. $d(d - 8) = 0$ **0; 8**

6. $3m(2m + 9) = 0$ **0; $-\frac{9}{2}$**

Solve by factoring.

7. $n^2 + 2n - 15 = 0$
-5; 3

8. $a^2 - 15a + 56 = 0$
7; 8

9. $z^2 - 10z + 24 = 0$
6; 4

10. $8x^2 + 10x + 3 = 0$
 $-\frac{3}{4}$; $-\frac{1}{2}$

11. $3b^2 + 7b - 6 = 0$
 $\frac{2}{3}$; -3

12. $5p^2 - 9p - 2 = 0$
2; $-\frac{1}{5}$

13. $w^2 + w = 12$
3; -4

14. $s^2 + 12s = -32$
-4; -8

15. $d^2 = 5d$
0; 5

16. $3j^2 - 20j = -12$
 $\frac{2}{3}$; 6

17. $12y^2 + 40y = 7$
 $\frac{1}{6}$; $-\frac{7}{2}$

18. $27r^2 + 69r = 8$
 $\frac{1}{9}$; $-\frac{8}{3}$

Use the Zero-Product Property to solve each equation. Write your solutions as a set in roster form.

19. $k^2 - 11k + 30 = 0$
{6, 5}

20. $x^2 - 6x - 7 = 0$
{-1, 7}

21. $n^2 + 17n + 72 = 0$
{-8, -9}

22. The volume of a sandbox shaped like a rectangular prism is 48 ft^3 . The height of the sandbox is 2 feet. The width is w feet and the length is $w + 2$ feet. Use the formula $V = lwh$ to find the value of w .

4

23. The area of the rubber coating for a flat roof was 96 ft^2 . The rectangular frame the carpenter built for the flat roof has dimensions such that the length is 4 feet longer than the width. What are the dimensions of the frame?

8 ft by 12 ft

24. Ling is cutting carpet for a rectangular room. The area of the room is 324 ft^2 . The length of the room is 3 feet longer than twice the width. What should the dimensions of the carpet be?

12 ft by 27 ft

Practice (continued)

Form G

Factoring to Solve Quadratic Equations

Write each equation in standard form. Then solve.

25. $21x^2 + 5x - 35 = 3x^2 - 4x$

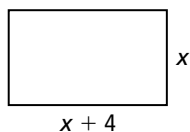
$18x^2 + 9x - 35; -\frac{5}{3}; \frac{7}{6}$

26. $3n^2 - 2n + 1 = -3n^2 + 9n + 11$

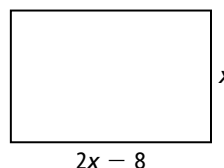
$6n^2 - 11n - 10; \frac{5}{2}; -\frac{2}{3}$

Find the value of x as it relates to each rectangle or triangle.

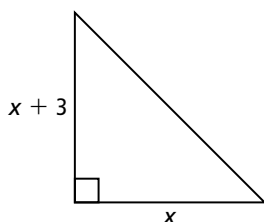
27. Area = 60 cm^2 **6 cm**



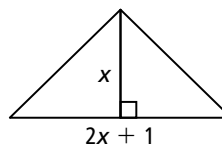
28. Area = 234 yd^2 **13 yd**



29. Area = 20 in.^2 **5 in.**



30. Area = 150 m^2 **12 m**

**Reasoning** For each equation, find k and the value of any missing solutions.

31. $x^2 - kx - 16 = 0$ where -2 is one solution of the equation.

6; 8

32. $x^2 - 6x = k$ where 10 is one solution of the equation.

40; -4

33. $kx^2 - 13x = 5$ where $-\frac{1}{3}$ is one solution of the equation.

6; $\frac{5}{2}$

34. **Writing** Explain how you solve a quadratic equation by factoring.

Write the equation in standard form equal to zero. Write two sets of parentheses. Find factors of the x^2 term. Find factors of the constant term. Find the combination of factors whose sum equals the x -term.