

## Ch 9.6

Factoring Trinomials of  
 $ax^2+bx+c$

## + Factoring Trinomials where $a > 1$

To factor:

1. Multiply the 'a' by the 'c' term
2. Find the factors of ac that = the b (middle term)

Ex 1.  $2y^2 + 5y + 2$     1.  $2(2) = 4$     2.  $+4 / +5$

$2, 2 / 4$

**Step 3- Short cut:**

$1, 4 / 5$

Set up 2 fractions using 'a' as the numerator and each factor as the denominators. Divide the exponent by 2. Reduce each fraction. Each fraction becomes a binomial.

3.     $\frac{2y}{1}$      $\frac{2y}{4} = \frac{y}{2}$

1

4

2

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

+  
 - Factoring Trinomials where a > 1

Ex 2.  $6n^2 - 23n + 7$       $6(7) = 42$       $\frac{42}{-23}$

$-1, -42 / -43$   
 $-2, -21 / -23$

$6n = 3n$

$-2 \quad -1$

$6n = 2n$

$-21 \quad -7$

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

Ex 3.  $5d^2 - 14d - 3$       $5(-3) = -15$       $\frac{-15}{-14}$

$3, -5 / -2$   
 $1, -15 / -14$

$5d$       $5d = d$

$1 \quad -15 \quad -3$

**$(5d + 1)(d - 3)$**

+  
– Try some

Factor each expression.

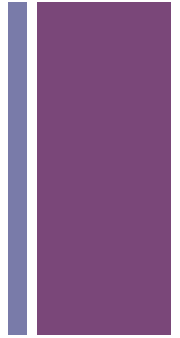
1.  $2n^2 + n - 3$

2.  $20b^2 - 31b - 9$

3.  $2y^2 - 5y + 2$

4.  $20x^2 + 17x + 3$

5.  $3n^2 - 7n - 6$



## + Factoring out a GCF

Sometimes you will have a GCF to factor out first. Then follow the previous factoring rules.

Ex 1.  $2n^2 - 12n + 10$       GCF: 2      so  $2(n^2 - 6n + 5)$

$$\underline{5} \quad / \quad -6$$

$$-5, -1 / -6$$

$$\underline{n} \quad \underline{n}$$

$$-1 \quad -5$$

$$2(n - 1)(n - 5)$$

**\*\*Don't forget to include the GCF in the final answer.\*\***

Ex 2.  $18k^2 - 12k - 6$       GCF: 6      so  $6(3k^2 - 2k - 1)$

$$3(-1) = -3$$

$$\underline{-3} \quad / \quad -2$$

$$-3, 1 / -2$$

$$\underline{3k} = \underline{k}$$

$$-3 \quad -1$$

$$\underline{3k}$$

$$1$$

$$6(k - 1)(3k + 1)$$

+  
- Try some

Factor each expression.

1.  $4n^2 + 14n + 6$

2.  $18b^2 + 33b - 30$

3.  $9y^2 - 48y - 36$

4.  $11x^2 + 77x + 66$

