FACTORING TRINOMIALS IN THE $ax^2 + bx + c$ FORM, when $a \neq 1$
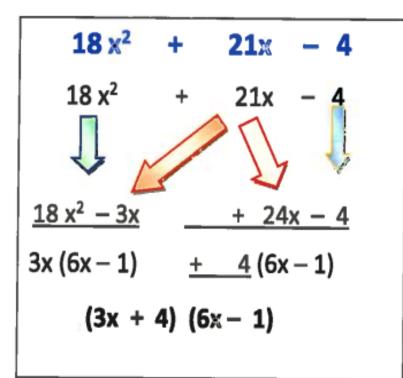
USING THE AC METHOD

Steps

1) Mulitply the coefficients of "a" and "c".

2) List the factors of the product of (ac)

3) One set of factors will give you "b" when you **add or subtract** them.

4) Split the middle term $(21 = -3 + 24)$.

5) Factor by grouping

FACTOR: $18x^2 + 21x - 4$

$18x^2 + 21x - 4$

$18x^2 + 21x - 4$

$18x^2 - 3x \qquad + 24x - 4$

$3x(6x - 1) \qquad + \quad 4(6x - 1)$

$(3x + 4)(6x - 1)$

$(18 * 4) = 72$

1, 72
2, 36
3, 24
4, 18
6, 12
8, 9

FACTORING TRINOMIALS IN THE $ax^2 + bx + c$ FORM, when $a \neq 1$

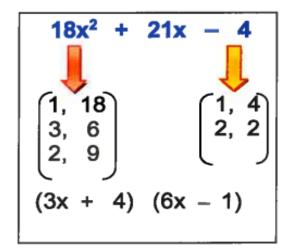### Using the Trial And Error Method

Steps

1) List the factors of the coefficients for terms "a" and "c".

2) The factors for "a" will be used for the first terms in the binominal and the factors for "c" will be used for the last terms in the binominal.

3) Determine the signs. Look at the operation sign before "c" to determine the signs for the binomial.

Note:

Binominals must be written using lowest terms. For instance: $(6x - 4)$ can be factored and is not a possible answer.

However, factoring out a 2 first, will leave you a binomial in lowest terms: $2(3x - 2)$

FACTOR: $18x^2 + 21x - 4$

$$18x^2 + 21x - 4$$

$$\begin{pmatrix} 1, & 18 \\ 3, & 6 \\ 2, & 9 \end{pmatrix} \qquad \begin{pmatrix} 1, & 4 \\ 2, & 2 \end{pmatrix}$$

$$(3x + 4)(6x - 1)$$

Sign Check-Number Choices

"c" is negative, therefore the signs must be a negative and a positive.

If c was a positive, the signs would be either both negative or both positive. In this case the sign in front of "b" would determine the signs.

An important thing to keep in mind when using the trial and error and method is to never put numbers that have a common term together.

Ex: $(3x + 2)(6x - 2)$

Doesn't check! $12x - 6x \neq 21x$

Maximize your Success

NSU Florida