

Solving Quadratic Equations by Factoring

Agenda

Warm-Up

Notes
(Flip Book)

HW:
Practice
#1-12

Reminders

Quiz Friday

Warm-Up (Monday)

1.

Evaluate the following: $3x^2 + 3x - 6$ for $x=1$ and $x=-2$

for $x=1$

$$3(1)^2 + 3(1) - 6$$

$$\boxed{0}$$

for $x=-2$

$$3(-2)^2 + 3(-2) - 6$$

$$\boxed{0}$$

2. If $ab = 0$, what do you know about either a or b ?

a or b must equal 0

Solving Quadratic Equations Flip Book

This flip book contains your notes for the next 4 days. We will make a pocket to keep it in.

The pink sheet goes on the outside. Match your tabs so it looks like the right. You may have to flip your paper(s). Glue or staple the 2 pages together along the spine.

Solving
Quadratic
Equations...

By Factoring

By Square Roots

By Quadratic Formula

Solving Quadratic Equations by Factoring

Zero Product Property

If $a \cdot b = 0$, then a and/or b is zero.

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

$$\boxed{\{-5, 3\}}$$

$$\begin{array}{r} x-3=0 \\ +3 \quad +3 \\ \hline x=3 \end{array}$$

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

****See unit 7 for more factoring help****

Steps to Solve by Factoring:

1. Solve for y (and plug in $y=0$)
(move everything to one side)
2. Factor (don't forget the GCF!)
3. Set each factor each to zero and solve

$$x^2 - 13x + 36 = 0$$

$$a:1 \quad b:-13 \quad c:36$$

$$a \cdot c = 1 \cdot 36$$

$$\begin{array}{r} 36 \\ 1 \quad 36 \\ 2 \quad 18 \\ 3 \quad 12 \\ 4 \quad 9 \\ 6 \quad 6 \end{array}$$

$$\begin{array}{r} 36 \\ 1 \quad 36 \\ 2 \quad 18 \\ 3 \quad 12 \\ 4 \quad 9 \\ 6 \quad 6 \end{array}$$

$$(x-4)(x-9) = 0$$

$$\begin{array}{r} x-4=0 \\ +4 \quad +4 \\ \hline x=4 \end{array}$$

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

$$\boxed{\{4, 9\}}$$

Remember: Solutions are also called x-intercepts, roots, or zeroes.

2.

$$x^2 - 3x - 10 = 0$$

$$a:1 \quad b:-3 \quad c:-10$$

$$\begin{array}{r} x+2 \\ x^2 \quad 2x \\ -5 \quad -5x \quad -10 \end{array}$$

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

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

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

$$\boxed{\{-2, 5\}}$$

3.

$$3x^2 = 12x$$

$$\begin{array}{r} -12x \quad -12x \\ 3x^2 - 12x = 0 \end{array}$$

$$3x(x-4) = 0$$

$$\begin{array}{r} 3x=0 \\ \frac{3x}{3} = \frac{0}{3} \\ x=0 \end{array}$$

$$\begin{array}{r} x-4=0 \\ +4 \quad +4 \\ \hline x=4 \end{array}$$

$$\boxed{\{0, 4\}}$$

4.

$$6x^2 + 5 = -17x$$

$$\begin{array}{r} +17x \quad +17x \\ 6x^2 + 17x + 5 = 0 \end{array}$$

$$a:6 \quad b:17 \quad c:5$$

$$\begin{array}{r} 3x+1 \\ 6x^2 \quad 2x \\ +5 \quad +5x \end{array}$$

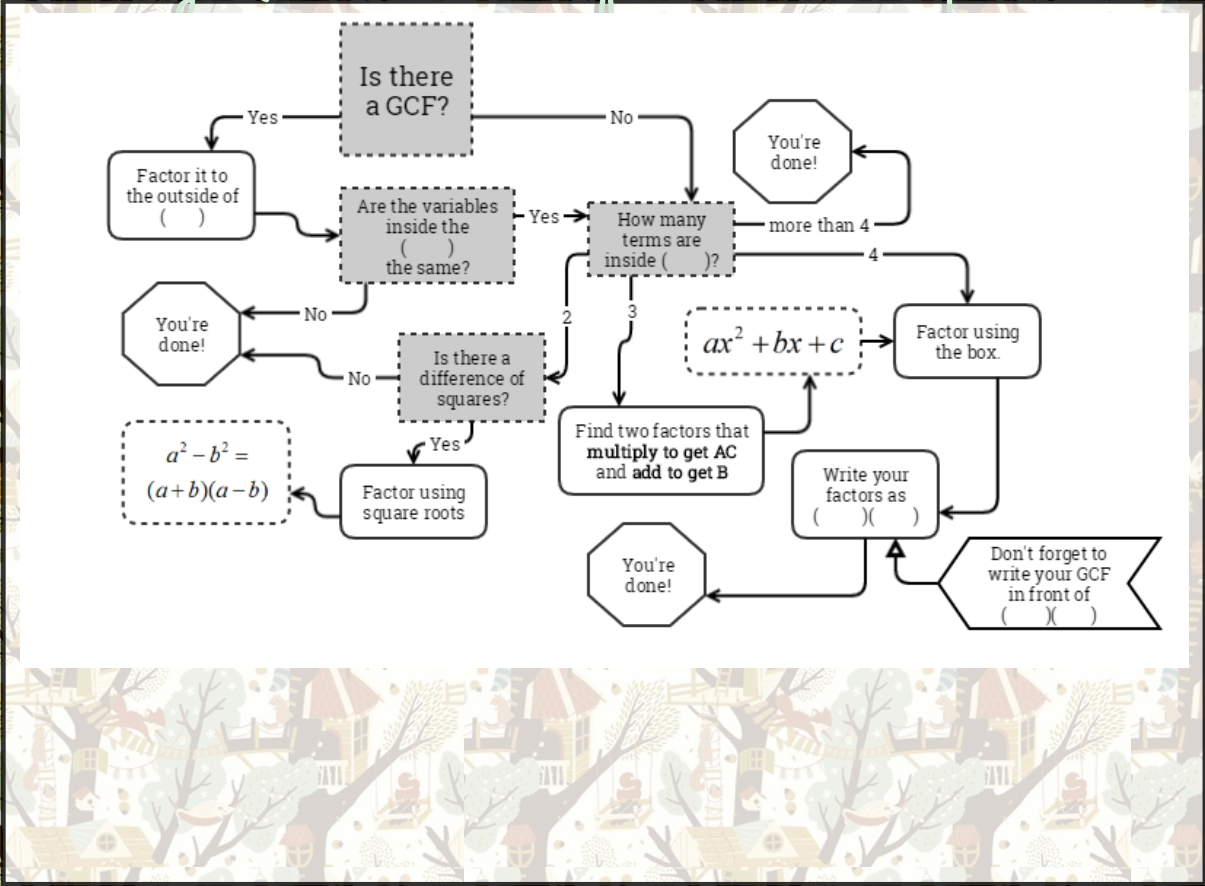
$$(3x+1)(2x+5) = 0$$

$$\begin{array}{r} 3x+1=0 \\ -1 \quad -1 \\ \hline 3x=-1 \\ \frac{3x}{3} = \frac{-1}{3} \\ x=-\frac{1}{3} \end{array}$$

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

$$\boxed{\{-\frac{1}{3}, -\frac{5}{2}\}}$$

Solving Quadratic Equations Flip Book



HW: Practice #1-12, NO WORK, NO CREDIT, NO KIDDING!!!

Algebra I – Unit 8: Solving Quadratics by Factoring

Student Practice – Solving Quadratics by Factoring

Name _____ Date _____ Period _____

ODDS

Solve the equations below by factoring.

1. $(x + 3)(x - 7) = 0$

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

3. $x^2 - 169 = 0$

4. $4x^2 - 12x + 9 = 0$

5. $x^2 = 8x - 16$

6. $12x^2 - 1 = -x$

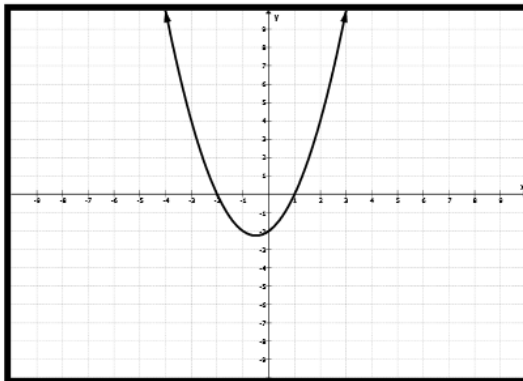
7. $x^2 + 2x = 15$

8. $2x^2 = -4 - 6x$

Algebra I Unit 8- Solving Quadratics by Factoring

9. Which equation best represents the graph shown?

- A $(x - 2)(x + 1) = y$
- B $(x + 2)(x + 1) = y$
- C $(x + 2)(x - 1) = y$
- D $(x - 2)(x - 1) = y$



10. The area of a rectangular floor is described by the equation $w(w - 9) = 252$ where w is the width of the floor in meters. What is the width of the floor?

11. A group of friends try to keep a beanbag from touching the ground without using their hands. Once the beanbag has been kicked, its height can be modeled by $h = -16t^2 + 14t + 2$, where h is the height in feet above the ground and t is the time in seconds. Find the time it takes the beanbag to reach the ground.

12. The length of a rectangle is 3 cm more than the width. The area is 70 square centimeters. Find the dimensions of the rectangle.

Solving by Factoring HW Help

No WORK, No CREDIT, No KIDDING!!

1 & 2. These quadratics are already factored. Set each factor equal to zero and solve for x!

3. This is a difference of squares: $a^2 - b^2 = (a-b)(a+b)$

4. $\frac{a \cdot c}{b}$
 $\frac{36}{-6}$
 $\frac{2x}{-6}$

$\frac{-3}{-6}$
 $\frac{-3}{-6}$
 $\frac{-3}{-6}$

$4x^2 - 6x + 9$
 $(2x-3)(2x-3) = 0$
 $2x-3=0$
 $+3 +3$
 $2x = 3$
 $\frac{2x}{2} = \frac{3}{2}$
 $x = \frac{3}{2}$

6. $\frac{12(-1)}{-12}$
 $\frac{-26}{-3}$
 $\frac{-3}{-3}$

$4x - 1$
 $(4x-1)(3x+1) = 0$
 $4x-1=0$
 $+1 +1$
 $4x = 1$
 $\frac{4x}{4} = \frac{1}{4}$
 $x = \frac{1}{4}$

$3x+1=0$
 $-1 -1$
 $3x = -1$
 $\frac{3x}{3} = \frac{-1}{3}$
 $x = -\frac{1}{3}$

5. Move everything to one side!

7. Factors of -15 that add to 2 are -3 and 5.

8. Factor out a 2 before you start!

9. Your FACTORS will always have opposite signs than the x-intercepts. So if your x-intercept is 1, your factor would be $(x - 1)$

10. Distribute w to the parenthesis and subtract 252 from both sides. The factors of -252 that add to -9 are 12 and -21. Once you solve for w, remember that you can't have a negative width!

11. Factor out a negative 2. Your answer should be 1 second.

12. Area = length x width. Your quadratic should be $w^2 + 3w - 70 = 0$. Factor, solve, and don't forget to also find the length!

Need extra pointers? Come to tutorials!!

1. $x : \{-3, 7\}$

2. $x : \{\frac{2}{3}, \frac{3}{4}\}$

3. $x : \{\pm 13\}$

4. $x = \frac{3}{2}$

5. $x = 4$

6. $x : \{-\frac{1}{3}, \frac{1}{4}\}$

7. $x : \{-5, 3\}$

8. $x : \{-2, -1\}$

9. C

10. 21 meters

11. 1 second

12. $w = 7cm$

$l = 10cm$

