Solving Quadratics Practice Test - Algebra 1

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Solve the equation using square roots.

1. \(7x^2 + 6 = 13\)
   a. no real number solutions  
   b. 1  
   c. \(\pm \sqrt{7}\)  
   d. \(\pm 1\)
2. \(x^2 + 20 = 4\)
   a. \(\sqrt{24}\)  
   b. \(-4\)  
   c. \(\pm \sqrt{24}\)  
   d. no real number solutions

Solve the equation using the zero-product property.

3. \((2x + 2)(5x - 5) = 0\)
   a. \(x = -1\) or \(x = -1\)  
   b. \(x = -1\) or \(x = 1\)  
   c. \(x = -2\) or \(x = 5\)  
   d. \(x = 1\) or \(x = 1\)
4. \(-8n(10n - 1) = 0\)
   a. \(n = -\frac{1}{8}\) or \(n = -\frac{1}{10}\)  
   b. \(n = 0\) or \(n = -\frac{1}{10}\)  
   c. \(n = 0\) or \(n = \frac{1}{10}\)  
   d. \(n = -\frac{1}{8}\) or \(n = \frac{1}{10}\)

Solve the equation by factoring.

5. \(z^2 - 6z - 27 = 0\)
   a. \(z = 3\) or \(z = -9\)  
   b. \(z = 3\) or \(z = -9\)  
   c. \(z = -3\) or \(z = 9\)  
   d. \(z = -3\) or \(z = -9\)
6. \(3z^2 + 3z - 6 = 0\)
   a. \(z = 1\) or \(z = -2\)  
   b. \(z = 1\) or \(z = 2\)  
   c. \(z = 3\) or \(z = -2\)  
   d. \(z = 3\) or \(z = 2\)
7. \(e^2 - 4e = 0\)
   a. \(e = 0\) or \(e = -4\)  
   b. \(e = 0\) or \(e = \sqrt{4}\)  
   c. \(e = 0\) or \(e = 4\)  
   d. \(e = 1\) or \(e = -\sqrt{4}\)
8. Tasha is planning an expansion of a square flower garden in a city park. If each side of the original garden is increased by 7 m, the new total area of the garden will be 144 m\(^2\). Find the length of each side of the original garden.
   a. 19 m  
   b. 12 m  
   c. 5 m  
   d. \(\sqrt{5}\) m
9. Find the value of \(n\) such that \(x^2 - 19x + \frac{n}{4}\) is a perfect square trinomial.
   a. \(\frac{19}{2}\)  
   b. \(\frac{361}{4}\)  
   c. 361  
   d. \(\frac{361}{2}\)

Solve the equation by completing the square. Round to the nearest hundredth if necessary.
10. \( x^2 - 4x = 5 \)
   a. 5, -1  
   b. 11, -7  
   c. 1.73, -1.73  
   d. 1, 3
11. \( x^2 + 3x = 24 \)
   a. 4.66, 5.12  
   b. 3.62, -6.62  
   c. 3.55, -6.55  
   d. 24.75, -27.75
12. The solutions given by the quadratic formula are ________ integers.
   a. sometimes  
   b. always  
   c. never

Find the number of real number solutions for the equation.
13. \( x^2 + 0x - 1 = 0 \)
   a. 0  
   b. 1  
   c. 2
14. \( x^2 - 18 = 0 \)
   a. 0  
   b. 1  
   c. 2
15. \( x^2 + 5x + 7 = 0 \)
   a. 2  
   b. 0  
   c. 1

Which method(s) would you choose to solve the equation? Justify your reasoning.
16. \( x^2 + 6x - 2 = 0 \)
17. \( 3x^2 - 27 = 0 \)

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Answer Section

MULTIPLE CHOICE

1. ANS: D  
   PTS: 1  
   KEY: solving quadratic equations | square root
2. ANS: D  
   PTS: 1  
   KEY: solving quadratic equations | square root
3. ANS: B  
   PTS: 1  
   KEY: zero-product property | solving quadratic equations
4. ANS: B  
   PTS: 1  
   KEY: zero-product property | solving quadratic equations
5. ANS: C  
   PTS: 1  
   KEY: factoring | solving quadratic equations
6. ANS: A  
   PTS: 1  
   KEY: factoring | solving quadratic equations
7. ANS: C  
   PTS: 1  
   KEY: factoring | solving quadratic equations
8. ANS: C  
   PTS: 1  
   KEY: factoring | solving quadratic equations | word problem | problem solving
9. ANS: B  
   PTS: 1  
   KEY: solving quadratic equations | completing the square
10. ANS: A  
    PTS: 1  
    KEY: solving quadratic equations | completing the square
11. ANS: B  
    PTS: 1  
    KEY: solving quadratic equations | completing the square
12. ANS: A  
    PTS: 1  
    KEY: solving quadratic equations | quadratic formula | reasoning
13. ANS: C  
    PTS: 1  
    KEY: solving quadratic equations | one solution | two solutions | discriminant
14. ANS: C  
    PTS: 1  
    KEY: solving quadratic equations | no solution | two solutions | discriminant
15. ANS: B  
    PTS: 1  
    KEY: solving quadratic equations | discriminant | no solution