

Grade 5 - Volume of Rectangular Prisms - Answer Key

Common Core 5.MD.C.3, 5.MD.C.4, 5.MD.C.5 · maths-pdf.fr/en/

Each answer shows the layers or the formula, the multiplication, and the final volume with cubic units. For composite solids, check that you added the two volumes.

Grade 5 · Common Core State Standards: **5.MD.C.3, 5.MD.C.4, 5.MD.C.5**

Exercise 1 - Count the cubes

One layer has $3 \times 2 = 6$ cubes. There are 2 layers.

$$6 \times 2 = 12.$$

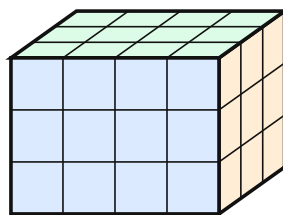
12 cubic units

Exercise 2 - Layers of cubes

(a) $4 \times 3 = 12$ cubes per layer.

(b) 3 layers.

(c) $12 \times 3 = 36$.



$$12 \times 3 = 36 \text{ cubes}$$

A rectangular prism.

36 cubic units

Exercise 3 - Volume in cubic feet

Use $V = l \times w \times h$.

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

30 ft³

Exercise 4 - Volume in cubic centimeters

Use $V = l \times w \times h$.

$$V = 6 \times 4 \times 5 = 120.$$

120 cm³

Exercise 5 - Volume in cubic inches

Use $V = l \times w \times h$.

$$V = 8 \times 2 \times 7 = 112.$$

112 in³

Exercise 6 - Base area times height

Use $V = B \times h$.

$$V = 24 \times 5 = 120.$$

120 cubic units

Exercise 7 - Using the base area

$$V = B \times h = 18 \times 4 = 72.$$

72 in³

Exercise 8 - Find the height

Base area: $6 \times 5 = 30$ square cm.

$30 \times h = 90$, so $h = 90 \div 30 = 3$.

Check: $6 \times 5 \times 3 = 90$.

3 cm

Exercise 9 - Find the missing edge

$15 \times h = 105$, so $h = 105 \div 15 = 7$.

7 ft

Exercise 10 - Volume of a cube

A cube has equal edges, so $V = 4 \times 4 \times 4 = 64$.

64 m^3

Exercise 11 - Prism from a picture

Base: $5 \times 2 = 10$ cubes. Height: 3 layers.

$10 \times 3 = 30$.

30 cubic units

Exercise 12 - Fish tank

$20 \times 10 = 200$ is the base area.

$200 \times 12 = 2,400$.

$2,400 \text{ in}^3$

Exercise 13 - Compare two boxes

Box A: $3 \times 7 \times 4 = 84$. Box B: $6 \times 5 \times 3 = 90$.

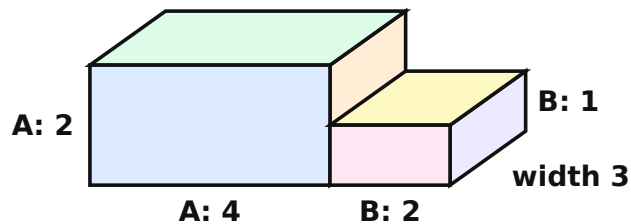
$$90 - 84 = 6.$$

Box B is greater by 6 in^3

Exercise 14 - Two prisms joined

Prism A: $4 \times 3 \times 2 = 24$. Prism B: $2 \times 3 \times 1 = 6$.

$$24 + 6 = 30.$$



$$24 + 6 = 30 \text{ cubic units}$$

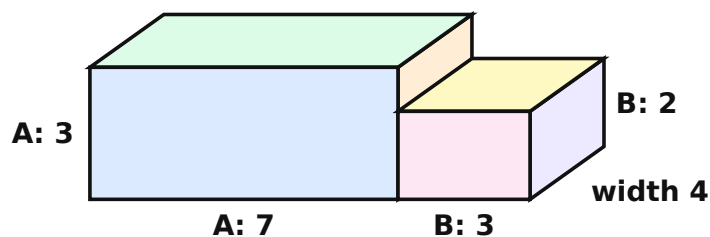
A composite solid made of prism A and prism B.

30 cubic units

Exercise 15 - Step-shaped solid

Prism A: $7 \times 4 \times 3 = 84$. Prism B: $3 \times 4 \times 2 = 24$.

$$84 + 24 = 108.$$



$$84 + 24 = 108 \text{ cubic units}$$

A composite solid made of prism A and prism B.

108 cubic units

Exercise 16 - Packing cubes

Box volume: $12 \times 9 \times 6 = 648$ cubic inches. One cube: $3 \times 3 \times 3 = 27$ cubic inches.

$648 \div 27 = 24$. Check by edges: $4 \times 3 \times 2 = 24$.

24 cubes

Exercise 17 - Filling a pool

Pool volume: $20 \times 10 \times 4 = 800$ cubic feet.

$\frac{3}{4} \times 800 = 600$.

600 ft³

Exercise 18 - Storage bin

Base area: $12 \times 6 = 72$.

$360 \div 72 = 5$.

Check: $72 \times 5 = 360$.

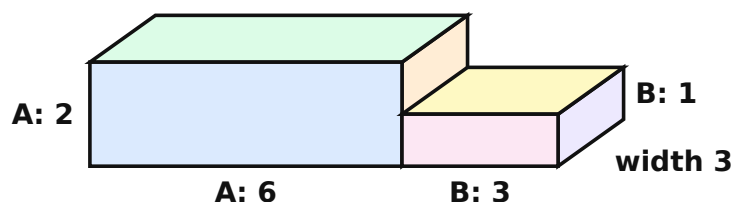
5 inches

Exercise 19 - Planter soil

First box: $6 \times 3 \times 2 = 36$. Second box: $3 \times 3 \times 1 = 9$.

Total: $36 + 9 = 45$ cubic feet.

Cost: $45 \times 4 = 180$ dollars.



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

A composite solid made of prism A and prism B.

\$180

Exercise 20 - Cubes in a box

(a) $(10 \div 2) \times (8 \div 2) = 5 \times 4 = 20$ cubes.

(b) $6 \div 2 = 3$ layers.

(c) $20 \times 3 = 60$ cubes.

Check: each cube is $2 \times 2 \times 2 = 8$ cubic cm, and $60 \times 8 = 480 = 10 \times 8 \times 6$.

(a) 20; (b) 3; (c) 60 cubes