

M10 - 5.0 - Factoring Review Don't Forget To Check By Distribution/FOIL

Remove Greatest Common Factor "GCF."

Or Substitution!

Factoring:  $bx + c$

$12x + 8$  GCF = 4  $\frac{8}{4} = 2$   $12x^2 + 8x$  GCF =  $4x$   $-2x + 8$  GCF =  $-2$   
 $4(3x + 2)$   $\frac{8}{4} = 2$   $4x(3x + 2)$   $-2(x - 4)$

a "a" is the number in front of the  $x^2$  term.  
 b "b" is the number in front of the  $x$  term.  
 c "c" is the number by itself.

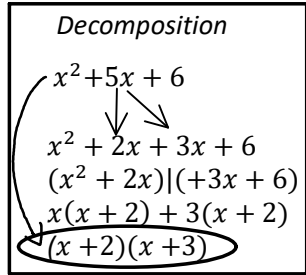
Factoring:  $ax^2 + bx + c$

$* ac = c$

List them!

$x^2 + 5x + 6$   $a = 1$   
 $(x + 2)(x + 3)$   $\frac{2}{3} \times \frac{3}{2} = 6$   
 $\frac{2}{3} + \frac{3}{2} = 5$

- 1,6  
2,3



Factoring:  $ax^2 + bx + c$

$ac$

Quick Method

Hack Method

$2x^2 + 7x + 6$   $a \neq 1$   
 $\frac{3}{3} \times \frac{4}{4} = 12$   
 $\frac{3}{3} + \frac{4}{4} = 7$   
 $2x^2 + 3x + 4x + 6$   
 $(2x^2 + 3x)(+4x + 6)$   
 $x(2x + 3) + 2(2x + 3)$   
 $(x + 2)(2x + 3)$

$2x^2 + 7x + 6$   
 $(x + \quad)(2x \quad)$   
 $(x + 2)(2x + 3)$

$2x^2 + 7x + 6$   
 $(2x + 4)(2x + 3)$   
 $\div 2$   
 $(x + 2)(2x + 3)$

$x^2 + 5x + 8$  Cannot Factor

Factoring:  $a^2 - b^2$

Differences of Squares

$a^2 - b^2 = (a + b)(a - b)$   
 $= a^2 - \cancel{ab} + \cancel{ab} - b^2$

$x^2 - 9$   
 $(x + 3)(x - 3)$

$9 = 3^2$

$x^2 + 9$  Cannot Factor

$4x^2 - 9y^2$   
 $(2x + 3y)(2x - 3y)$

$4x^2 = (2x)^2$   
 $9y^2 = (3y)^2$

Factoring:  $ax^2 + bxy + cy^2$

$x^2 + 5xy + 6y^2$   
 $(x + 2y)(x + 3y)$

Perfect Squares

$4x^2 - 20x + 25$   
 $(2x - 5)(2x - 5)$   
 $(2x - 5)^2$

$(\sqrt{ax} \pm \sqrt{c})^2$

$\pm\sqrt{a} \times \sqrt{25} \times 2 = \pm 20$

Perfect Square

$\sqrt{a} \times \sqrt{c} \times 2 = b$   
 $2\sqrt{ac} = b$

$b^2 - 4ac = 0$

Factoring Special Trinomials

$9 - x^2 - 2x - 1$  Group/GCF =  $-1$   
 $9 - (x^2 + 2x + 1)$  Partial Factor

$9 - (x + 1)^2$   
 $9 - m^2$

Substitution:  $m = x + 1$

$(3 - m)(3 + m)$   
 $(3 - (x + 1))(3 + (x + 1))$   
 $(3 - x - 1)(3 + x + 1)$   
 $(-x + 2)(x + 4)$

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