

Things to Look at in the Equation	<p style="text-align: center;"><u>Solving by Factoring</u></p> <p style="text-align: center;">Trinomial or Binomial in Standard Form  <math>Ax^2 + Bx + C</math>                      Easily factor (put into 2 binomials or find GCF)                      No Parenthesis in Original Equation</p>	<p style="text-align: center;"><u>Solving by Square Roots</u></p> <p style="text-align: center;">Parenthesis                      No b term  <span style="font-size: 2em; color: green;">*PEMDAS*</span></p>
Set Equal to...	= 0	Get x by itself
Types of Solutions	Integers & Fractions only <span style="border: 1px solid black; padding: 2px;">no radical</span>	Integers, fractions, and radicals "if you don't take the square root of a perfect square, you WILL have radical answers"
<p>Step:</p> <ol style="list-style-type: none"> <li>1. set = 0</li> <li>2. GCF</li> <li>3. ( ) ( )</li> <li>4. Solve</li> </ol> <p>x = _____                      x = _____</p> <p>Sample Problems</p>	<p>a. <math>x^2 + 3x - 4 = 0</math>  <math>\begin{matrix} x &amp; \cdot &amp; x &amp; &amp; &amp; \\ &amp; 1 &amp; \cdot &amp; 4 &amp; &amp; \\ &amp; 2 &amp; \cdot &amp; 2 &amp; &amp; \end{matrix}</math>  <math>(x-1)(x+4) = 0</math>  <math>x-1=0 \rightarrow x=1</math>  <math>x+4=0 \rightarrow x=-4</math></p> <p>b. <math>3x^2 - x - 8 = -6</math>  <math>\begin{matrix} 3 &amp; &amp; &amp; &amp; &amp; \\ &amp; 1 &amp; &amp; &amp; &amp; \\ &amp; &amp; 1 &amp; &amp; &amp; \\ &amp; &amp; &amp; 1 &amp; &amp; \\ &amp; &amp; &amp; &amp; 1 &amp; \\ &amp; &amp; &amp; &amp; &amp; 1 \end{matrix}</math>  <math>3x^2 - x - 2 = 0</math>  <math>(3x+2)(x-1) = 0</math>  <math>3x+2=0 \rightarrow 3x=-2 \rightarrow x=-\frac{2}{3}</math>  <math>x-1=0 \rightarrow x=1</math></p> <p>c. <math>x^2 + 6x = 0</math>  <math>x(x+6) = 0</math>  <math>x=0</math>  <math>x+6=0 \rightarrow x=-6</math></p>	<p>a. <math>x^2 - 9 = 16</math>  <math>x^2 = 25</math>  <math>x = \pm 5</math></p> <p>b. <math>5(x-7)^2 = 135</math>  <math>(x-7)^2 = \frac{135}{5} = 27</math>  <math>x-7 = \pm \sqrt{27} = \pm 3\sqrt{3}</math>  <math>x = 7 \pm 3\sqrt{3}</math></p> <p>c. <math>5(x+4)^2 - 3 = 17</math>  <math>5(x+4)^2 = 20</math>  <math>(x+4)^2 = 4</math>  <math>x+4 = \pm 2</math>  <math>x = -4 \pm 2</math>  <math>x = -2</math> or <math>x = -6</math></p>

	Solving by Completing the Square	Solving by Quadratic Formula
Things to Look at in the Equation	$a = 1$ $b$ is even No Parenthesis in Original Equation	ANY equation in Standard Form $Ax^2 + Bx + C$ No Parenthesis in Original Equation Having trouble finding factors (putting into two binomials)
Set Equal to...	$\left(\frac{b}{2}\right)^2 = C$ A and B terms on the left, C term on the right Integers, fractions, and radicals	$= 0$ Integers, fractions, and radicals
Types of Solutions	"If the equation is not factorable, you WILL have radical answers"	"If the equation is not factorable, you WILL have radical answers"
Step	<ol style="list-style-type: none"> <li>1. Move C to right</li> <li>2. Find B</li> <li>3. Half it</li> <li>4. Square it</li> <li>5. Solve by <math>\sqrt{\quad}</math></li> </ol>	<ol style="list-style-type: none"> <li>1. <math>a = -2, b = -10, c = 0</math></li> <li>2. <math>b^2 - 4ac</math></li> <li>3. <math>(-10)^2 - 4(-2)(0)</math></li> <li>4. <math>100</math></li> <li>5. <math>\sqrt{100} = 10</math></li> <li>6. <math>\frac{-b \pm \sqrt{disc}}{2a}</math></li> <li>7. <math>\frac{-(-10) \pm 10}{2(-2)}</math></li> <li>8. <math>\frac{10 \pm 10}{-4}</math></li> <li>9. <math>\frac{20}{-4} = -5</math></li> <li>10. <math>\frac{0}{-4} = 0</math></li> </ol>
Sample Problems	$a. x^2 - 8x + 15 = 0$ $-15 = -15$ $x^2 - 8x + 16 = -15 + 16$ $\sqrt{(x-4)^2} = \sqrt{1}$ $x-4 = \pm 1$ $x = 5, x = 3$	$a. 2x^2 - 10x = 0$ $b. x^2 + 3x - 28 = 0$ $c. 2x^2 + 4x - 7 = 0$ $a: 2, b: 4, c: -7$ $b^2 - 4ac$ $(4)^2 - 4(2)(-7)$ $16 + 56 = 72$ $\sqrt{72} = 6\sqrt{2}$

## Quadratic Plan of Attack!

- Is there  $( )$ ?  $\rightarrow$  Solve by  $\sqrt{\quad}$
- \* { ● Is  $a=1$   $b$ =even  $\rightarrow$  Solve by Comp.  $\square$
- } ● Is it factorable  $\rightarrow$  Solve by Factoring  
 $(\quad)(\quad)$
- If all else FAILS  $\rightarrow$  Solve QF