



5-4 Reteach to Build Understanding

Solving Radical Equations

1. Use the structure in the Algebra column and follow the steps to complete the table below.

Steps	Algebra	Numbers
1. Write the original equation.	$\sqrt{x+a} + b = c$	$\sqrt{x+2} + 4 = 6$
2. Subtract the value of b from both sides to isolate the radical.	$\sqrt{x+a} + b - b = c - b$ $\sqrt{x+a} = c - b$	$\sqrt{x+2} + 4 - 4 = 6 - \underline{\quad}$ $\sqrt{x+2} = 2$
3. Square both sides to eliminate the square root.	$(\sqrt{x+a})^2 = (c-b)^2$	$(\sqrt{x+2})^2 = (\underline{\quad})^2$
4. Simplify.	$x + a = (c-b)^2$	$x + \underline{\quad} = 4$
5. Subtract a from both sides.	$x + a - a = (c-b)^2 - a$ $x = (c-b)^2 - a$	$x + 2 - 2 = 4 - \underline{\quad}$ $x = 2$

2. Aubrey solves the equation $\sqrt{x-4} = 4-x$, and shows her work. She found that $x = 4$ and $x = 5$. What mistake did she make? What is the correct answer?

$$\begin{aligned}(\sqrt{x-4})^2 &= (4-x)^2 \\x-4 &= x^2 - 8x + 16 \\x-4-x+4 &= x^2 - 8x + 16-x+4 \\0 &= x^2 - 9x + 20 \\(x-4)(x-5) &= 0 \\x &= 4 \text{ and } x = 5\end{aligned}$$

3. Solve: $\frac{x}{6} = \sqrt{x-5}$

Square both sides:

$$\frac{x^2}{36} = x - \underline{\quad}$$

Multiply both sides by 36:

$$x^2 = \underline{\quad}(x-5)$$

Use the Distributive Property:

$$x^2 = 36x - \underline{\quad}$$

Rearrange the equation:

$$x^2 - \underline{\quad}x + 180 = 0$$

Factor:

$$(x - \underline{\quad})(x - 30)$$

Use the Zero Product Property:

$$x - 6 = 0 \text{ and } x - \underline{\quad} = 0$$

Solve:

$$x = \underline{\quad} \text{ and } x = \underline{\quad}$$