

4-22-12

Examples:

1. $2x^2 + 5x + 3$

2. $2y^2 - 9y - 5$

3. $3c^2 - 17c - 6$

4. $3x^2 - 10x + 8$

5. $3x^2 + 7x + 2$

6. $4x^2 + 17x - 15$

Factoring with a leading coefficient $ax^2 + bx + c$

9-26-18

$$4y^2 + 14y + 6$$

Example #1:

$$\text{GCF} = x \quad \begin{array}{cc} 2x^2 + 3x + 1 & 2 \cdot 1 = 2 \\ \left(\frac{2x^2 + 1x}{x} \right) + \left(\frac{2x + 1}{1} \right) & \text{GCF} = 1 \end{array}$$

$$x(2x+1) + 1(2x+1)$$

$$(2x+1)(x+1)$$

Example #2

$$3x^2 - x - 4 \quad 3 \cdot -4 = -12$$

$$\begin{array}{ccc} -1, 12 & -2, 6 & -3, 4 \\ 1, -12 & 2, -6 & 3, -4 \end{array}$$

$$\text{GCF} = -4 \quad \left(\frac{3x^2 + 3x}{3x} \right) \left(\frac{-4x - 4}{-4} \right) \quad \text{GCF} = -4$$

$$3x(x+1) - 4(x+1)$$

$$(x+1)(3x-4)$$

↓ common binomial ↓ both GCF's

Factor out the <u>GCF</u> , if possible	
Multiply <u>a * c</u> . This will be the new product of numbers you need to find	
Find 2 numbers that <u>multiply to get ac</u> and <u>add to get the middle term</u>	
Replace the middle term with the 2 numbers (include the variable). You should have a polynomial with 4 terms.	
Group together the terms with common factors. There should be two groups.	
Pull out the <u>GCF</u> of each group. **If you have successfully removed the proper GCF, you should be left with a term in each group that is the same in both groups.	
Remove the term in common to both groups (that will be your first factor), and what remains will be your second factor.	

Factoring with a leading coefficient $ax^2 + bx + c$

9-26-18

$$4y^2 + 14y + 6$$

Example #1:

$$\text{GCF} = 2$$

$$2\left(\frac{2y^2}{a} + \frac{7y}{b} + \frac{3}{c}\right)$$

$$2 * 3 = 6$$

Use this # to find the factors

Factors of 6: 1, 2, 3, 6

$$1 + 6 = 7$$

↳ middle term

$$2y^2 + 1y + 6y + 3$$

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

$$\text{GCF} = y$$

$$\text{GCF} = 3$$

$$\frac{2y^2 + 1y}{y}$$

$$\frac{6y + 3}{3}$$

$$y(2y + 1) + 3(2y + 1)$$

$$2(2y + 1)(y + 3)$$

↓
GCF

-12
2, 6 -3, 4
-6 3, 4

-4