Name _____ Date _____

Zeroing In
Solving Quadratics by Factoring

Vocabulary

Complete the definition of the Zero Product Property.

1. The Zero Product Property states that if the product of two or more factors is equal to _____, then at least one factor must be equal to _____.

   If $ab = 0$, then _____ or _____.

   This property is also known as the _____.

Define the term in your own words.

2. roots

Problem Set

Factor and solve each quadratic equation. Check your answer.

1. $x^2 + 5x + 6 = 0$

$x^2 + 5x + 6 = 0$

$(x + 3)(x + 2) = 0$

$x + 3 = 0$ or $x + 2 = 0$

$x = -3$ or $x = -2$

The roots are -3 and -2.

Check:

$(-3)^2 + 5(-3) + 6 = 0$

$9 - 15 + 6 = 0$

$0 = 0$

$(-2)^2 + 5(-2) + 6 = 0$

$4 - 10 + 6 = 0$

$0 = 0$

2. $x^2 - 3x - 4 = 0$

3. $m^2 + 2m - 35 = 0$

4. $-x^2 - 4x + 12 = 0$

5. $x^2 + 8x = 0$

6. $w^2 + 50 = -15w$

12

7. $-t^2 + 12t = 32$

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

9. $2t^2 + t - 3 = 0$

10. $w^2 + 5w - 32 = 2w - 4$

Determine the zeros of each quadratic function, if possible. Check your answer.

11. $f(x) = x^2 - 5x$

$f(x) = x^2 - 5x$

$0 = x^2 - 5x$

$0 = x(x - 5)$

$x = 0$ or $x - 5 = 0$

$x = 0$ or $x = 5$

The zeros are 0 and 5.

Check:

$(0)^2 - 5(0) \stackrel{?}{=} 0$

$0 - 0 \stackrel{?}{=} 0$

$0 = 0$

$(5)^2 - 5(5) \stackrel{?}{=} 0$

$25 - 25 \stackrel{?}{=} 0$

$0 = 0$

12. $f(x) = 3x^2 + 6x$

13. $f(x) = x^2 + 11x + 30$

14. $f(x) = x^2 - 9x - 36$

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15. $f(x) = 2x^2 + 9x + 10$

16. $f(x) = x^2 + 5x + 14$

17. $f(x) = 3x^2 + 3x - 6$

18. $f(x) = \frac{1}{2}x^2 - \frac{3}{4}x$