

	Algorithm (<i>instructions</i>)	Example
All Types	1. Put the polynomial in order of decreasing degree (standard form).	$10 + 7x + x^2$
	2. Factor out the GCF (include any variables!)	$3y^3 - 18y^2 - 48y$
Trinomial $x^2 + Bx + C$	If A = 1 , <ol style="list-style-type: none"> List the pairs of factors of C. Find the pair that has a sum/difference of the target number. Write the two binomials. 	$x^2 + 7x + 12$
Trinomial $x^2 + Bx + C$	If A \neq 1 , <ol style="list-style-type: none"> Multiply A and C together and list the pairs of factors. Find the pair that has a sum/difference of the target number. Factor by grouping. <p>(or factor by trial and error)</p>	$2x^2 - 3x - 20$

BINOMIAL SPECIAL CASE: Difference of Perfect Squares

Binomial $A^2 - B^2$	If it is a <u>difference of squares</u> , factor it into conjugates. Formula: _____	$9x^2 - 100$
Binomial $A^2 + B^2$	If it is a <u>sum of squares</u> , the binomial is <u>PRIME</u> .	$9x^2 + 100$

Sum of Binomials Cubed

$$\text{Formula: } A^3 + B^3 = (A + B)(A^2 - AB + B^2)$$

Example

$$x^3 + 125$$

Difference of Binomials Cubed

$$\text{Formula: } A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

Example

$$8x^3 + 27$$