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 1st terms multiply to ax^2 & the 2nd terms multiply to c.

New **Factoring by Trial & Error**

Multiplies to ____ x^2

$$2x^2 + 11x + 5 = (\_\_\_x + \_\_\_\_)(\_\_\_x + \_\_\_\_)$$

Multiplies to ____

Possible Binomial Factors:

(___x + ____)(___x + ____) =

(___x + ____)(___x + ____) =

◆ 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 $\underline{\quad a \quad} \cdot \underline{\quad c \quad} = \_\_\_\_$	**Sum** of factors (*must* $= \underline{\quad b \quad}$)

$= 2x^2 + \_\_\_\_ + \_\_\_\_ + 5$

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