

Algebra Review Solving Quadratics

KEY
Name _____

PROBLEM SOLVING

Solve by Factoring

$$x^2 - 64 = 0$$

$$(x+8)(x-8) = 0$$

$x = -8$	$x = 8$
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$$2.) \quad x^2 - 6x - 16 = 0$$

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

$x = 8$	$x = -2$
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$$3.) \quad x^2 + 3x = 40$$

$$\quad \quad \quad -40 \quad -40$$

$$x^2 + 3x - 40 = 0$$

$$(x+8)(x-5) = 0$$

$x = -8$	$x = 5$
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$$4.) \quad 2x^2 + 3x + 1 = 0$$

$$(2x+1)(2x+2) = 0$$

$$(2x+1)(x+1) = 0$$

$2x+1=0$	$x+1=0$
$x = -1/2$	$x = -1$

$$5.) \quad x^2 - 100 = 0$$

$$(x+10)(x-10) = 0$$

$x = -10$	$x = 10$
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$$6.) \quad x^2 + 6x = 0$$

$$x(x+6) = 0$$

$x = 0$	$x = -6$
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II. Solve by Square Roots

$$7.) \quad x^2 = 64$$

$x = \pm 8$

$$8.) \quad 4x^2 = 81$$

$$\quad \quad \quad 4 \quad 4$$

$$\sqrt{x^2} = \sqrt{20.25}$$

$x = \pm 4.5$

$$9.) \quad x^2 + 7 = -300$$

$$\quad \quad \quad -7 \quad -7$$

$$\sqrt{x^2} = \sqrt{-307}$$

No solution

$$10.) \quad \sqrt{(x-5)^2} = \sqrt{36}$$

$$x-5 = \pm 6$$

$$\quad \quad \quad +5 \quad +5$$

$$x = 5 \pm 6$$

$x = 5+6 = 11$
$x = 5-6 = -1$

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

Solve by using the quadratic formula: The quadratic formula is:

$$11.) \quad x^2 + 3x + 2 = 0$$

$$x = \frac{-3 \pm \sqrt{(3)^2 - 4(1)(2)}}{2(1)}$$

$$x = \frac{-3 \pm \sqrt{1}}{2}$$

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

$$12.) \quad 4x^2 - 8x = 1$$

$$\quad \quad \quad -1 \quad -1$$

$$4x^2 - 8x - 1 = 0$$

$$x = \frac{8 \pm \sqrt{(-8)^2 - 4(4)(-1)}}{2(4)}$$

$$x = \frac{8 \pm \sqrt{80}}{8} \rightarrow \frac{\sqrt{80}}{16} = \frac{\sqrt{16 \cdot 5}}{16} = \frac{4\sqrt{5}}{16} = \frac{\sqrt{5}}{4}$$

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

$$13.) \quad x^2 + 8x = 0$$

$$x = \frac{-8 \pm \sqrt{(8)^2 - 4(1)(0)}}{2(1)}$$

$$x = \frac{-8 \pm \sqrt{64}}{2}$$

$$x = \frac{-8 \pm 8}{2}$$

$x = \frac{-8+8}{2} = 0$
$x = \frac{-8-8}{2} = -8$

Solve each equation any way you want. Show your work.

$$14.) \quad x^2 + 11x + 18 = 0$$

$$(x+9)(x+2) = 0$$

$x = -9$	$x = -2$
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$$15.) \quad x^2 + 2x + 1 = 15$$

$$\quad \quad \quad -15 \quad -15$$

$$x^2 + 2x - 14 = 0$$

$$x = \frac{-2 \pm \sqrt{(2)^2 - 4(1)(-14)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{60}}{2} \rightarrow x = \frac{-2 \pm 2\sqrt{15}}{2}$$

$$16.) \quad x^2 - 9x + 1 = 0$$

$$x = \frac{9 \pm \sqrt{(-9)^2 - 4(1)(1)}}{2(1)}$$

$x = \frac{9 \pm \sqrt{83}}{2}$

$$17.) \quad \sqrt{(x+2)^2} = \sqrt{36}$$

$$x+2 = \pm 6$$

$x = -2+6 = 4$
$x = -2-6 = -8$

$$18.) \quad x^2 - 10x + 25 = 0$$

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

$x = 5$

$$19.) \quad x^2 + 3x + 7 = 0$$

NO solution

20. $\sqrt{x^2} = \sqrt{36}$
 $x = \pm 6$

21. $x^2 - 6x + 2 = 0$
 $x = \frac{+6 \pm \sqrt{(-6)^2 - 4(1)(2)}}{2(1)}$
 $x = \frac{6 \pm \sqrt{28}}{2}$
 $x = \frac{3 \pm 2\sqrt{7}}{1}$

22. $x^2 - 5x + 4 = 0$
 $(x-1)(x-4) = 0$
 $x = 1$ | $x = 4$

REASONING:

20.) Explain why $x^2 = -81$ DOES NOT have a solution.
 B/c you cannot take square root of a negative number

21.) Which method can't you use to solve this problem? $x^2 - 47 = 0$

Circle one: Factoring Square Roots Quadratic Formula

Explain why: 47 is not a perfect square

22.) Which method can't you use to solve this problem? $x^2 + 7x = 0$

Circle one: Factoring Square Roots Quadratic Formula

Explain why: you cant take the square root of 7x (not perfect square)

23.) Which method can you use to solve all quadratic equations?

Circle one: Factoring Square Roots Quadratic Formula

Explain why: works for any type

24.) What are the two mistakes in setting up the quadratic formula:

Solve: $2x^2 - x - 6 = 0$

$$x = \frac{(-1) \pm \sqrt{(-1)^2 - 4(2)(6)}}{2(2)}$$

Annotations: "should be +1" above the -1 in the numerator; "should be -6" next to the 6 in the numerator.