

Finding the Volume of Rectangular Prisms

Grade 6 math · Test Answer Key · Standards: 6.G.A.2

Award the points in each scoring line. Accept volumes written as fractions, mixed numbers or decimals. Take off the units point when cubic units are missing, and give partial credit when the method is right but one multiplication slips.

Standards: 6.G.A.2 · **Level:** Grade 6

Question 1 Volume of a box (2 points)

$$V = 11 \times 6 \times 4 = 66 \times 4 = 264.$$

264 cubic inches

Scoring: 1 point for the product setup, 1 point for the answer with cubic units.

Question 2 Fractional edges (3 points)

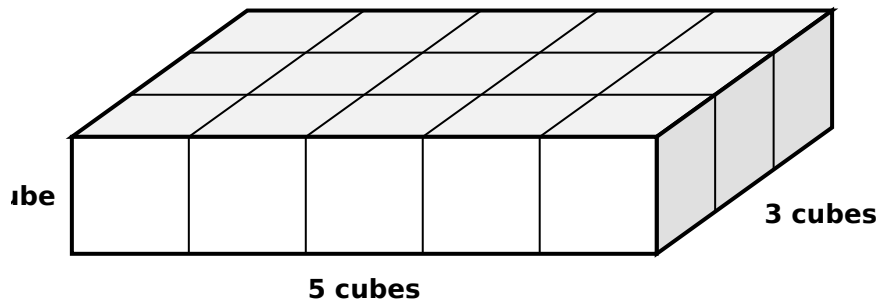
$$V = 3.5 \times 2 \times 1.5 = 7 \times 1.5 = 10.5.$$

10½ cubic feet

Scoring: 1 point for the setup, 1 point for 7 as the first product, 1 point for the answer with cubic units.

Question 3 Packing with half-inch cubes (3 points)

- a. 5 cubes along the length, 3 along the width, 1 along the height: $5 \times 3 \times 1 = \mathbf{15 \text{ cubes}}$.
- b. $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$ **cubic inch**.
- c. $15 \times \frac{1}{8} = \mathbf{1 \frac{7}{8} \text{ cubic inches}}$. Check: $2\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{2} = 1 \frac{7}{8}$.



$$5 \times 3 \times 1 = 15 \text{ cubes.}$$

Scoring: 1 point for each part.

Question 4 Missing height (2 points)

$$252 = 9 \times 7 \times h = 63h, \text{ so } h = 252 \div 63 = 4.$$

4 centimeters

Scoring: 1 point for the equation, 1 point for the answer.

Question 5 Storage bin (3 points)

a. $V = 15.5 \times 4 = \mathbf{62 \text{ cubic feet.}}$

b. The contents have height $\frac{3}{4} \times 4 = 3$ feet, so $15.5 \times 3 = \mathbf{46.5 \text{ cubic feet.}}$ Check: $\frac{3}{4} \times 62 = 46.5.$

Scoring: 1 point for part (a); 2 points for part (b), 1 for the correct height or fraction of volume.

Question 6 Raised garden bed (3 points)

a. $8 \times 3 \times 1.5 = 24 \times 1.5 = \mathbf{36 \text{ cubic feet.}}$

b. $36 \div 2 = \mathbf{18 \text{ bags.}}$

c. $18 \times 5.40 = \mathbf{\$97.20.}$

Scoring: 1 point for each part.

Question 7 Comparing two boxes (2 points)

Box A: $9 \times 5 \times 4 = 180$. Box B: $7 \times 5 \times 5 = 175$. The difference is 5.

Box A holds 5 cubic centimeters more

Scoring: 1 point for both volumes, 1 point for the comparison with the difference.

Question 8 Cube with a decimal edge (2 points)

$$V = 1.5 \times 1.5 \times 1.5 = 2.25 \times 1.5 = 3.375.$$

3.375 cubic feet

Scoring: 1 point for the setup, 1 point for the answer with cubic units.