

\* Already Factored

\* GCF

0 3 terms  $x^2 + bx + c$   
0 3 terms  $ax^2 + bx + c$

♥ Difference of Squares

## 11.1 - SOLVING QUADRATICS BY FACTORING

- Write the equation with zero as one side. \* Must be in this order:
- Factor the other side of the equation.
- Set each factor equal to zero and solve.

\* 1.  $x(x-2) = 0$

$$x = 0 \quad x - 2 = 0$$
$$x = 2$$

\* 2.  $(x-3)(x+4) = 0$

$$x - 3 = 0 \quad x + 4 = 0$$
$$x = 3 \quad x = -4$$

solution: 0, 2

\* 3.  $(2x-4)(3x+5) = 0$

$$2x - 4 = 0 \quad 3x + 5 = 0$$
$$2x = 4 \quad 3x = -5$$
$$x = 2 \quad x = -\frac{5}{3}$$

solution: 2,  $-\frac{5}{3}$

5  $x^2 - 25 = 0$

$$(x-5)(x+5) = 0$$
$$x - 5 = 0 \quad x + 5 = 0$$
$$x = 5 \quad x = -5$$

solution: 5, -5

\* 7.  $2x^2 - 8x - 24 = 0$

$$2(x^2 - 4x - 12) = 0$$

Factors of 12 that  
sub to 4.  $-6 + 2 = -4$

$$(x-6)(x+2) = 0$$
$$x - 6 = 0 \quad x + 2 = 0$$
$$x = 6 \quad x = -2$$

solution: 6, -2

solution: 3, -4

\* 4.  $x^2 - 2x = 0$

$$x(x-2) = 0$$
$$x = 0 \quad x - 2 = 0$$
$$x = 2$$

solution: 0, 2

6  $x^2 = x + 30 \quad x^2 - x - 30 = 0$

Factors of 30 that sub to 1.

$$(x-6)(x+5) = 0 \quad -6 + 5 = -1$$

$$x - 6 = 0 \quad x + 5 = 0$$
$$x = 6 \quad x = -5$$

solution: 6, -5

8.  $3x^2 - 10x = 8 \quad 3x^2 - 10x - 8 = 0$

Factors of 24 that sub to 10.

$$-12 + 2 = -10$$

$$3x^2 - 12x + 2x - 8 = 0$$

$$3x(x-4) + 2(x-4) = 0$$

$$(3x+2)(x-4) = 0$$

$$x - 4 = 0 \quad 3x + 2 = 0$$
$$x = 4 \quad 3x = -2$$

solution: 4,  $-\frac{2}{3}$