

Warm-Up

2/5/18

Solve the linear equations in #1 & 2.

1. $3(x + 5) = 6$

2. $2x + 8 = 12$

$$1. \quad 3(x+5) = 6$$

$$3x + 15 = 6$$
$$\quad -15 \quad -15$$

$$3x = -9$$

$$\frac{3x}{3} = \frac{-9}{3}$$

$$x = -3$$

$$2x + 8 = 12$$

$$\frac{-8}{-8} \quad \frac{-8}{-8}$$

$$\frac{2x}{2} = \frac{4}{2} \quad \boxed{x = 2}$$

Warm-Up**2/5/18**

Solve quadratic equations using the zero product property.

3. $2x^2 + 3x = 0$

4. $2x^2 - 2x - 14 = -2$

$$2x^2 + 3x = 0$$

Solutions
or
zero
roots

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

$$x = 0$$

$$2x + 3 = 0 \quad \frac{2x}{2} = \frac{-3}{2}$$

$$x = -1.5$$

$$2x^2 - 2x - 14 + 2 = 0$$

$$2x^2 - 2x - 12 = 0$$

$$2(x^2 - x - 6) = 0$$

~~$$\begin{array}{r} -6 \\ 2 \\ -1 \end{array} \begin{array}{l} \\ -3 \\ \end{array}$$~~

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

$$\begin{array}{l} x = 0 \\ x = -2 \\ x = 3 \end{array}$$

Home Work Review 2/5/18

Day 4 - Solving when A not 1
Practice Assignment

Name: _____

Solve the quadratic equations:

1. $2x^2 - 14x - 21 = 0$ $a = -4$ $b = -11$

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

Handwritten work for equation 1:

~~-42~~
 ~~-14~~ ~~$+3$~~ \times $\begin{matrix} 2x^2 & 3x \\ -14x & -21 \end{matrix}$
 ~~-11~~ -7

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

$2x + 3 = 0$
 $-3 = -3$
 $\frac{2}{2}x = \frac{-3}{2} = -1.5$

$x - 7 = 0$
 $+7 +7$
 $x = 7$

Factored Form: _____

Factored Form: _____

Zeros: -1.5 or 7

Zeros: _____

$$ax^2 + bx + c = 0$$

3. $5x^2 - 14x + 8 = 0$

$$\begin{array}{r} 5x - 1 = 0 \\ +1 \quad +1 \\ \hline 5x = -1 \\ \frac{5x}{5} = \frac{-1}{5} \\ x = -\frac{1}{5} \end{array}$$

Factored Form: _____

Zeros: _____

$$\begin{array}{r} x + 2 = 0 \\ -2 \quad -2 \\ \hline x = -2 \end{array}$$

4. $5x^2 + 9x = 2$

$$\begin{array}{r} -2 \quad -2 \\ \hline 5x^2 + 9x - 2 = 0 \end{array}$$

$a = -10 \quad b = 9$

$$\begin{array}{r} -10 \\ 10 \quad -1 \\ 9 \end{array}$$

	$5x$	-1
x	$5x^2$	$-1x$
2	$10x$	-2

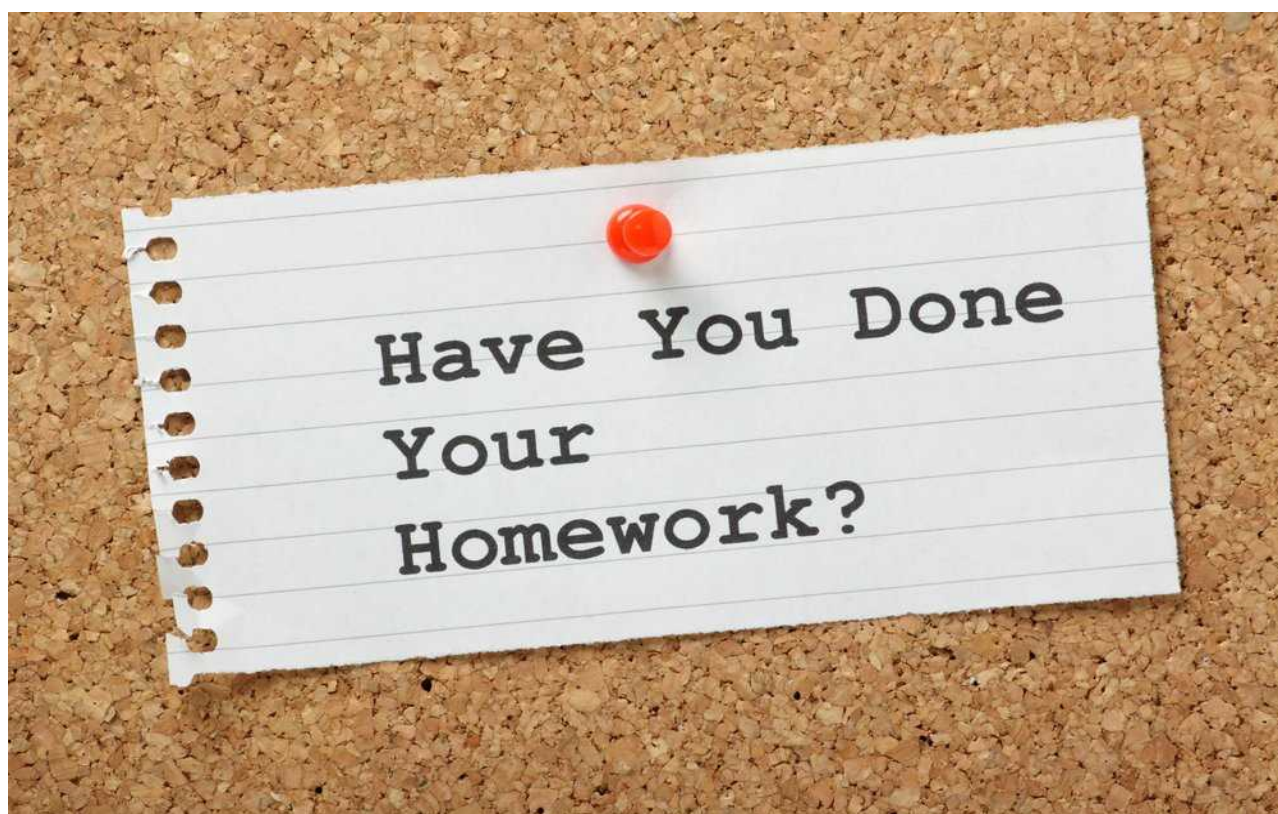
$$(5x - 1)(x + 2) = 0$$

Factored Form: _____

Zeros: _____

$\frac{1}{5}, -2$

Turn in your home-work on
Solving by factoring!



Essential Question 2/5/18

How can I solve Quadratic Equations by taking Square Roots?

This Week's Standards:

MGSE9–12.A.SSE.3a Factor any quadratic expression to reveal the zeros of the function defined by the expression.

MGSE9–12.A.REI.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, factoring, completing the square, and the quadratic formula, as appropriate to the initial form of the equation (limit to real number solutions). Build a function that models a relationship between two quantities.

Opening: Solving by Taking Square Roots

Solve the following equations.

1. $x^2 = 16$ 2. $x^2 = 9$

3. $x^2 = 4$ 4. $x^2 = 1$

How many of you had one answer for each equation?

$$x^2 = 16$$

$$x^2 - 16 = 0$$

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

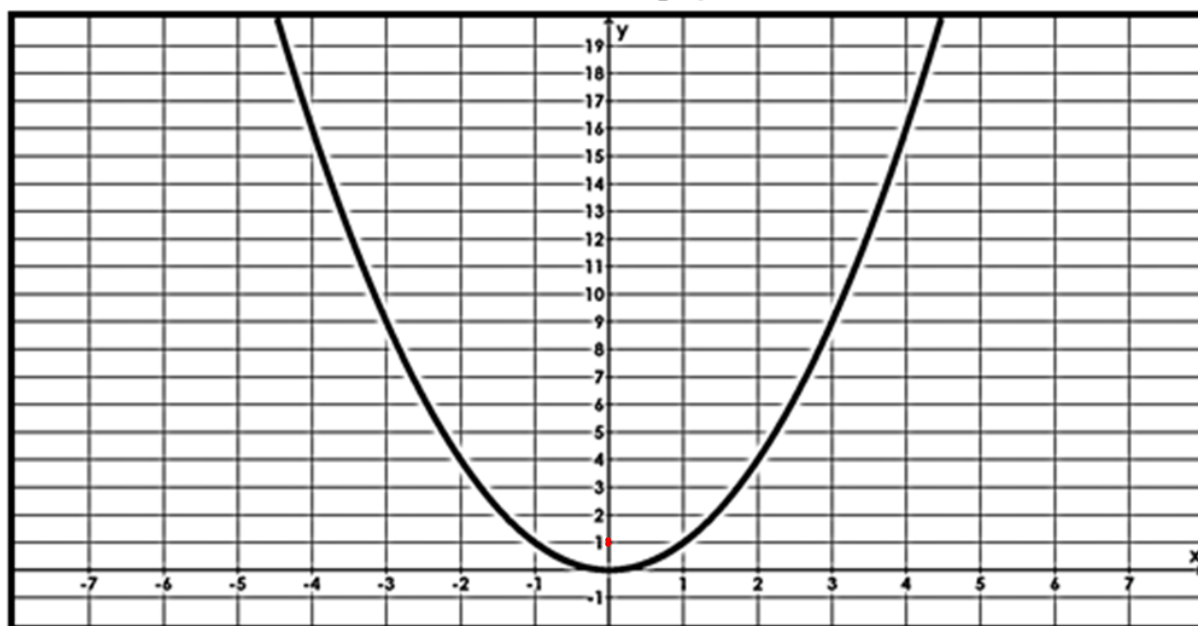
$$x = -4, 4$$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = 4$$

Using a Graph to Solve

Well, let's take a look at the graph of this function.



After looking at the graph, what values of x result in a y value of 1, 4, 9, and 16?

What would be your new answers for the previous equations?

a. $x^2 = 16$

$$x = \pm 4$$

b. $x^2 = 4$

$$x = \pm 2$$

c. $x^2 = 9$

$$x = \pm 3$$

d. $x^2 = 1$

$$x = \pm 1$$



Steps for Solving Without Parenthesis

Steps for Solving Quadratics by Finding Square Roots

1. Add or Subtract any constants that are on the same side of x^2 .
2. Multiply or Divide any constants from x^2 terms. "Get x^2 by itself"
3. Take square root of both sides and set equal to positive and negative roots (\pm).

REMEMBER WHEN SOLVING FOR X YOU GET A positive AND Negative ANSWER!

Day 6 – Solving by Square Roots (SIMPLE)**Practice Assignment**

Directions: Solve each of the following equations.

Level 1: One Step, may have to simplify radicals

$$1. \sqrt{x^2} = \sqrt{64}$$

$$x = \pm 8$$

$$2. x^2 = 96$$

$$x = \pm 4\sqrt{6}$$

Level 2: Two Step, no simplifying of radicals

3. $x^2 - 9 = 16$

$+9$

$x^2 = 25$

$x = \pm 5$

4. $x^2 - 1 = 80$

Level 3: Three Step, may simplify radicals

5. $10x^2 + 8 = 498$

6. $2x^2 - 5 = 27$

$$+ \frac{5}{+5}$$

$$\frac{2x^2}{2} = \frac{32}{2}$$

$$x^2 = 16$$

$$x = \pm 4$$

$$\sqrt{x^2} \quad \sqrt{\quad}$$

$x = 4$

7. $4x^2 + 7 = 23$

$$\begin{array}{r} -7 \quad -7 \\ \hline 4x^2 = 16 \\ \hline 4 \quad \quad 4 \\ \hline x^2 = 4 \\ \boxed{x = \pm 2} \end{array}$$

8. $2x^2 + 3 = 93$

9. $10x^2 + 6 = 326$

$$\begin{array}{r} -6 \quad -6 \\ \hline 10x^2 = 320 \\ \hline 10 \quad 10 \\ \sqrt{x^2} = \sqrt{32} \quad \uparrow \downarrow \\ x = \pm 4\sqrt{2} \end{array}$$

10. $2x^2 + 10 = 34$

$$\begin{array}{c} \sqrt{45} \\ \swarrow \quad \searrow \\ 3 \quad 15 \\ \swarrow \quad \searrow \\ 3 \quad 5 \end{array}$$

$3\sqrt{5}$

Day 6 - Solving by Square Roots (COMPLEX)

Practice Ass

Directions: Solve each equation. Put your answers in decimal form AND simplest

Level 4: Multi-Step, may simplify radicals

$$1. (x - 3)^2 = 4$$

$$\begin{array}{r} x - 3 = \pm 2 \\ +3 \quad +3 \end{array}$$

$$x = 3 \pm 2$$

$$x = 5 \text{ or } 1$$

$$2. 5(x - 4)^2 = 125$$

$$\sqrt{(x - 4)^2} = \sqrt{25}$$

$$\begin{array}{r} x - 4 = \pm 5 \\ +4 \quad +4 \end{array}$$

$$x = 4 \pm 5$$

$$x = 9 \text{ or } -1$$

$$3. \frac{4(x+1)^2}{4} = \frac{100}{4}$$

$$\sqrt{\frac{(x+1)^2}{4}} = \sqrt{25}$$

$$x+1 = \pm 5$$

$$x = -1 \pm 5$$

$$x = 4 \text{ or } -6$$

$$4. (x-5)^2 - 100 = 0$$

$$\textcircled{4} \quad (x-5)^2 - 100 = 0$$

$+100 \quad +100$

$$\sqrt{(x-5)^2} = \pm \sqrt{100}$$

$$\begin{array}{r} x-5 = \pm 10 \\ +5 \quad +5 \\ \hline \end{array}$$

$$x = 5 \pm 10$$

$$x = 15 \text{ or } -5$$

Level 5: Multi-Step, may simplify radicals

5. $5(x - 1)^2 = 50$

$$\frac{5(x-1)^2}{5} = \frac{50}{5}$$

$$(x-1)^2 = 10$$

$$x-1 = \pm \sqrt{10}$$

~~+1~~ ~~+1~~

$$x = 1 \pm \sqrt{10}$$

$$1 + \sqrt{10} \text{ or } 1 - \sqrt{10}$$

6. $-3(x + 2)^2 = -18$

$$\textcircled{6} \quad -3(x+2)^2 = -18$$

$$\begin{array}{ccc} \downarrow & & \downarrow \\ (x+2)^2 & = & 6 \end{array}$$

$$x+2 = \pm\sqrt{6}$$

$\begin{array}{ccc} -2 & & -2 \end{array}$

$$x = -2 \pm \sqrt{6}$$

$$7. 5(x-7)^2 = 135$$

$$\frac{\cancel{5} \quad 5}{\cancel{5} \quad 5}$$

$$\sqrt{(x-7)^2} = \sqrt{27}$$

$$\begin{array}{r} x-7 \quad \pm 3\sqrt{3} \\ +7 \quad \quad +7 \\ \hline \end{array}$$

$$x = 7 \pm 3\sqrt{3}$$

$$8. 8(x+4)^2 = 96$$

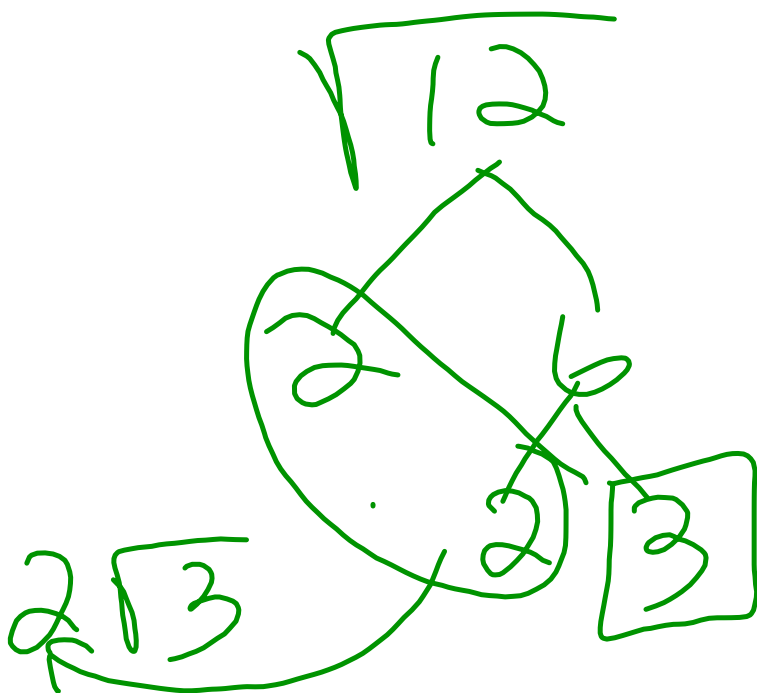
$$\frac{\cancel{8} \quad 8}{\cancel{8} \quad 8}$$

$$\frac{8(x+4)^2}{8} = \frac{96}{8}$$

$$(x+4)^2 = 12$$

$$x+4 = \pm\sqrt{12}$$

$$x = -4 \pm 2\sqrt{3}$$





Steps for Solving With Parenthesis

Steps for Solving Quadratics by Finding Square Roots with Parentheses

1. Add or Subtract any constants outside of any parenthesis.
2. Multiply or Divide any constants around parenthesis/squared term.
"Get ()² by itself"
3. Take square root of both sides and set your expression equal to positive and negative roots (\pm).
4. Add, subtract, multiply, or divide any remaining numbers to isolate x.

REMEMBER WHEN SOLVING FOR X YOU GET A POSITIVE AND NEGATIVE ANSWER!

Guided Practice 2/5/18

$$15) \sqrt{(p-4)^2} = \sqrt{16}$$

$$p-4 = \pm 4$$

$$p-4 = 4; p=8$$

$$+4 \quad +4$$

$$p-4 = -4; p=0$$

$$+4 \quad +4$$

$$p = 8 \text{ or } 0$$

$$16) \sqrt{(2k-1)^2} = \sqrt{9}$$

$$2k-1 = \pm 3$$

$$2k-1 = 3$$

$$+1 \quad +1$$

$$\hline 2k = 4$$

$$\frac{2}{2} \quad \frac{2}{2}$$

$$k = 2$$

$$\text{or } 2k-1 = -3$$

$$+1 \quad +1$$

$$\hline 2k = -2$$

$$\frac{2}{2} \quad \frac{2}{2}$$

$$k = -1$$

$$k = 2 \text{ or } -1$$

Attachments

Day 4 Quiz Review - Jeopardy.ppt