

# Notes 9-6

## Factoring Trinomials of the Type $ax^2 + bx + c$

$ax^2 + bx + c$

When we have a trinomial  $ax^2 + bx + c$  in the form  $ax^2 + bx + c$ , we can factor it by using the following steps:

- Step 1: Multiply  $a \cdot c$ .
- Step 2: Find factors of  $ac$ .
- Step 3: Factor out the GCF of  $ac$  from the factors.
- Step 4: Set up the box.
- Step 5: Find GCF.
- Step 6: Write factors.

$ax^2$	$bx$
$cx$	$c$

**\*\* Step 5: Find GCF by rows and columns. ALWAYS use the sign that is closest to where you write the GCF.**

**Ex. 1 & 2:**

a)

Factor  $2y^2 + 5y + 2$

$2(2)$	$+5$
$1 \ 4$	$5$
$2 \ 2$	$4$

	$2y$	$1$
$y$	$2y^2$	$1y$
$2$	$4y$	$2$

$(2y+1)(y+2)$

b) Factor  $6n^2 - 23n + 7$

What can we multiply to get 42 and add to get -23

• 42	+ (-23)
-1 • (-42)	-43
-2 • (-21)	-23

$3n$	$6n^2$	$-21n$
$-1$	$-2n$	$7$

GCF by row  
GCF by column  
Put number w/ variable

GCF by column (what can both be divided by)

$$(2n-7)(3n-1)$$

Ex.3:

a)

Factor

$$24m^2 - 32m + 8$$

$$8(3m^2 - 4m + 1)$$

3(1)	
• 3	-4
-3 • -1	-4

$$8 \begin{pmatrix} m & -1 \\ 3m & 3m^2 - 3m \\ -1 & -m & 1 \end{pmatrix}$$

$$8(3m-1)(m-1)$$

b) Factor  $4y^2 + 14y + 6$

2(2y^2 + 7y + 3)

• 6	+ 7
6 • 1	7

2 • 3 = 6

Pull out GCF 1st

$$2 \begin{pmatrix} 2y & +1 \\ y & 2y^2 & y \\ +3 & 6y & 3 \end{pmatrix}$$

$$2(2y+1)(y+3)$$