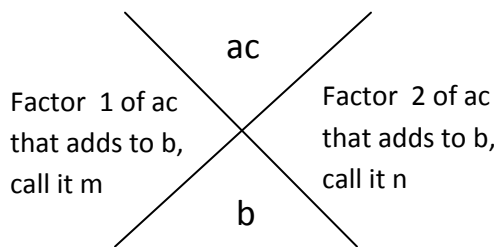


Methods for Factoring/Solving $ax^2+bx+c=0$

*all methods assume any GCF has already been factored

AC Method with the X:



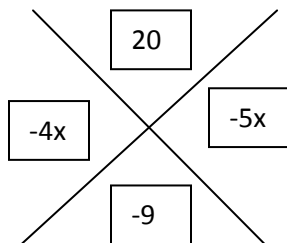
$$m+n = b$$

Rewrite polynomial such that

$$ax^2+bx+c= \underline{ax^2 + mx} + \underline{nx + c} \text{ and factor by grouping}$$

Example:

$$2x^2 - 9x + 10$$



$$2x^2 - 9x + 10 = \underline{2x^2 - 4x} - \underline{5x + 10} = 2x(x - 2) - 5(x - 2) = (x - 2)(2x - 5)$$

Helpful: Use TI-84 to find factors:

$$Y_1 = (ac)/x \text{ to find factors}$$

$$Y_2 = x + (ac)/x \text{ to find sum of factors}$$

View table, X and Y_1 are factors of ac , look for "b" in Y_2 column (sum of factors)

Box or Area Method:

Create a 2 x 2 box:

ax^2	
	c

For the other 2 boxes, find factors of ac that add to b , put a factor into each box.
(see calculator hint described in previous method)

On left side of box, factor GCF from each row.

On top of box, factor GCF from each column.

Values on left and top of chart are your factors.

Example:

$$3x^2+14x+15$$

$3x^2$	
	15

$$ac=45$$

$3x^2$	$9x$
$5x$	15

	x	3
$3x$	$3x^2$	$9x$
5	$5x$	15

Therefore $(3x+5)(x+3)$ are the factors

Slide and Divide: $ax^2 + bx + c$

“Slide” the a and multiply by c and rewrite as:

$$x^2 + bx + ac$$

Factor

Divide constant in each factor by original a.

“slide” when it doesn’t divide evenly.

Example:

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

“slide” the 4 and multiply by 15 and rewrite:

$$x^2 + 17x - 60$$

$$\text{Factor: } (x + 20)(x - 3)$$

Divide constant in each factor by 4

$$(x + 20/4) (x - 3/4)$$

“slide” what doesn’t divide evenly:

$$(x + 5) (4x - 3)$$