

- ☐ Pull out the GCF
- ☑ Tell me what is left from each term (remainder)

Ex 1

$$8a^2b - 6ab^2$$

$$\boxed{2ab(4a - 3b)}$$

$$\begin{array}{cc} 8 & 6 \\ \uparrow & \uparrow \\ 2^4 & 2^3 \\ \uparrow & \\ 2^2 & \end{array}$$

Ex 2

$$20x^2y^2 - 4xy$$

$$\boxed{4xy(5xy - 1)}$$

$$\begin{array}{cc} 20 & 4 \\ \uparrow & \uparrow \\ 5^2 & 2^2 \\ \uparrow & \\ 2^2 & \end{array}$$

Greatest Common Factor

Grouping

Perfect Square Trinomial

AC Method

$w^4 - 16$

Difference of Squares

Sum/Difference of Cubes

- ☑ Polynomial with 4 terms
- ☑ Group the 1<sup>st</sup> two terms, group last two terms
- ☑ Pull out GCF from each group and find remainders
- ☑ One factor will be the GCF's, one factor will be the common remainder

Ex

$$x^3 - 10 - 5x + 2x^2$$

$$x^3 + 2x^2 - 5x - 10 \leftarrow \text{Standard Form}$$

$$(x^3 + 2x^2)(-5x - 10)$$

$$x^2(x+2) - 5(x+2)$$

$$\boxed{(x^2 - 5)(x + 2)}$$

$$(x^2 - 5)(x + 2)$$

$$x^3 + 2x^2 - 5x - 10 \checkmark$$

Foil check

Grouping

Perfect Square Trinomial

AC Method

$w^4 - 16$

Difference of squares

Sum/difference of cubes

- ▣ 3 terms
- ▣ 1<sup>st</sup> and 3<sup>rd</sup> terms are perfect squares
- ▣ Middle term is twice the product of the perfect squares
- ▣ Sum or difference
- ▣  $(a+b)^2$  OR  $(a-b)^2$

Ex 1

$$m^2 + 14m + 49$$

$$\sqrt{m^2} = m$$

$$\sqrt{49} = 7$$

$$7(m)(2) =$$

$$(7m)(2)$$

$$= 14m$$

$$(m+7)(m+7)$$

$$\boxed{(m+7)^2}$$

Ex 2

$$9r^2 - 24rs + 16s^2$$

$$\sqrt{9r^2} = 3r$$

$$\sqrt{16s^2} = 4s$$

$$(3r)(4s)(2)$$

$$(12rs)(2)$$

$$= 24rs$$

$$(3r-4s)(3r-4s)$$

$$\boxed{(3r-4s)^2}$$

Perfect Square Trinomial

AC Method

Difference of squares

Sum/Difference of Cubes

W4-16

□ 3 term  
Not a perfect square

□ Draw your X and fill in A.C and B



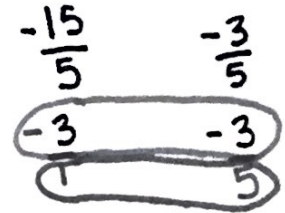
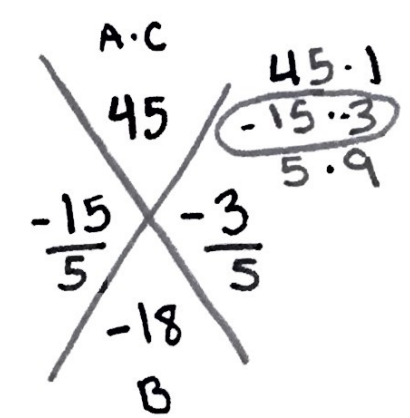
□ To find the left and right:  
Find 2 Factors that multiply to be the top and add to be the bottom

□ Divide the found factors by the leading coefficient and Simplify

□ constants  
coefficients

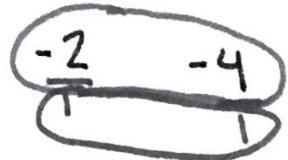
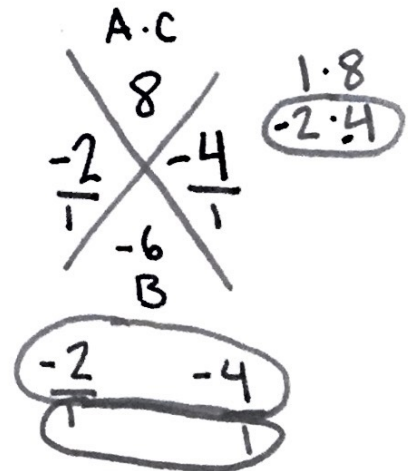
Example 1  
 $5x^2 - 18x + 9$

$$(x-3)(5x-3)$$



Example 2  
 $b^2 - 6b + 8$

$$(b-2)(b-4)$$



AC Method

$w^4 - 16$

Difference of squares

Sum/difference of cubes

- 2 terms
- Subtraction
- both term are Perfect Squares
- $(a+b)(a-b)$

Ex 1

$$x^2 - 4$$

$$\sqrt{x^2} = x = A$$

$$\sqrt{4} = 2 = B$$

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

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

$$x^2 - \cancel{2x} + \cancel{2x} - 4$$

$$x^2 - 4 \checkmark$$

Ex 2

$$w^4 - 16$$

$$\sqrt{w^4} = w^2$$

$$\sqrt{16} = 4$$

$$(w^2+4)(w^2-4)$$

or

$$(w^2+4)(w+2)(w-2)$$

$$(w^2+4)(w+2)(w-2)$$

$$(w^3 + 2w^2 + 4w + 8)(w-2)$$

$$w^4 + 2w^3 - 2w^3 - 4w^3 + 4w$$

$$-8w + 8w - 16$$

$$w^4 - 16$$

Difference of Squares

Sum/Difference of Cubes

- 2 terms
- Sum or difference?
- both terms are perfect cubes
- Sum:  
 $(A+B)(A^2-AB+B^2)$

- Difference:  
 $(A-B)(A^2+AB+B^2)$

Ex 1  
 $x^3 - 27y^3$

$$\sqrt[3]{x^3} = x \rightarrow A$$

$$\sqrt[3]{27y^3} = 3y \rightarrow B$$

$$(x-3y)(x^2+3xy+(3y)^2)$$

$$(x-3y)(x^2+3xy+9y^2)$$

Ex 2

$$64m^3 + 1$$

$$\sqrt[3]{64m^3} = 4m \rightarrow A$$

$$\sqrt[3]{1} = 1 \rightarrow B$$

$$(4m+1)(4m^2-4m+1)$$

$$(4m+1)(16m^2-4m+1)$$