FACTORING:
Check for GCF!

BINOMIAL

TRINOMIAL

POLYNOMIAL

Difference of 2 Squares:

$a^2 - b^2 = (a + b)(a - b)$

Example:

$4x^2 - 25 = (2x+5)(2x-5)$

$a^2 = 4x^2 \qquad b^2 = 25$

$a = 2x \qquad b = 5$

Binomial with GCF:

Example:

$5x^2 + 3x =$

$x(5x+3)$

Difference of 2 Squares with GCF:

$fa^2 - fb^2 = f(a + b)(a - b)$

Example:

$4x^2 - 16 = 4(x^2 - 4) =$

$4(x+2)(x-2)$

$a^2 = x^2 \qquad b^2 = 4$

$a = x \qquad b = 2$

Perfect Square Trinomial:

$a^2 + 2ab + b^2 = (a+b)^2$

or

$a^2 - 2ab + b^2 = (a-b)^2$

Ex:

a) $x^2 - 18x + 81 = (x-9)^2$

$a^2 = x^2 \qquad b^2 = 81 \qquad 2ab =$

$a = x \qquad b = 9 \qquad 2 \cdot x \cdot 9 = 18x$

b) $5x^2 + 40x + 80 = 5(x^2 + 8x + 16) = 5(x+4)^2$

$a^2 = x^2 \qquad b^2 = 16 \qquad 2ab =$

$a = x \qquad b = 4 \qquad 2ab = 2 \cdot x \cdot 4 = 8x$

Box Method:

a) Multiply ac (sometimes a is just 1)
b) Find factors of ac that sum to b
c) Set up box
d) Factor out the GCF from each column and row (ALWAYS use the sign that is closest to where you write the GCF!)

Quadratic term	Linear term with one factor from step b)
Linear term with other factor from step b)	Constant term

Example: $2x^2 - 11x - 6$

a) $2 \cdot -6 = -12$
b) $-12 \mid +(-11)$
   $-12 \mid -11$

2x		
	$2x^2$	x
-6	$-12x$	-6

$(2x+1)(x-6)$

Box Method:

Place each term in a box and find the GCFs of each column and row.

Ex:

$3x^3 + 9x^2 + 2x + 6 = (x+3)(3x^2+2)$

	$3x^2$	
x^2	$3x^3$	$9x^2$
2	$2x$	6