

Day 1	Name:	Date:
	Topic/Objective: Solving Quadratics by the square root	Class/Period:

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Questions/Main Ideas:	Notes:
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<p>How do you solve quadratics by finding the square root?</p> <p><b>Vocabulary:</b> Square root Perfect square</p> <p>What are perfect squares?</p> <p>Rational number multiplied by itself.</p>	<p>What is a Quadratic equation? An equation raised to the 2nd power. <math>ax^2 + bx + c</math></p> <p><b>Before we begin:</b></p> <p>To simplify a radical.....</p> <ol style="list-style-type: none"> <li>1. We need to know what numbers multiply together</li> <li>2. Are any of the numbers perfect squares?</li> </ol> <p>No. Then you are simplified already      Yes. Then rewrite</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><math>\sqrt{20}</math></td> <td style="text-align: center;"><math>\sqrt{6}</math></td> </tr> <tr> <td style="text-align: center;"><math>\sqrt{5} \cdot \sqrt{4}</math></td> <td style="text-align: center;"><math>\sqrt{3} \cdot \sqrt{2}</math></td> </tr> <tr> <td style="text-align: center;"><math>2\sqrt{5}</math></td> <td style="text-align: center;"><math>\sqrt{6}</math></td> </tr> </table> <p>You cannot take the square root of a negative number. So there is no solution</p> <p style="text-align: center;"><math>x^2 = -4</math> no solution</p>	$\sqrt{20}$	$\sqrt{6}$	$\sqrt{5} \cdot \sqrt{4}$	$\sqrt{3} \cdot \sqrt{2}$	$2\sqrt{5}$	$\sqrt{6}$
$\sqrt{20}$	$\sqrt{6}$						
$\sqrt{5} \cdot \sqrt{4}$	$\sqrt{3} \cdot \sqrt{2}$						
$2\sqrt{5}$	$\sqrt{6}$						

Steps to solving quadratics by square root:

1. Get  $x^2$  by itself
2. Take the square root of both sides to get rid of the  $^2$
3. Simplify the radical or take the square root if it is a perfect square.

\*Remember that quadratics usually has two solutions so your answer should have a  $\pm$  in front of it.

For every  $\sqrt{\quad}$  except zero there are two answers

$$ax^2 + \cancel{bx} + c$$

Solve  $x^2 = 16$

Step 1: (Already done)  $x^2 = 16$

Step 2:  $\sqrt{x^2} = \sqrt{16}$

Step 3:  $x = \pm 4$

Solve:

$$2x^2 = 8$$

$$\frac{2x^2}{2} = \frac{8}{2}$$

$$\sqrt{x^2} = \sqrt{4}$$

$$x = \pm 2$$

always!!

Solve:  $25x^2 = 16$

$$\frac{25x^2}{25} = \frac{16}{25}$$

$$\sqrt{x^2} = \sqrt{\frac{16}{25}}$$

$$x = \pm \frac{4}{5}$$

Solve  $m^2 - 18 = -18$

$$\frac{\phantom{m^2} + 18}{\phantom{m^2} + 18}$$

$$\sqrt{m^2} = \sqrt{0}$$

$$m = 0$$

Solve  $b^2 + 12 = 5$

$$\frac{b^2 + 12}{-12 \quad -12} = \frac{5}{-12 \quad -12}$$

$$\sqrt{b^2} = \sqrt{-7}$$

no solution

Solve  $3x^2 - 11 = 7$

$$\begin{array}{r} 3x^2 - 11 = 7 \\ +11 \quad +11 \\ \hline 3x^2 = 18 \\ \frac{3x^2}{3} = \frac{18}{3} \end{array}$$

$$\sqrt{x^2} = \sqrt{6}$$

$$x = \pm\sqrt{6} \text{ or } x = \pm 2.45$$

Solve  $4x^2 = 9$

$$\frac{4x^2}{4} = \frac{9}{4}$$

$$\sqrt{x^2} = \sqrt{\frac{9}{4}} \text{ or } \sqrt{x^2} = \sqrt{\frac{9}{4}}$$

$$x = \pm \frac{3}{2}$$

Solve  $5x^2 + 12 = -8$

$$\begin{array}{r} 5x^2 + 12 = -8 \\ -12 \quad -12 \\ \hline \end{array}$$

$$\frac{5x^2}{5} = \frac{-20}{5}$$

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

no solution