



2-1 Solving Quadratic Equations

Class/Period: 4th
Date: 11/9/16

Essential Question:

How do you solve a quadratic equation by factoring?

Questions:

Notes:

Quadratic equation

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

Quadratic term linear term constant

*Note: A degree 2 (squared) polynomial has 2 solutions.

We have several ways to solve:

- factoring
- factoring by grouping

- Square root method
- completing the square
- Quadratic Formula
- Graphing

Factoring

* The Key is the Zero Product Property (Zero factor)

if $xy=0$, then $x=0$ or $y=0$
then $(x-a)(x-b)=0$, then
 $x-a=0$ or $x-b=0$

Questions:

Notes:

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

$$(x-a)(x-b) = 0$$

$$x^2 - ax - bx + ab = 0$$

$$x^2 + \underbrace{(-a-b)}_b x + \underline{ab} = 0$$

I need two factors that:
 $a \cdot b = c$ and
 $a + b = b \text{ term}$

Ex) $x^2 + 13x + 36 = 0$
 $(x+9)(x+4) = 0$

$$a \cdot b = 36 \quad 9 \cdot 4 = 36$$

$$a + b = 13 \quad 9 + 4 = 13$$

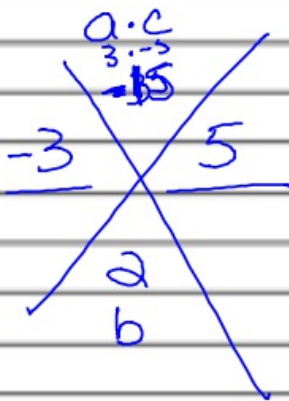
$$x+9=0 \quad \text{or} \quad x+4=0$$

$$x=-9 \quad \text{or} \quad x=-4$$

Factoring by Grouping
 use when $a \neq 1$

Ex) $3x^2 + 2x - 5 = 0$

Goal is to "split" the b-term so that I have two binomials.
 to "split" the b, I need two numbers that multiply to be $a \cdot c$ and add to b



$$\underbrace{3x^2 - 3x}_{\text{GFC}} + \underbrace{5x - 5}_{\text{GFC}} = 0$$

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

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

$$x-1=0$$

$$x=1$$

$$3x+5=0$$

$$3x=-5$$

$$x=-5/3$$

GCF is
 $(x-1)$

Ex) $6x^2 + 5x - 4 = 0$

(λ)

Hw p. 35

αA #1, 2

αB #1, 3