Section 7.1: Extraction of Roots and Properties of Square Roots

1. What number(s) squared give(s) 25?
   (a) 5
   (b) 5 and -5
   (c) \( \frac{25}{2} \)
   (d) \( \frac{25}{2} \) and \( -\frac{25}{2} \)

2. Find all solutions to \( x^2 = 25 \).
   (a) \( x = 5 \)
   (b) \( x = 5 \) and \( x = -5 \)
   (c) \( x = \frac{25}{2} \)
   (d) \( x = \frac{25}{2} \) and \( x = -\frac{25}{2} \)

3. What is \( \sqrt{-25} \) ?
   (a) -5
   (b) 5
   (c) not a real number

4. What is \( -\sqrt{25} \) ?
   (a) -5
   (b) 5
   (c) not a real number

5. True or False: 7 and -7 are both square roots of 49.
   (a) True, and I am very confident
   (b) True, but I am not very confident
(c) False, but I am not very confident
(d) False, and I am very confident

6. **True or False:** \( \sqrt{49} = -7 \)
   (a) True, and I am very confident
   (b) True, but I am not very confident
   (c) False, but I am not very confident
   (d) False, and I am very confident

7. **True or False:** \( -\sqrt{64} = -8 \)
   (a) True, and I am very confident
   (b) True, but I am not very confident
   (c) False, but I am not very confident
   (d) False, and I am very confident

8. **Simplify:** \( \sqrt{-9^2} \)
   (a) -9
   (b) 9
   (c) not a real number

9. **Simplify:** \( \sqrt{(-9)^2} \)
   (a) -9
   (b) 9
   (c) not a real number

10. **Simplify:** \( \sqrt{24} \)
    (a) \( 12\sqrt{2} \)
    (b) \( 4\sqrt{6} \)
    (c) \( 8\sqrt{3} \)
    (d) \( 2\sqrt{6} \)
11. Simplify: $\sqrt{250}$
   (a) $5\sqrt{50}$
   (b) $5\sqrt{10}$
   (c) $10\sqrt{5}$
   (d) $2\sqrt{125}$

12. True or False: The solution to $x^2 = 10$ is $x = \sqrt{10}$.
   (a) True, and I am very confident
   (b) True, but I am not very confident
   (c) False, but I am not very confident
   (d) False, and I am very confident

13. Find all solutions to $(x - 3)^2 = 25$.
   (a) $x = 5$ and $x = -5$
   (b) $x = \sqrt{28}$ and $x = -\sqrt{28}$
   (c) $x = 8$
   (d) $x = 8$ and $x = -2$

14. Find all solutions to $4x^2 = 36$.
   (a) $x = \frac{3}{2}$ and $x = -\frac{3}{2}$
   (b) $x = 6$ and $x = -6$
   (c) $x = 3$ and $x = -3$

15. Find all solutions to $4(x - 2)^2 = 100$.
   (a) $x = 7$ and $x = -3$
   (b) $x = \frac{9}{2}$ and $x = -\frac{1}{2}$
   (c) $x = 18$ and $x = -2$
   (d) $x = 5$ and $x = -5$

16. A home-owner wishes to build an addition. The addition will be a rectangular room with an area of 120 square feet, with the length equal to twice the width. If $w$ is the width of the addition, which equation must be true?
(a) \(3w = 120\)
(b) \(w^2 = 120\)
(c) \(\frac{1}{2}w^2 = 120\)
(d) \(2w^2 = 120\)

17. True or False: All quadratic equations have two solutions.

(a) True, and I am very confident
(b) True, but I am not very confident
(c) False, but I am not very confident
(d) False, and I am very confident