

Solving With Square and Cube Roots

Grade 8 math · Test · Standards: 8.EE.A.2

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total and should take about 45 minutes. Show your steps for every question and use exact roots unless an approximation is requested. A calculator is not required.

Standards: 8.EE.A.2 · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Evaluate the roots (3 points)

Evaluate each root. (1 point each)

- a. $\sqrt{196}$
- b. $\sqrt[3]{-343}$
- c. $\sqrt[49]{81}$

Question 2 Solve for x (3 points)

Solve each equation. (1 point each)

- a. $x^2 = 144$
- b. $x^3 = -216$
- c. $x^2 = 0.49$

Question 3 Between integers (2 points)

Between which two consecutive integers does each number lie? (1 point each)

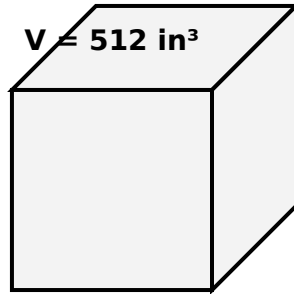
- a. $\sqrt{75}$
- b. $\sqrt[3]{75}$

Question 4 Storage bin (3 points)

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

- a. Find the edge length. (1 point)

- b. Find the area of one face. (1 point)
c. Find the total surface area. (1 point)



Storage bin.

Question 5 Two-step equations (3 points)

Solve each equation.

- a. $3x^2 - 20 = 127$ (2 points)
b. $2x^3 + 6 = 134$ (1 point)

Question 6 Square deck (3 points)

A square deck has an area of 135 square feet.

- a. Between which two consecutive integers is the side length? (1 point)
b. Find the side length to the nearest tenth of a foot. (1 point)
c. Is the side length a rational number? Explain. (1 point)



side = s

Square deck.

Question 7 Check Dan's claim (2 points)

Dan says that $x^2 = -25$ has the solution $x = -5$. Explain whether he is right.

Question 8 Compare (1 point)

Is $\sqrt{50}$ less than or greater than 7.1? Justify with a square.