

Grade 8 · Square Roots and Cube Roots · Test Answer Key

Common Core 8.EE.A.2 · mathovore.fr

Use this answer key to score the square roots and cube roots test. Each solution is worked out, and a scoring note explains how to award the points. Give partial credit when the method is right and only the arithmetic slips. The total is 20 points.

Grade 8 Common Core: 8.EE.A.2

Question 1: Evaluate roots (2 points)

- a. $11 \cdot 11 = 121$, so $\sqrt{121} = 11$.
- b. $6 \cdot 6 \cdot 6 = 216$, so $\sqrt[3]{216} = 6$.

Scoring: 1 point for each correct value.

Question 2: Solve with whole numbers (2 points)

- a. $15 \cdot 15 = 225$, so $x = 15$ or $x = -15$.
- b. $(-5)^3 = -125$, so $x = -5$.

Scoring: part (a) 1 point, and both solutions are required; part (b) 1 point.

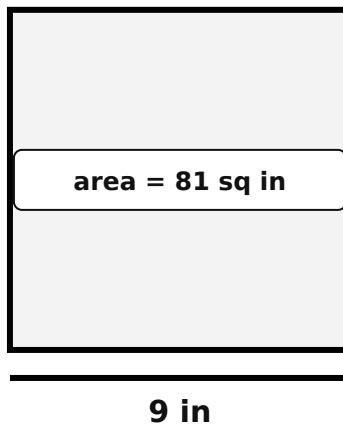
Question 3: Fractions and decimals (2 points)

- a. $0.6 \cdot 0.6 = 0.36$, so $x = 0.6$ or $x = -0.6$.
- b. $\sqrt[3]{1} = 1$ and $\sqrt[3]{64} = 4$, so $x = \frac{1}{4}$.

Scoring: 1 point for each part; part (a) needs both signs.

Question 4: Square picture frame (2 points)

- a. $\sqrt{81} = 9$, so the side is 9 in.
- b. $4 \cdot 9 = 36$, so the perimeter is 36 in.

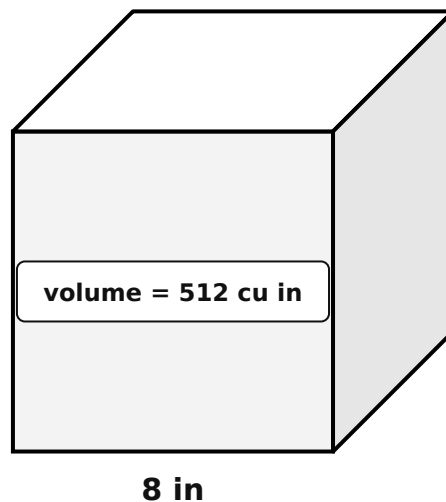


Each side is 9 inches.

Scoring: 1 point for the side with units, 1 point for the perimeter with units.

Question 5: Cube-shaped box (2 points)

- a. $\sqrt[3]{512} = 8$, since $8^3 = 512$. The edge is 8 in.
- b. One face is 8 in by 8 in: $8^2 = 64$ square inches.



The edge is 8 inches.

Scoring: 1 point for the edge, 1 point for the face area with square units.

Question 6: Estimate between integers (2 points)

- a. $8^2 = 64 < 72 < 81 = 9^2$, so between 8 and 9.
- b. $3^3 = 27 < 30 < 64 = 4^3$, so between 3 and 4.

Scoring: 1 point for each pair; the pair must be consecutive integers.

Question 7: Square with area 2 (2 points)

- a. The side s satisfies $s^2 = 2$, so $s = \sqrt{2}$ in.
- b. The number $\sqrt{2}$ is irrational. Since $1.4^2 = 1.96 < 2 < 2.25 = 1.5^2$, it lies between 1.4 and 1.5.

Scoring: 1 point for $\sqrt{2}$; 1 point for irrational with the interval between 1.4 and 1.5.

Question 8: Border for a patio (3 points)

- a. $\sqrt{400} = 20$, so each side is 20 ft.
- b. $4 \cdot 20 = 80$ ft of border.
- c. $80 \cdot 3.50 = 280$, so the cost is \$280.00.

Scoring: 1 point for each part; carry-forward credit if the side is wrong but later steps follow from it.

Question 9: Shipping crate (3 points)

- a. $\sqrt[3]{3375} = 15$, since $15^3 = 3375$. The edge is 15 in.
- b. $15^2 = 225$ square inches.
- c. The crate is 15 in on each edge, and 15 is greater than 14, so it does not fit.

Scoring: 1 point for each part; part (c) needs the comparison 15 greater than 14.

Total
20 points