ALBERT

Name _____ Date _____

Solving Quadratic Equations Worksheet

Algebra 1 · Common Core HSA-REI.B.4b

> Solve quadratic equations in one variable. b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.

Practice

Builds the skill step by step.

1. Solve $x^2 = 49$.

2. Solve $x^2 - 25 = 0$.

3. Solve $(x - 3)(x + 4) = 0$.

4. Solve $x^2 + 5x + 6 = 0$ by factoring.

5. Solve $3x^2 = 27$.

6. Solve $(x + 2)^2 = 9$.

7. Solve $x^2 - 7x = 0$.

8. Which method is quickest for solving $x^2 = 81$?

   A. Factoring by grouping

   B. Completing the square

   C. The quadratic formula

   D. Taking square roots

9. Solve $x^2 - 6x + 9 = 0$.

10. Solve $x^2 - x - 12 = 0$.

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On Level

Grade-level practice.

1. Solve $2x^2 + 7x + 3 = 0$.

2. Solve $x^2 + 4x - 1 = 0$ with the quadratic formula. Round to the nearest hundredth.

3. How many real solutions does $x^2 + 2x + 5 = 0$ have?

   A. None

   B. One

   C. Two

   D. Infinitely many

4. Find the value of $b^2 - 4ac$ for $3x^2 - 4x + 1 = 0$.

5. Solve $4x^2 - 9 = 0$.

6. Solve $x^2 + 10x + 21 = 0$.

7. Solve $(2x - 1)^2 = 25$.

8. How many real solutions does $x^2 - 8x + 16 = 0$ have?

   A. None

   B. Exactly one

   C. Two

   D. Infinitely many

9. Solve $3x^2 - 5x - 2 = 0$.

10. Solve $x^2 = 3x + 10$.

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Challenge

Multi-step and word problems that stretch it.

1. A ball is kicked from the ground. Its height in feet after t seconds is $h = -16t^2 + 48t$. After how many seconds does it land?

2. Solve $x^2 + 6x - 2 = 0$. Round to the nearest hundredth.

3. Which equation has no real solutions?

   A. $x^2 - 4x + 4 = 0$

   B. $x^2 + 4x = 0$

   C. $x^2 + 4 = 0$

   D. $x^2 - 4 = 0$

4. A positive number times 4 less than the number equals 21. Find the number.

5. Lin solves $x^2 - 5x + 6 = 2$ by writing $(x - 2)(x - 3) = 2$, so $x = 2$ or $x = 3$. What is her mistake?

   A. There is no mistake.

   B. She should have used the quadratic formula.

   C. The zero product property only works when one side is 0.

   D. She factored $x^2 - 5x + 6$ incorrectly.

6. Solve $x^2 - 5x + 6 = 2$ correctly.

7. For what positive value of k does $x^2 + kx + 25 = 0$ have exactly one solution?

8. Solve $(x + 1)^2 - 3 = 13$.

9. Which method makes the most sense for solving $3x^2 + 7x - 1 = 0$?

   A. Solving by inspection

   B. The quadratic formula

   C. Factoring

   D. Taking square roots

10. Solve $0.5x^2 - 2x - 6 = 0$.