

Grade 5 · Volume of Rectangular Prisms · Test Answer Key

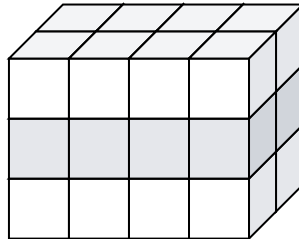
Common Core 5.MD.C.3, 5.MD.C.4, 5.MD.C.5 · mathovore.fr

This key gives the worked solution and the scoring for each question. Award the point for a part only when the number and the cubic unit are both correct. The total is 20 points.

Grade 5 Common Core: 5.MD.C.3 · 5.MD.C.4 · 5.MD.C.5

Question 1: Cubes in a prism (2 points)

- a. $4 \times 2 = 8$. **8 cubes**
- b. $8 \times 3 = 24$. **24 cubic units**



Three layers of 8 cubes.

Scoring: 1 point for each correct part; units are needed in part (b).

Question 2: Using the formula (2 points)

- a. $9 \times 4 \times 5 = 180$. 180 cm^3
- b. $7 \times 7 \times 7 = 343$. 343 ft^3

Scoring: 1 point for each correct volume with cubic units.

Question 3: Missing dimensions (2 points)

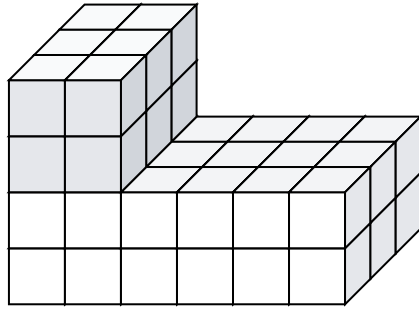
- a. $7 \times 4 \times h = 168$, $28 \times h = 168$, $h = 6$. 6 m
- b. $45 \times h = 270$, $h = 270 \div 45 = 6$. 6 in

Scoring: 1 point for each correct height with unit.

Question 4: Composite solid (3 points)

- a. $6 \times 3 \times 2 = 36$. 36 ft^3

- b. $2 \times 3 \times 2 = 12$. 12 ft^3
 c. $36 + 12 = 48$. 48 ft^3



Slab (white) 36 + tower (gray) 12 = 48 cubic feet.

Scoring: 1 point for each correct volume with cubic units.

Question 5: Aquarium (3 points)

- a. $30 \times 20 \times 15 = 600 \times 15 = 9,000$. 9,000 cm^3
 b. $30 \times 20 \times 12 = 7,200$. 7,200 cm^3
 c. $9,000 - 7,200 = 1,800$. 1,800 cm^3

Scoring: 1 point for each correct volume with cubic units. Allow credit in part (c) if the subtraction matches parts (a) and (b).

Question 6: Packing cubes (2 points)

- a. $16 \times 10 \times 8 = 1,280$. 1,280 in^3
 b. One cube is $2 \times 2 \times 2 = 8$ cubic inches. $1,280 \div 8 = 160$. **160 cubes**

Scoring: 1 point for part (a). 1 point for part (b); accept the method of 8, 5, and 4 cubes along the edges.

Question 7: Comparing boxes (2 points)

A: $12 \times 5 \times 4 = 240$. B: $10 \times 6 \times 5 = 300$. $300 - 240 = 60$.

Box B holds 60 in^3 more.

Scoring: 1 point for both volumes. 1 point for the correct box and the difference.

Question 8: Sandbox sand (2 points)

- a. $V = 24 \times 2 = 48$. 48 ft^3
 b. $48 \div 3 = 16$. **16 bags**

Scoring: 1 point for each correct part.

Question 9: Layers and dimensions (2 points)

- a. $72 \div 12 = 6$. **6 layers**
- b. Any three whole numbers with product 24 other than 4, 3, 2, for example $6 \times 4 \times 1 = 24$ or $2 \times 2 \times 6 = 24$. **Sample: 6 by 4 by 1**

Scoring: 1 point for part (a). 1 point for part (b) if the product of the three numbers is 24 and the set is not 4, 3, 2.

Total
20 points