

Grade 8 - Square Roots and Cube Roots - Answer Key

Common Core 8.EE.A.2 · maths-pdf.fr/en/

This answer key gives a full worked solution for each of the 21 problems on the square roots and cube roots worksheet (Common Core 8.EE.A.2). Compare each step with your own work, not only the final answer, and note any step where your method differed.

Grade 8 · Common Core State Standards: **8.EE.A.2**

Exercise 1 - Square root

$$9 \cdot 9 = 81.$$

$$9$$

Exercise 2 - Cube root

$$4 \cdot 4 \cdot 4 = 64.$$

$$4$$

Exercise 3 - Solve x squared

Take both roots: $x = \pm\sqrt{49}$.

$$x = 7 \text{ or } x = -7$$

Exercise 4 - Solve x cubed

$4^3 = 64$, and a cube has only one real root.

$$x = 4$$

Exercise 5 - Larger perfect square

$$14 \cdot 14 = 196.$$

Exercise 6 - Larger cube root

$$6^3 = 216.$$

$$6$$

Exercise 7 - Bigger equation

$$15^2 = 225, \text{ so } x = \pm 15.$$

$$x = 15 \text{ or } x = -15$$

Exercise 8 - Fraction cube

$$\sqrt[3]{27} = 3 \text{ and } \sqrt[3]{64} = 4.$$

$$x = \frac{3}{4}$$

Exercise 9 - Fraction square

$$\sqrt{49} = 7 \text{ and } \sqrt{81} = 9, \text{ so } x = \pm \frac{7}{9}.$$

$$x = \frac{7}{9} \text{ or } x = -\frac{7}{9}$$

Exercise 10 - Combine roots

$$6+2=8.$$

$$8$$

Exercise 11 - Estimate a cube root

$$3^3 = 27 \text{ and } 4^3 = 64, \text{ and } 27 < 30 < 64.$$

$$3 < \sqrt[3]{30} < 4$$

Exercise 12 - Not a perfect square

$x = \pm\sqrt{20}$. Since $4.47^2 = 19.98$ and $4.48^2 = 20.07$, $\sqrt{20} \approx 4.47$.

$$x = \pm\sqrt{20} \approx \pm 4.47$$

Exercise 13 - Two-step equation

Divide by 2: $x^2 = 49$.

$$x = \pm 7$$

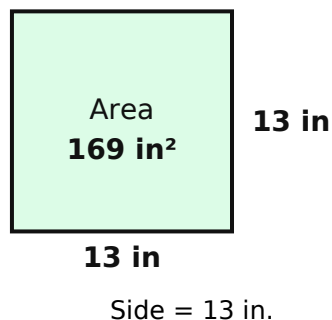
Exercise 14 - Cube with a coefficient

Divide by 4: $x^3 = 27$, so $x = 3$.

Check: $4 \cdot 27 = 108$.

$$x = 3$$

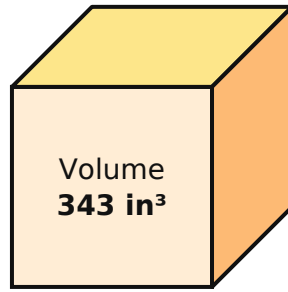
Exercise 15 - Square tile



$$\text{Side} = \sqrt{169} = 13.$$

13 inches

Exercise 16 - Shipping cube



Edge = 7 in.

Edge = $\sqrt[3]{343} = 7$, because $7 \cdot 7 \cdot 7 = 343$.

7 inches

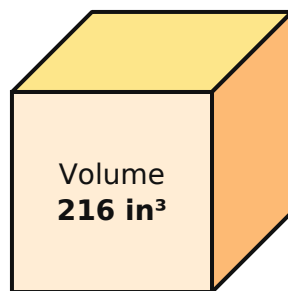
Exercise 17 - Garden fence

Side = $\sqrt{196} = 14$ ft.

Perimeter = $4 \cdot 14 = 56$.

56 feet

Exercise 18 - Gift box surface



Edge = 6 in.

Edge = $\sqrt[3]{216} = 6$ in.

One face: $6^2 = 36$. Six faces: $6 \cdot 36 = 216$.

Edge 6 in; 216 square inches of paper

Exercise 19 - Jogging lap

Side $= \sqrt{2500} = 50$ yd.

One lap: $4 \cdot 50 = 200$ yd. Three laps: $3 \cdot 200 = 600$.

600 yards

Exercise 20 - Compare

$\sqrt{90} \approx 9.5$ because $9.5^2 = 90.25$.

$\sqrt[3]{90} \approx 4.5$ because $4.5^3 = 91.125$ and $4.4^3 = 85.18$.

The square: about 9.5 cm versus about 4.5 cm

Exercise 21 - Explain

No. The symbol $\sqrt{36}$ means 6, but $(-6)^2$ is also 36.

$x = 6$ or $x = -6$