Algebra 1
Day 1 – Solving by Factoring
Practice Assignment

Unit 9 – Quadratic Equations

Practice

Name: Key

Date: _____ Block: _____

Solve the quadratic equation to find it zeros.

1. $(x + 5)(x - 2) = 0$

$x + 5 = 0 \qquad x - 2 = 0$

$\boxed{x = -5} \qquad \boxed{x = 2}$

2. $2x^2 - 11x - 21 = 0$

$(2x + 3)(x - 7) = 0$

$2x + 3 = 0 \qquad x - 7 = 0$
$\quad -3 \ -3 \qquad \boxed{x = 7}$

$\frac{2x}{2} = \frac{-3}{2}$

$\boxed{x = -\frac{3}{2}}$

3. $x^2 - 15x + 36 = 0$

$(x - 12)(x - 3) = 0$

$x - 12 = 0 \qquad x - 3 = 0$

$\boxed{x = 12} \qquad \boxed{x = 3}$

4. $-30x^2 = -25x$
$\quad +25x \ +25x$

$-30x^2 + 25x = 0$

$-5x(6x - 5) = 0$

$\frac{-5x}{-5} = \frac{0}{-5} \qquad 6x - 5 = 0$
$\qquad\qquad\qquad +5 \ +5$
$\boxed{x = 0} \qquad\quad \frac{6x}{6} = \frac{5}{6}$
$\qquad\qquad\qquad \boxed{x = \frac{5}{6}}$

5. $(x - 8)(2x - 1) = 0$

$x - 8 = 0 \qquad 2x - 1 = 0$
$\boxed{x = 8} \qquad\quad +1 \ +1$
$\qquad\qquad\qquad \frac{2x}{2} = \frac{1}{2}$
$\qquad\qquad\qquad \boxed{x = \frac{1}{2}}$

6. $3x^2 - 81x = 0$

$3x(x - 27) = 0$

$\frac{3x}{3} = \frac{0}{3} \qquad x - 27 = 0$
$\qquad\qquad\qquad \boxed{x = 27}$
$\boxed{x = 0}$

7. $x^2 - 48 = 2x$
$\quad -2x \ -2x$

$x^2 - 2x - 48 = 0$

$(x - 8)(x + 6) = 0$

$x - 8 = 0 \qquad x + 6 = 0$

$\boxed{x = 8} \qquad \boxed{x = -6}$

8. $5x^2 + 9x = 2$
$\qquad\qquad -2 \ -2$

$5x^2 + 9x - 2 = 0$

$(5x - 1)(x + 2) = 0$

$5x - 1 = 0 \qquad x + 2 = 0$
$\quad +1 \ +1 \qquad \boxed{x = -2}$
$\frac{5x}{5} = \frac{1}{5}$
$\boxed{x = \frac{1}{5}}$

9. $5x^2 - 19x - 26 = 4$
$\qquad\qquad\qquad -4 \ -4$

$5x^2 - 19x - 30 = 0$

$(5x + 6)(x - 5) = 0$

$5x + 6 = 0 \qquad x - 5 = 0$
$\quad -6 \ -6 \qquad \boxed{x = 5}$
$\frac{5x}{5} = \frac{-6}{5}$
$\boxed{x = -\frac{6}{5}}$

10. $x^2 - 6x + 9 = 0$

$(x - 3)(x - 3) = 0$

$x - 3 = 0$

$\boxed{x = 3}$

11. $x^2 - 6x = 0$

$x(x - 6) = 0$

$\boxed{x = 0} \qquad x - 6 = 0$
$\qquad\qquad \boxed{x = 6}$

12. $2x^2 - 7x - 4 = 0$

$(2x + 1)(x - 4) = 0$

$2x + 1 = 0 \qquad x - 4 = 0$
$\quad -1 \ -1 \qquad \boxed{x = 4}$
$\frac{2x}{2} = \frac{-1}{2}$
$\boxed{x = -\frac{1}{2}}$

13. Given that the solutions to a quadratic equation are x = -6 and x = 8, write an equation in factored form AND standard form that would represent those solutions.

opp in equation

$$y = (x + 6)(x - 8)$$

$$y = x^2 - 2x - 48$$

14. What are the factors AND zeros of x² + 4x – 21 = 0?

Factors: $(x + 7)(x - 3)$

Zeros: $x = -7$ and $x = 3$

15. Which equation only has -5 has its only zero? Show work to prove the answer you selected.

A. y = x² + 9x + 20

$$0 = (x + 5)(x + 4)$$

$$x = -5 \text{ and } -4$$

B. y = x² – 8x + 15

$$0 = (x - 5)(x - 3)$$

$$x = 5 \text{ and } 3$$

C. y = x² + 10x + 25

$$0 = (x + 5)(x + 5)$$

$$x = -5$$

D. y = x² – 25

$$0 = (x + 5)(x - 5)$$

$$x = -5 \text{ and } 5$$

16. When an equation is factored and the factored form results in a binomial squared, will it ever have two different zeros? Explain why or why not.

It will only ever have 1 zero because the factors are both the same, which means it will produce the exact same zeros.

ex: $y = (x + 4)^2 \rightarrow (x + 4)(x + 4) = 0 \rightarrow x = -4$

$y = (x - 9)^2 \rightarrow (x - 9)(x - 9) = 0 \rightarrow x = 9$