Friday, January 11, 2019

- Warm-up
  - Factor the following trinomials:

$$x^2 + 2x + 1$$

$$(x + 1)(x + 1)$$

$$(x + 1)^2$$

$$x^2 - 1$$

$$x^2 - 0x - 1$$

$$(x + 1)(x - 1)$$

- Using the factors to solve…

Objectives:
Content: I will factor trinomials with an a value of 1 and use those factors to solve for x.
Social: I will demonstrate my work to the group as well as the class.
Language: I will write my factoring and solving process clearly for myself and others.

How can I multiply to get zero?

$$\boxed{0} \times \boxed{} = \bigcirc$$

at least one has to
be zero

So … if a * b = 0, what must be true?

$a = 0$ and/or $b = 0$

Zero product property

$$a \cdot b$$

So ... if $(x + 3)(x - 6) = 0$?

$$x + 3 = 0$$
$$-3 \quad -3$$
$$x = -3$$

$$x - 6 = 0$$
$$+6 \quad +6$$
$$x = 6$$

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Try a couple

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

$x = -4$ or $x = 2$

$x + 4 = 0$
$ -4 \quad -4$
$x = -4$

$x - 2 = 0$
$ +2 \quad +2$
$x = 2$
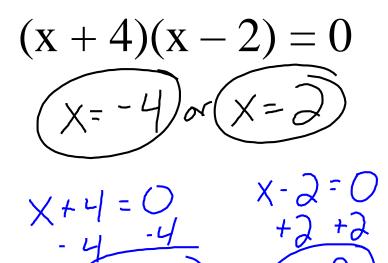
$(x - 5)(x + 3) = 0$
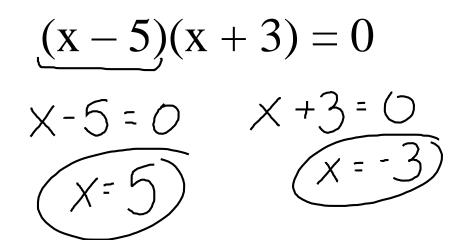
$x - 5 = 0$

$x = 5$

$x + 3 = 0$

$x = -3$

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But, they don't all begin factored

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

$\times \to 1, -10$
$ 2, -5$
$+ \to 5, -2$
$ 10, -1$

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

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

$x = -5 \qquad x = 2$

$m^2 + 5m - 84 = 0$

$(m+12)(m-7) = 0$

$m+12 = 0 \qquad m-7 = 0$

$m = -12 \qquad m = 7$

$x^2 - 10x + 25 = 0$

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

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

$x = 5$

$y^2 + 9y + 20 = 0$

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

$y+5 = 0 \qquad y+4 = 0$

$y = -5 \qquad y = -4$

Objectives:
Content: I will factor trinomials with an a value of 1 and use those factors to solve for x.
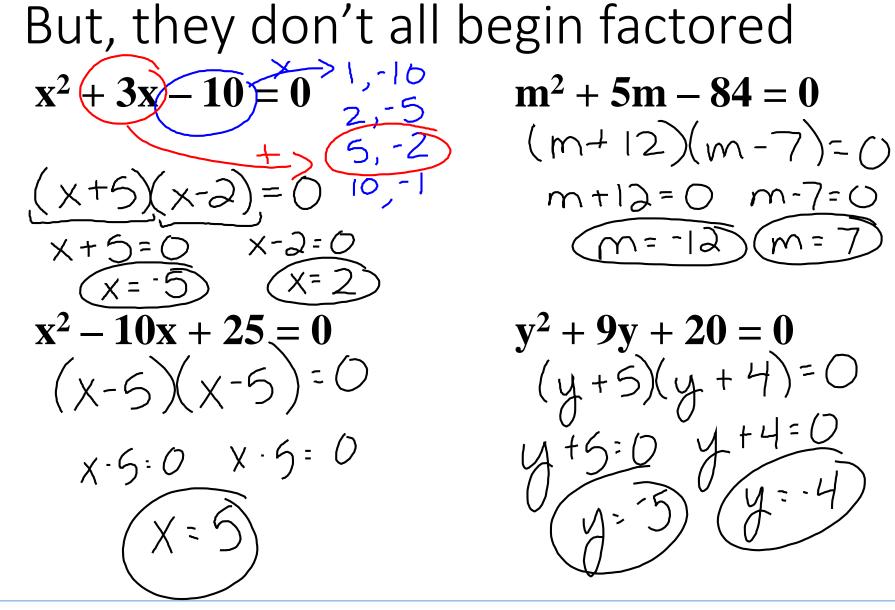**Social**: I will demonstrate my work to the group as well as the class.
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What if a term is missing?

$$x^2 - 25 = 0 \longrightarrow x^2 - 25 = 0$$

$$+25 \quad +25$$

$$\sqrt{x^2} = \sqrt{25}$$

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

$$x^2 + 3x = 0 \longrightarrow x(x+3) = 0$$

$$x = 0 \quad x+3 = 0$$

$$x = -3$$

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

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

$$x - 5 = 0 \quad x + 5 = 0$$

$$x = 5 \quad x = -5$$

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

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

$$x + 0 = 0 \quad x + 3 = 0$$

$$x = 0 \quad x = -3$$

More Practice

total of 4 required (handwritten, red)

all = bonus (handwritten, red)

$$x^2 - 9 = 0$$
$$+9 \quad +9$$
$$\sqrt{x^2} = \sqrt{9}$$
$$x = 3 \text{ or } x = 3$$

Color My Math
Solving Quadratic Equations by Factoring

x = -13	x = -2		x = -4
x = -1	x = 5		x = 4
x = 3	x = 2	x = -4	x = -4
x = 4	x = 11	x = 3	x = 1
x = 3	x = -6	x = -5	x = -5
x = 6	x = -1	x = 5	x = -4
x = -3	x =	x = -5	x = 4
x = -2	x =	x = 2	x = 6

Solve each quadratic equation and then find the answers in the boxes above.
Color the boxes according to the given pattern.

$x^2 + 5x + 6 = 0$	$x^2 + 3x - 4 = 0$	$x^2 - 3x - 10 = 0$
$x^2 - 7x + 12 = 0$	$x^2 - 25 = 0$	$x^2 - 10x + 24 = 0$
$x^2 + 7x + 6 = 0$	$x^2 + x - 12 = 0$	$x^2 - 16 = 0$
$x^2 + 3x - 10 = 0$	$x^2 - 9x + 18 = 0$	$x^2 + 9x + 20 = 0$
$x^2 - 9 = 0$ ✓	$x^2 - 13x + 22 = 0$	$x^2 + 14x + 13 = 0$