

**TOPIC: FACTORING TRINOMIALS OF THE FORM  $ax^2 + bx + c$**

**Factor Trinomials Using Trial and Error**

- ◆ To factor by trial & error, find possible binomial factors, then FOIL to test options until you get original trinomial.
  - ▶ Find binomial factors where the 1<sup>st</sup> terms multiply to  $ax^2$  & the 2<sup>nd</sup> terms multiply to  $c$ .

**New**

**Factoring by Trial & Error**

$$2x^2 + 11x + 5 = (\underline{\hspace{1cm}}x + \underline{\hspace{1cm}})(\underline{\hspace{1cm}}x + \underline{\hspace{1cm}})$$

*Multiplies to  $\underline{\hspace{1cm}}$   $x^2$*

*Multiplies to  $\underline{\hspace{1cm}}$*

**Possible Binomial Factors:**

$$(\underline{\hspace{1cm}}x + \underline{\hspace{1cm}})(\underline{\hspace{1cm}}x + \underline{\hspace{1cm}}) =$$

$$(\underline{\hspace{1cm}}x + \underline{\hspace{1cm}})(\underline{\hspace{1cm}}x + \underline{\hspace{1cm}}) =$$

- ◆ Remember to pay attention to the \_\_\_\_\_ of all terms when determining possible binomial factors.

**EXAMPLE**

Factor the polynomial.



$$6x^2 + 19x - 7$$

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**PRACTICE**

Factor the following using trial and error.

(A)  $3y^2 - 14y + 8$

(B)  $8a^2 - 22a + 15$

**EXAMPLE**

Completely factor.

$$2x^2 + 5xy + 3y^2$$

**EXAMPLE**

Factor completely. *Hint: Factor out the GCF first.*

$$8x^2 - 28x - 16$$

**PRACTICE**

Factor the following using trial and error.

$$15a^2 + 25a - 40$$

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**Factoring Trinomials by Grouping (AC-method)**

◆ To factor by the **AC-method**, rewrite the trinomial to have \_\_\_\_\_ terms then factor by grouping.

**New**

**Factoring by AC-Method**

$$2x^2 + 11x + 5$$

| Factors of                                                     | Sum of factors                         |                                        |
|----------------------------------------------------------------|----------------------------------------|----------------------------------------|
| $\frac{\text{---}}{a} \cdot \frac{\text{---}}{c} = \text{---}$ | $(\text{must} = \frac{\text{---}}{b})$ | $= 2x^2 + \text{---} + \text{---} + 5$ |
|                                                                |                                        |                                        |
|                                                                |                                        |                                        |
|                                                                |                                        |                                        |
|                                                                |                                        |                                        |

**HOW TO: Factor by AC-Method**

1) Factor out GCF (if there is one)

2) a. \_\_\_\_\_  $a \cdot c$  & list *factor pairs*  
b. Choose *factor pair* that \_\_\_\_\_ to  $b$

3) Rewrite  $bx$  as \_\_\_\_\_ of *factor pair*

4) Factor by *grouping*

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**PRACTICE**

Factor completely.

(A)  $2x^2 + 9x + 9$

(B)  $-6x^2 + 17x + 3$

**EXAMPLE**

Factor completely.

$$2x^2y + 10xy^2 + 12y^3$$

**PRACTICE**

Factor the following polynomial.

(A)  $6x^3 + 9x^2 - 15x$

(B)  $2x^2 + 7xy + 3y^2$