

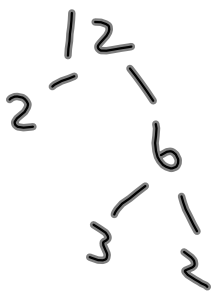
WARM-UP: FACTOR

1) GCF  
 $3w^7 - 12w^2 + 15w^4$   
 $3w^2(w^5 - 4 + 5w^2)$

Simple Trinomial

3)  $x^2 - 8x - 20$   
 $(x + 2)(x - 10)$

5)  $x^2 + 7x - 18$   
 $(x + 9)(x - 2)$



GCF

2)  $10a^2b^7 - 15a^3b^4$   
 $= 5a^2b^4(2b^3 - 3a)$

Factoring by Grouping

4)  $2ax + 2ay - bx - by$   
 $2a(x + y) - b(x + y)$   
 $(x + y)(2a - b)$

6)  $3x^2 - 30x + 72$   
 $3(x^2 - 10x + 24)$   
 $3(x - 6)(x - 4)$

Tomorrow:

Quiz: 1) Expand & Simplify

2) Factoring  $\Rightarrow$  Common Factor  
 $\Rightarrow$  Simple Trinomials

# Hard Trinomials

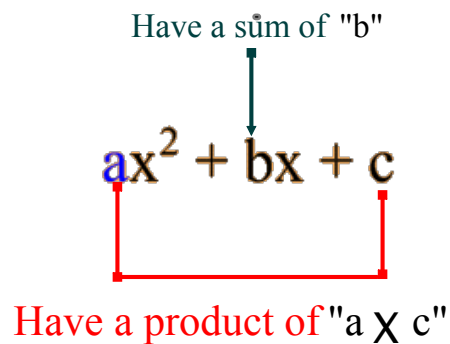
- have three terms of the form...

$$ax^2 + bx + c$$

- a hard trinomial has an "a" value not equal to 1.
- we use a method of decomposition to factor them.

## DECOMPOSITION METHOD

- here's how it goes... "What two numbers?"



- once you find the two numbers, use them to decompose the MIDDLE TERM into two new terms.
- then, factor by grouping.

### EXAMPLES:

1)  $2x^2 + 5x - 12$  2)  $5x^2 - 13x - 6$

$-24$

$$\begin{array}{r} 8 \\ \underline{\quad} x \underline{\quad} -3 \end{array} = -24$$

$$\begin{array}{r} +8 \\ \underline{\quad} + \underline{\quad} -3 \end{array} = +5$$

Decompose the Middle term

$$2x^2 + 8x - 3x - 12$$

$$2x(x+4) - 3(x+4)$$

$$(x+4)(2x-3)$$

3)  $9x^2 - 12x + 4$  4)  $8x^2 - 41x + 5$

$$2x^2 + 5x - 12$$

*(+5, -24)*

$$\left(\frac{2x+8}{2}\right)\left(2x-3\right)$$

$(x+4)(2x-3)$

Factoring Hard  
Trinomials

$$2) 5x^2 - 13x - 6 \quad (-30)$$

$$5x^2 - 15x + 2x - 6 \leftarrow \begin{array}{l} \text{Decompose ...} \\ \text{Now 4 Terms!!} \end{array}$$

$$\begin{array}{l} 5x(\underline{x-3}) + 2(\underline{x-3}) \\ (x-3)(5x+2) \end{array}$$

$$\begin{array}{l} \underline{\text{OR}} \\ 5x^2 - 13x - 6 \quad (-30) \\ \left( \frac{5x-15}{5} \right) (5x+2) \\ (x-3)(5x+2) \end{array}$$

$$4) 8x^2 - 41x + 5 \quad (+40)$$

$$8x^2 - 40x - x + 5$$

$$8x(\underline{x-5}) - 1(\underline{x-5})$$

$$(x-5)(8x-1)$$

or

$$\left(\frac{8x-40}{8}\right)(8x-1)$$

$$(x-5)(8x-1)$$

Pg. 177  
            
#12,13