

Boost Free Lessons - Year 6 Maths

Lesson 17: Volume of Rectangular Prisms

Name: _____ Grade: _____ Date: _____

Worked Example 1

Find the volume of a rectangular prism 8 cm long, 5 cm wide and 3 cm high.

1. **Volume** is the amount of space a solid takes up.
2. Think of it as layers. The bottom layer is $8 \times 5 = 40$ cubes.
3. There are 3 layers stacked on top of each other.
4. $40 \times 3 = 120$. Volume is measured in **cubic** units.

Volume = 120 cm^3

Worked Example 2

A prism has a volume of 96 cm^3 , a length of 6 cm and a width of 4 cm. Find its height.

1. Start from $V = \text{length} \times \text{width} \times \text{height}$.
2. The base area is $6 \times 4 = 24 \text{ cm}^2$.
3. So $24 \times h = 96$.
4. Divide both sides by 24: $h = 4$.

The height is 4 cm

Remember: Volume = length $\times$ width $\times$ height, or base area $\times$ height. It is always measured in **cubic** units such as cm^3 .



Question 1: Find the volume of each rectangular prism.

1. 4 cm by 3 cm by 2 cm

2. 10 cm by 5 cm by 4 cm

3. 6 m by 6 m by 6 m

4. 12 cm by 3 cm by 5 cm

5. 9 m by 2 m by 7 m

6. 20 cm by 10 cm by 3 cm

7. 7 cm by 7 cm by 2 cm

8. 15 m by 4 m by 6 m



Question 2: Answer the following.

1. Volume 120 cm^3 , base area 30 cm^2 . Find the height.

2. Volume 200 m^3 , length 10 m, width 4 m. Find the height.

3. Find the volume of a cube with sides of 5 cm.

4. A cube has a volume of 64 cm^3 . Find the length of one side.

5. How many 1 cm cubes fit in a box 6 cm by 4 cm by 2 cm?

6. Explain why volume is measured in cubic units.



Question 3: Answer the following questions.

1. A fish tank is 50 cm by 30 cm by 40 cm. Find its volume in cubic centimetres.
2. Using the tank above, how many litres does it hold? (1 litre = 1 000 cm³)
3. A shipping crate is 4 m by 2 m by 2 m. Find its volume.
4. A concrete slab is 8 m long, 3 m wide and 0.2 m thick. Find the volume of concrete needed.
5. Two boxes have the same volume. One is 12 cm by 2 cm by 5 cm. Give possible dimensions for the other.





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Answers: Volume of Rectangular Prisms**Question 1**

1. 24 cm³
2. 200 cm³
3. 216 m³
4. 180 cm³
5. 126 m³
6. 600 cm³
7. 98 cm³
8. 360 m³

Question 2

1. 4 cm
2. 5 m
3. 125 cm³
4. 4 cm
5. 48 cubes
6. Volume fills space in three directions, so the units are multiplied three times: cm × cm × cm = cm³.

Question 3

1. 60 000 cm³
2. 60 litres
3. 16 m³
4. 4.8 m³
5. Model: 6 cm by 4 cm by 5 cm, which also gives 120 cm³

