

Name: _____

Date: _____

1. This equation can be used to determine a number such that the square of the number is 25 less than 10 times the number.

$$x^2 + 25 = 10x$$

Which of the following is equivalent to the equation?

A. $x^2 = 5x$

B. $x^2 = -15x$

C. $(x-5)^2 = 0$

D. $(x+5)(x-5) = 0$

2. A sky diver uses this equation to determine h , her height in meters above the ground t seconds after jumping from a plane.

$$h = 5(200 - t^2)$$

The sky diver wants to open her parachute when she is at a height of 300 meters above the ground. Approximately how many seconds after the sky diver jumps from the plane should she open her parachute?

A. 12 seconds

B. 14 seconds

C. 16 seconds

D. 26 seconds

3. The floor of a room is rectangular in shape. Its length, x , is 2 feet greater than its width. The floor has an area of 120 square feet.

Which equation can be used to determine the length of the floor?

A. $x^2 + 2x + 120 = 0$

B. $x^2 + 2x - 120 = 0$

C. $x^2 - 2x + 120 = 0$

D. $x^2 - 2x - 120 = 0$

4. This equation represents d , the distance in meters a ball rolls down a ramp in t seconds.

$$d = t^2 + 2t$$

What number of seconds will it take the ball to roll 15 meters down the ramp?

A. 2 seconds

B. 3 seconds

C. 5 seconds

D. 8 seconds

5. A student uses this equation to determine x , the side length of a square.

$$\sqrt{24} + x = 12$$

Which of the following is equivalent to the student's equation?

A. $x^2 + 24x + 120 = 0$

B. $x^2 + 24 + 168 = 0$

C. $x^2 - 24x + 120 = 0$

D. $x^2 - 24x + 168 = 0$

6. This equation can be used to determine t , the number of seconds it takes a pendulum to make one complete swing.

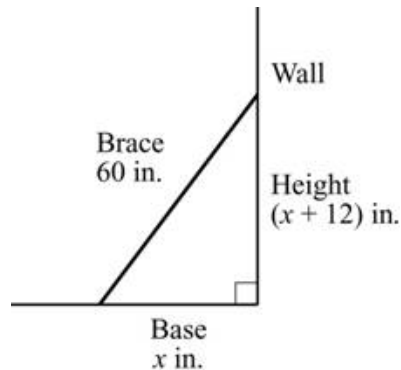
$$t = 6.28\sqrt{\frac{L}{980}}$$

The variable L in the equation represents the length of the pendulum in centimeters.

What is the approximate length of a pendulum that takes 1 second to complete one swing?

- A. 2.2 cm
- B. 5.0 cm
- C. 12.5 cm
- D. 24.8 cm

7. This diagram shows the length of a brace used to support a wall.



The equation $60 = \sqrt{x^2 + (x + 12)^2}$ can be used to determine x , the base of the triangle. Which of the following is equivalent to the equation?

- A. $x^2 + 24x - 3456 = 0$
- B. $x^2 + 24x + 3744 = 0$
- C. $2x^2 + 24x - 3456 = 0$
- D. $2x^2 + 24x + 3744 = 0$

8. Two opposite sides of a square are increased 6 inches in one direction, and the other two sides are increased 4 inches. These increases cause the area to increase by 114 square inches.

This equation can be used to determine x , the length of each side of the original square.

$$(x + 6)(x + 4) = x^2 + 114$$

Which of the following is equivalent to the equation?

A. $10x = 90$

B. $10x = 138$

C. $x^2 + 10x + 90 = 0$

D. $x^2 + 10x + 138 = 0$

Answer Key

1. C) $(x - 5)^2 = 0$

2. A) 12 seconds

3. D) $x^2 - 2x - 120 = 0$

4. B) 3 seconds

5. C) $x^2 - 24x + 120 = 0$

6. D) 24.8 cm

7. C) $2x^2 + 24x - 3456 = 0$

8. A) $10x = 90$