

What you will learn about:  
Factoring Trinomials

Standard Form of Quadratic

$$ax^2 + bx + c$$

## Factoring when $a = 1$

Steps

- 1) Find numbers that will multiply to constant (c) that will add together to get linear term (b).
- 2) Write as linear factors  $(x \pm p)(x \pm q)$

Write each quadratic as a product of linear factors.

$$x^2 + 9x + 20$$

$$x^2 - 10x + 21$$

$$x^2 - 5x - 24$$

$$x^2 - 8x + 15$$

$$x^2 + 9x - 36$$

$$x^2 - 5x - 6$$

$$x^2 - 36$$

$$x^2 - 121$$

Factoring $a \neq 1$	$2x^2 + 20x + 18$	$-5x^2 - 15x - 10$
First look for greatest common factor (GCF)		
	$3x^2 - 63x + 240$	$10x^2 + 140x + 490$
	$9x^2 - 81$	$-3x^2 + 48$
If NO GCF either guess and check or split the middle term	Guess and Check	
	$3x^2 - x - 2$	$5x^2 - 7x - 6$
	$3x^2 + 8x - 3$	$2x^2 + 9x - 5$

Split the middle term

$$ax^2 + bx + c$$

1<sup>st</sup> multiply  $a$  and  $c$  together.

2<sup>nd</sup> find numbers that multiply to get the product from above that add to get  $b$ .

3<sup>rd</sup> replace (or split) the middle term with the 2 numbers from step 2.

4<sup>th</sup> Group the first 2 terms together and group the second terms together

5<sup>th</sup> Find the GCF of each set of Parenthesis

6<sup>th</sup> Write as a product of linear factors

$$4x^2 + 9x + 2$$

$$6x^2 - 11x + 4$$

$$9x^2 + 12x + 4$$

$$12x^2 - 25x + 7$$

$$4x^2 - 4x - 35$$

$$6x^2 + 13x - 25$$

$$4x^2 - 9$$

$$25x^2 - 10x + 4$$

Both GCF and Split the middle term	$4x^2 - 2x - 20$	$-3x^2 + 12x + 15$
Solving 1 <sup>st</sup> factor 2 <sup>nd</sup> Set linear factors equal to zero 3 <sup>rd</sup> Solve each linear equation	$8x^2 - 28x - 60$  $112x^2 - 168x + 63$  $x^2 - 3x - 4 = 0$	$18x^2 - 2$      $x^2 + 2x - 35 = 0$

Solving Continued

$$5x^2 - 13x + 6 = 0$$

$$8x^2 - 6x - 5 = 0$$

$$-3x^2 + 3x + 90 = 0$$

$$x^2 + 7x = 0$$

$$5x^2 - 25 = 4x^2 + 24$$

$$2x^2 + 4x - 1 = 7x^2 - 7x + 1$$

$$16x^2 = 8x - 1$$

$$6x^2 - 10x - 4 = 0$$

