

Grade 5 · Volume of Rectangular Prisms · Worksheet Answer Key

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

Each solution shows the formula, the substituted numbers, and the answer with its cubic unit. If your answer differs, check that you multiplied all three edges and wrote cubic units, not square units.

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

Problem 1: Counting unit cubes

Each layer has $3 \times 2 = 6$ cubes, and there are 2 layers: $6 \times 2 = 12$.

Answer: **12 cubic units.**

Problem 2: Counting layers

One layer has $4 \times 3 = 12$ cubes. There are 2 layers. Volume: $12 \times 2 = 24$.

Answer: **12 cubes per layer, 2 layers, 24 cubic units.**

Problem 3: Volume in centimeters

$$V = l \times w \times h = 5 \times 4 \times 3 = 60.$$

Answer: 60 cm^3 .

Problem 4: Volume in feet

$$V = 8 \times 2 \times 6 = 16 \times 6 = 96.$$

Answer: 96 ft^3 .

Problem 5: Using base area

$$V = B \times h = 20 \times 7 = 140.$$

Answer: 140 in^3 .

Problem 6: Volume of a cube

All three edges are 6 in: $V = 6 \times 6 \times 6 = 36 \times 6 = 216$.

Answer: 216 in^3 .

Problem 7: Base first, then height

$$B = 7 \times 5 = 35 \text{ square meters. } V = 35 \times 4 = 140.$$

Answer: **$B = 35 \text{ m}^2$; $V = 140 \text{ m}^3$.**

Problem 8: Missing height

$$6 \times 5 \times h = 90, \text{ so } 30 \times h = 90. \text{ Since } 30 \times 3 = 90, h = 3.$$

Answer: 3 cm .

Problem 9: Height from base area

$$36 \times h = 144, \text{ so } h = 144 \div 36 = 4.$$

Answer: 4 ft .

Problem 10: Missing length

$$l \times 4 \times 5 = 120, \text{ so } l \times 20 = 120 \text{ and } l = 6.$$

Answer: 6 in .

Problem 11: Which holds more

$$A: 6 \times 4 \times 5 = 120. B: 7 \times 3 \times 6 = 126. \text{ Difference: } 126 - 120 = 6.$$

Answer: **Prism B is greater by 6 in^3 .**

Problem 12: Cubes in layers

$$15 \times 4 = 60.$$

Answer: **60 cubic units.**

Problem 13: Choose the unit

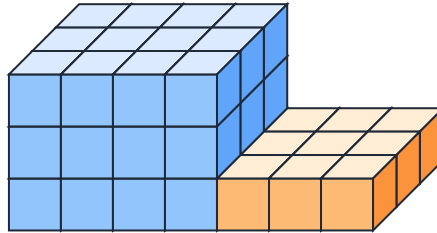
$$10 \times 6 \times 4 = 240. \text{ Volume uses cubic units.}$$

Answer: 240 in^3 .

Problem 14: Composite solid, two parts

Blue: $4 \times 3 \times 3 = 36$. Orange: $3 \times 3 \times 1 = 9$. Total: $36 + 9 = 45$.

Answer: 45 ft^3 .



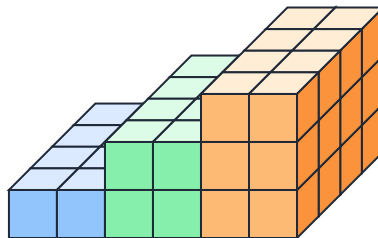
$$36 + 9 = 45 \text{ cubic feet.}$$

Problem 15: Staircase solid

Step 1: $2 \times 4 \times 1 = 8$. Step 2: $2 \times 4 \times 2 = 16$. Step 3: $2 \times 4 \times 3 = 24$.

Total: $8 + 16 + 24 = 48$.

Answer: 48 ft^3 .



$$8 + 16 + 24 = 48 \text{ cubic feet.}$$

Problem 16: Packing a box

Each cube is 1 in^3 . $12 \times 9 \times 6 = 108 \times 6 = 648$.

Answer: **648 cubes**.

Problem 17: Check a prism

$$5 \times 3 \times 2 = 15 \times 2 = 30.$$

Answer: **Yes; the product of the three edges is 30 cubic units.**

Problem 18: Sandbox

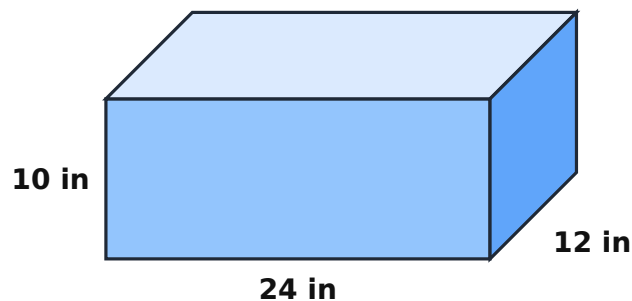
Volume: $8 \times 5 \times 1 = 40$ cubic feet. Bags: $40 \div 2 = 20$.

Answer: **20 bags.**

Problem 19: Fish tank

Water: $24 \times 12 \times 8 = 288 \times 8 = 2,304$. Full tank: $288 \times 10 = 2,880$. More: $2,880 - 2,304 = 576$.

Answer: **$2,304 \text{ in}^3$ of water; 576 in^3 more.**



The tank is 10 in high; the water is 8 in deep.

Problem 20: Storage boxes

First box: $6 \times 4 \times 3 = 72$. Second box: $4 \times 4 \times 2 = 32$. Total: $72 + 32 = 104$.

Answer: **104 ft^3 .**

Problem 21: Filling a pool

Volume: $15 \times 10 \times 4 = 600$ cubic feet. Time: $600 \div 50 = 12$.

Answer: **12 hours.**

Problem 22: Moving truck

Cargo space: $10 \times 8 \times 6 = 480$. One box: $2 \times 2 \times 2 = 8$. $480 \div 8 = 60$.

Answer: **60 boxes.**