

## Lesson 11 Using the Zero Product Property to Find Horizontal Intercepts

NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

# Homework Problem Set

Find the solution set of each equation:

1.  $(x - 1)(x - 2)(x - 3) = 0$

$$\{1, 2, 3\}$$

2.  $(x - 16.5)(x - 109) = 0$

$$\{16.5, 109\}$$

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

$$\{-5, 0, 4\}$$

4.  $3(x + 5)(2x - 3) = 0$

$$\begin{array}{l} x+5=0 \quad 2x-3=0 \\ x=5 \quad 2x=3 \\ \quad \quad x=\frac{3}{2} \end{array}$$

$$\left\{-5, \frac{3}{2}\right\}$$

5.  $\left(\frac{1}{2}x + 6\right)(x - 3) = 0$

$$\begin{array}{l} \frac{1}{2}x+6=0 \quad x-3=0 \\ \frac{1}{2}x=-6 \quad x=3 \\ x=-12 \end{array}$$

$$\{-12, 3\}$$

6.  $(5x - 10)(x + 2) = 0$

$$\begin{array}{l} 5x-10=0 \quad x+2=0 \\ 5x=10 \quad x=-2 \\ x=2 \end{array}$$

$$\{-2, 2\}$$

7.  $(x - 2)^2 = 0$

$$\begin{array}{l} (x-2)(x-2)=0 \\ x-2=0 \\ x=2 \end{array}$$

$$\{2\}$$

8.  $(x + 8)^2 = 0$

$$\begin{array}{l} (x+8)(x+8)=0 \\ x+8=0 \\ x=-8 \end{array}$$

$$\{-8\}$$

9.  $x^2 \cdot (x - 7) = 0$

$$\begin{array}{l} x^2=0 \quad x-7=0 \\ x=0 \quad x=7 \end{array}$$

$$\{0, 7\}$$

10. Using what you learned in this lesson, create an equation that has 53 and 22 as its only solutions.

$$(x - 53)(x - 22) = 0$$

Multiply each set of binomials.

11. $(x - 10)(x + 10)$ $x^2 + \cancel{10x} - \cancel{10x} - 100$ $x^2 - 100$	12. $(x - 1)(x + 1)$ $x^2 + \cancel{1x} - \cancel{1x} - 1$ $x^2 - 1$	13. $(x - 5)(x + 5)$ $x^2 + \cancel{5x} - \cancel{5x} - 25$ $x^2 - 25$
14. $(y - 3)(y + 3)$ $y^2 + \cancel{3y} - \cancel{3y} - 9$ $y^2 - 9$	15. $(a - 7)(a + 7)$ $a^2 + \cancel{7a} - \cancel{7a} - 49$ $a^2 - 49$	16. $(b - 6)(b + 6)$ $b^2 + \cancel{6b} - \cancel{6b} - 36$ $b^2 - 36$
17. $(x + 10)(x + 10)$ $x^2 + 10x + 10x + 100$ $x^2 + 20x + 100$	18. $(y + 4)(y - 4)$ $y^2 - \cancel{4y} + \cancel{4y} - 16$ $y^2 - 16$	19. $(c + 2)(c - 2)$ $c^2 - \cancel{2c} + \cancel{2c} - 4$ $c^2 - 4$
20. $(x + \frac{1}{2})(x - \frac{1}{2})$ $x^2 - \cancel{\frac{1}{2}x} + \cancel{\frac{1}{2}x} - \frac{1}{4}$ $x^2 - \frac{1}{4}$	21. $(w + 2)(w + 3)$ $w^2 + 3w + 2w + 6$ $w^2 + 5w + 6$	22. $(x - 0.2)(x + 0.2)$ $x^2 + \cancel{0.2x} - \cancel{0.2x} - 0.04$ $x^2 - 0.04$
23. $(b - 1.5)(b + 1.5)$ $b^2 + \cancel{1.5b} - \cancel{1.5b} - 2.25$ $b^2 - 2.25$	24. $(x - 2y)(x + 2y)$ $x^2 + \cancel{2xy} - \cancel{2xy} - 4y^2$ $x^2 - 4y^2$	25. $(2x - 3)(2x + 3)$ $4x^2 + \cancel{6x} - \cancel{6x} - 9$ $4x^2 - 9$

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## Spiral REVIEW—Solving Equations

Solve each equation.

26.  $3x + 4 = 2x - 5$

$$x = -9$$

27.  $\frac{1}{4}x = 5$

$$x = 20$$

28.  $\frac{-m}{8} = -5$

$$m = 40$$

29.  $\frac{-5}{6}x = \frac{3}{4}$

$$x = -\frac{9}{10}$$

30.  $\frac{1}{4} + \frac{1}{2}t = 4$

$$t = \frac{15}{2}$$

31.  $\frac{2}{5}(x - 2) = -3$

$$x = -\frac{11}{2}$$

32.  $3.5x + 0.8 = -50.9 - 5.9x$

$$x = 5.5$$

33.  $0.3x - 0.24 = 0.36 + 0.52x$

$$x = -2.72$$

34.  $\frac{3}{4}(2x + 1) = 2$

$$x = \frac{5}{6}$$

35.  $5x = -7x + 6$

$$x = \frac{1}{2}$$

36.  $7 - 3x = x - 4(2 + x)$

NO SOLUTION

37.  $6(4x - 5) = 24x - 30$

Infinite  
Solutions

38.  $2x + 5 = 2x - 3$

NO SOLUTION

39.  $3(x + 1) - 5 = 3x - 2$

Infinite  
Solutions

40.  $4(2x - 8) = 3(2 - 3x)$

$$x = \frac{38}{17}$$

41.  $-2x = -3x + 12 - 2x$

$$x = 4$$

42.  $8(b + 1) + 4 = 3(2b - 8) - 16$

$$b = -26$$

43.  $4x - 6 = x + 9$

$$x = 5$$