

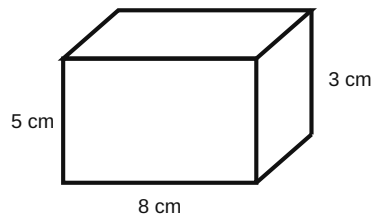
Boost Free Lessons - Year 8 Maths

Lesson 17: Volume of a Prism

Name: _____ Grade: _____ Date: _____

Worked Example 1

Find the volume of the rectangular prism below.

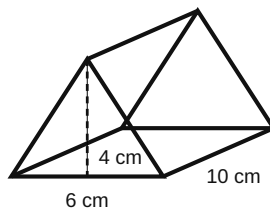


1. The volume of **any** prism is the area of its cross-section multiplied by its length.
2. Here the cross-section is a rectangle: $8 \times 5 = 40 \text{ cm}^2$.
3. Multiply by the remaining dimension: $40 \times 3 = 120$.

$V = 120 \text{ cm}^3$

Worked Example 2

Find the volume of the triangular prism below.



1. The cross-section is the triangle, so find its area first.
2. Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 6 \times 4 = 12 \text{ cm}^2$.
3. Multiply by the length of the prism: $12 \times 10 = 120$.

$V = 120 \text{ cm}^3$

Remember: $V = \text{area of cross-section} \times \text{length}$. The cross-section is the face that stays the same all the way through the prism. Volume is always measured in cubic units such as cm^3 or m^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 6 cm

3. 7 cm by 7 cm by 7 cm

4. 12 m by 4 m by 3 m

5. 9 cm by 2 cm by 5 cm

6. 20 cm by 10 cm by 15 cm

7. 6 m by 6 m by 2 m

8. 2.5 cm by 4 cm by 10 cm



Question 2: Answer the following questions.

1. A triangular prism has a cross-section area of 15 cm^2 and a length of 8 cm. Find its volume.

2. A triangular prism has a cross-section with base 10 cm and height 6 cm, and a length of 12 cm. Find its volume.

3. Find the volume of a cube with a side length of 5 cm.

4. A rectangular prism has a volume of 240 cm^3 and a base area of 30 cm^2 . Find its height.

5. A rectangular prism has a volume of 96 cm^3 , a length of 8 cm and a width of 4 cm. Find its height.

6. A prism has a cross-section area of 22 m^2 and a length of 5 m. Find its volume.



Question 3: Answer the following questions.

1. A fish tank measures 60 cm by 30 cm by 40 cm. Find its volume in cubic centimetres.
2. Using the tank above, how many litres of water does it hold? (1 litre = 1 000 cm³)
3. A shipping container measures 6 m by 2.4 m by 2.6 m. Find its volume, correct to 1 decimal place.
4. A concrete path is 10 m long, 1.2 m wide and 0.1 m deep. Find the volume of concrete needed.
5. A chocolate bar is a triangular prism. Its cross-section has base 4 cm and height 3 cm, and it is 20 cm long. Find its volume.





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Answers: Volume of a Prism

Question 1

- | | |
|------------------------|--------------------------|
| 1. 24 cm ³ | 5. 90 cm ³ |
| 2. 300 cm ³ | 6. 3 000 cm ³ |
| 3. 343 cm ³ | 7. 72 m ³ |
| 4. 144 m ³ | 8. 100 cm ³ |

Question 2

- | | |
|------------------------|-----------------------|
| 1. 120 cm ³ | 4. 8 cm |
| 2. 360 cm ³ | 5. 3 cm |
| 3. 125 cm ³ | 6. 110 m ³ |

Question 3

1. 72 000 cm³
2. 72 litres
3. 37.4 m³
4. 1.2 m³
5. 120 cm³

