

Algebra: Solving Equations with Square Roots

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Name: _____ Date: _____ Score: _____

DIRECTIONS*Isolate the square root, then square both sides. Check your solution in the original equation.***1** Solve:

$$\sqrt{x} = 5$$

Answer: _____

2 Solve:

$$\sqrt{x} = 9$$

Answer: _____

3 Solve:

$$\sqrt{x+3} = 4$$

Answer: _____

4 Solve:

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

Answer: _____

5 Solve:

$$\sqrt{x-4} = 6$$

Answer: _____

6 Solve:

$$2\sqrt{x} = 8$$

Answer: _____

7 Solve:

$$\sqrt{3x+1} = 5$$

Answer: _____

8 Solve:

$$\sqrt{x+5} = x-1$$

Answer: _____

9 Solve:

$$\sqrt{x} + 2 = 6$$

Answer: _____

10 Solve:

$$\sqrt{4x+5} = \sqrt{2x+11}$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES

Isolate radical first, then square both sides. Always check for extraneous solutions — squaring can introduce false answers.

ers.

$$\begin{aligned} 1 \quad \sqrt{x} &= 5 \\ &= x = 25 \end{aligned}$$

Square both sides: $x = 25$. Check: $\sqrt{25}=5$ ✓

$$\begin{aligned} 2 \quad \sqrt{x} &= 9 \\ &= x = 81 \end{aligned}$$

Square both sides: $x = 81$. Check ✓

$$\begin{aligned} 3 \quad \sqrt{x+3} &= 4 \\ &= x = 13 \end{aligned}$$

$x+3=16$, $x=13$. Check: $\sqrt{16}=4$ ✓

$$\begin{aligned} 4 \quad \sqrt{2x-1} &= 3 \\ &= x = 5 \end{aligned}$$

$2x-1=9$, $2x=10$, $x=5$. Check ✓

$$\begin{aligned} 5 \quad \sqrt{x-4} &= 6 \\ &= x = 40 \end{aligned}$$

$x-4=36$, $x=40$. Check ✓

$$\begin{aligned} 6 \quad 2\sqrt{x} &= 8 \\ &= x = 16 \end{aligned}$$

$\sqrt{x}=4$, $x=16$. Check ✓

$$\begin{aligned} 7 \quad \sqrt{3x+1} &= 5 \\ &= x = 8 \end{aligned}$$

$3x+1=25$, $3x=24$, $x=8$. Check ✓

$$\begin{aligned} 8 \quad \sqrt{x+5} &= x-1 \\ &= x = 4 \end{aligned}$$

$x+5=(x-1)^2=x^2-2x+1$; $x=4$ ($x=-1$ extraneous)

$$\begin{aligned} 9 \quad \sqrt{x} + 2 &= 6 \\ &= x = 16 \end{aligned}$$

$\sqrt{x}=4$, $x=16$. Check ✓

$$\begin{aligned} 10 \quad \sqrt{4x+5} &= \sqrt{2x+11} \\ &= x = 3 \end{aligned}$$

$4x+5=2x+11$, $2x=6$, $x=3$. Check ✓