

Factoring

use this when you have a trinomial you can play X-Game with

- 1) Set the problem equal to **ZERO**
- 2) Factor
- 3) **SOLVE**

EX: $2x^2 - 16x + 30 = 0$

$$2(x^2 - 8x + 15) = 0$$

$$2(x-3)(x-5) = 0$$

$x=3$ $x=5$

EX: $6x^2 - 5x - 4 = 0$

$$(6x^2 - 8x)(3x - 4) = 0$$

$$2x(3x - 4) + 1(3x - 4) = 0$$

$$(3x - 4)(2x + 1) = 0$$

$x = \frac{4}{3}$ $x = -\frac{1}{2}$

Square Roots

use this when there is NO "b" term

- 1) Get x^2 by itself
- 2) Take the $\sqrt{\quad}$ of each side
- 3) \pm in the answer

EX: $5x^2 - 10 = 170$

$$5x^2 = 180$$

$$\sqrt{x^2} = \sqrt{36}$$

$x = \pm 6$

Quadratic Formula

- 1) Set the problem equal to **ZERO**
- 2) Plug #'s (a, b, c) into Quadratic formula
- 3) Simplify & write answer

EX: $2x^2 - 10x + 4 = 0$

$$2x^2 - 10x + 4 = 0$$

$$x = \frac{10 \pm \sqrt{(-10)^2 - 4(2)(4)}}{2(2)}$$

$$x = \frac{10 \pm \sqrt{68}}{4}$$

$$x = \frac{10 \pm 2\sqrt{17}}{4}$$

$$x = \frac{5 \pm \sqrt{17}}{2}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

use anytime

Solving Quadratics

Completing the Square

- 1) Move constants to the right side of =
- 2) Complete the \square
- 3) Factor the left / Simplify the right
- 4) Take the $\sqrt{\quad}$ of both sides
- 5) **SOLVE** for x

Take $\frac{1}{2}$ of b, then square it

EX: $x^2 + 6x + 1 = 92$

$$x^2 + 6x + 9 = 91 + 9$$

$$\sqrt{(x+3)^2} = \sqrt{100}$$

$$x + 3 = \pm 10 - 3$$

$x = 7$ $x = -13$

use this when a=1 & when b is even