

Grade 8 · Square Roots and Cube Roots · Test

Common Core 8.EE.A.2 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This test has nine questions worth 20 points in total and should take about 45 minutes. Show every step. A calculator is not needed. Questions cover square roots and cube roots of perfect squares and cubes, solving $x^2 = p$ and $x^3 = p$, and the irrational number $\sqrt{2}$.

Test information

- **Grade:** Grade 8
- **Chapter:** Square Roots and Cube Roots
- **Common Core:** 8.EE.A.2
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 2 pts; Question 8: 3 pts; Question 9: 3 pts)

Question 1: Evaluate roots (2 points)

- Evaluate $\sqrt{121}$. (1 point)
- Evaluate $\sqrt[3]{216}$. (1 point)

Question 2: Solve with whole numbers (2 points)

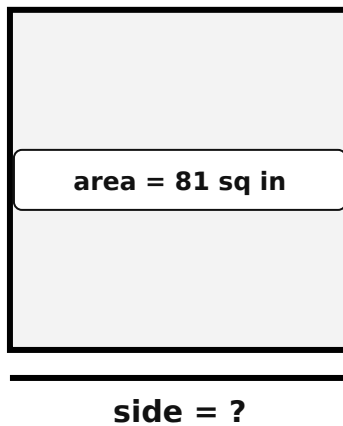
- Solve $x^2 = 225$. (1 point)
- Solve $x^3 = -125$. (1 point)

Question 3: Fractions and decimals (2 points)

- Solve $x^2 = 0.36$. Give both solutions. (1 point)
- Solve $x^3 = \frac{1}{64}$. (1 point)

Question 4: Square picture frame (2 points)

A square picture has an area of 81 square inches.

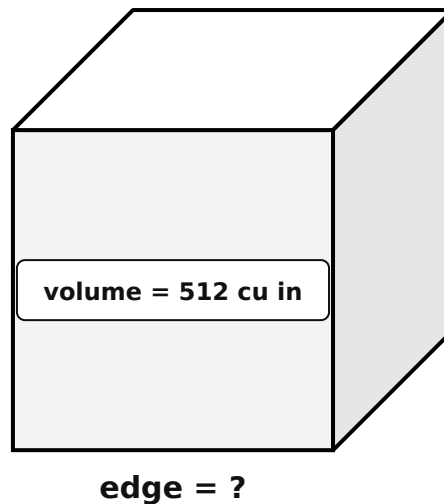


Square picture.

- a. Find the side length. (1 point)
- b. Find the perimeter. (1 point)

Question 5: Cube-shaped box (2 points)

A cube-shaped box has a volume of 512 cubic inches.



Cube-shaped box.

- a. Find the edge length. (1 point)
- b. Find the area of one face. (1 point)

Question 6: Estimate between integers (2 points)

- a. Between which two consecutive integers is $\sqrt{72}$? (1 point)
- b. Between which two consecutive integers is $\sqrt[3]{30}$? (1 point)

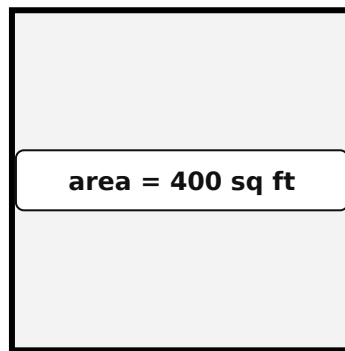
Question 7: Square with area 2 (2 points)

A square has an area of 2 square inches.

- Write the side length using a radical. (1 point)
- Is the side length rational or irrational? Between which two tenths does it lie? (1 point)

Question 8: Border for a patio (3 points)

Priya's square patio has an area of 400 square feet. She wants to trim all four edges with border stones that cost \$3.50 per foot.



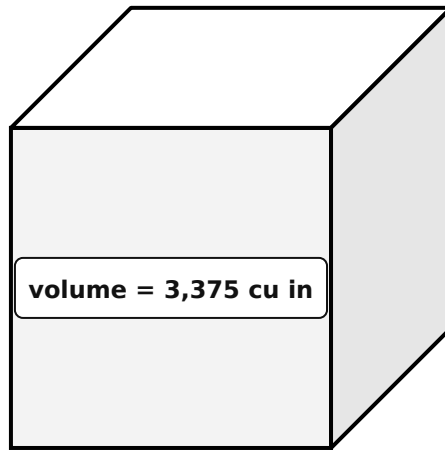
side = ?

Priya's patio.

- Find the side length. (1 point)
- Find the total length of border needed. (1 point)
- Find the cost. (1 point)

Question 9: Shipping crate (3 points)

Ethan's cube-shaped crate holds 3,375 cubic inches.



edge = ?

Ethan's crate.

- Find the edge length of the crate. *(1 point)*
- Find the area of the floor of the crate. *(1 point)*
- A shelf is 14 inches deep. Does the crate fit on it with its edge along the depth? Explain. *(1 point)*