Solving Quadratic Equations Using Square Roots

* Isolate the "squared part."
* Extract the root. (Square Root both sides of the equation.

1. $\sqrt{x^2} = \sqrt{49}$

$x = \pm 7$ (means 7 and -7)

2. $\frac{2x^2}{2} = \frac{200}{2}$

$\sqrt{x^2} = \sqrt{100}$ $\quad x = \pm 10$

3. $2x^2 - 15 = 65$
$+15 \quad +15$

$2x^2 = 80$

$\frac{2x^2}{2} = \frac{80}{2}$

$\sqrt{x^2} = \sqrt{40}$ $\quad x = \pm\sqrt{40}$

Simplest Radical Form

$\pm\sqrt{40} = \pm\sqrt{4}\cdot\sqrt{10}$
$= \pm 2\sqrt{10}$

4. $7(x-4)^2 - 18 = 10$
$+18 \quad +18$

"Squared Part"

DO NOT ADD 4 YET

$\frac{7(x-4)^2}{7} = \frac{28}{7}$

$(x-4)^2 = 4$

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

$x - 4 = \pm 2$
$+4 \quad +4$

$x = 4 \pm 2$

$4+2 = 6$

$4-2 = 2$

5. $\frac{1}{2}(x+2)^2 - 5 = 8$
$+5 \quad +5$

$2 \cdot \frac{1}{2}(x+2)^2 = 13 \cdot 2$

$(x+2)^2 = 26$

$\sqrt{(x+2)^2} = \sqrt{26}$

$x + 2 = \pm\sqrt{26}$
$-2 \quad -2$

$x = -2 \pm \sqrt{26}$