

GCSE Maths: Volume of prisms (Foundation): answers

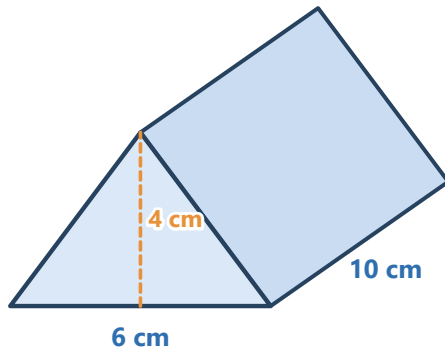
GCSE Maths - Volume, Surface Area and 3D Shapes - Foundation - Lesson 19.5

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch19-volume-surface-area-3d/foundation/volume-of-prisms/

Exercise 19E Volume of prisms Non-calculator

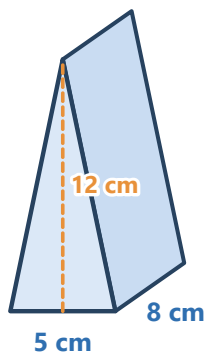
1 Work out the volume of each triangular prism.

(a)



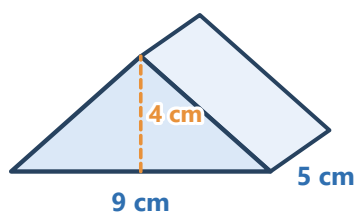
Answer: 120 cm^3

(b)



Answer: 240 cm^3

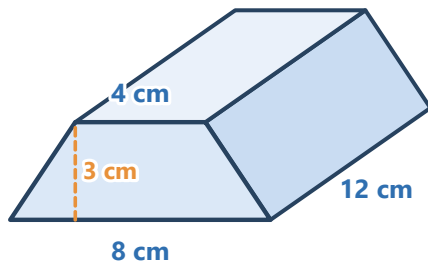
(c)



Answer: 90 cm^3

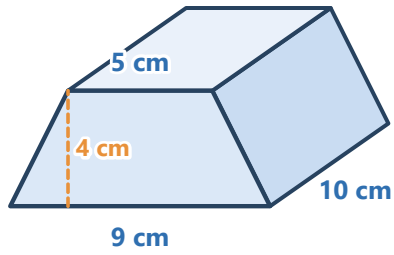
2 Work out the volume of each prism. The cross-section is a trapezium.

(a)



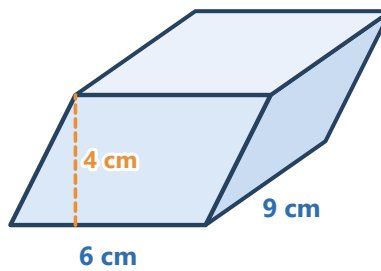
Answer: 216 cm^3

(b)



Answer: 280 cm^3

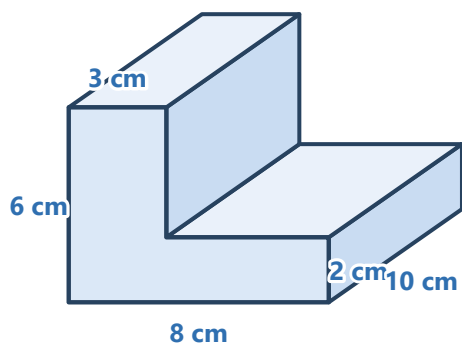
3 The cross-section of this prism is a parallelogram. Work out the volume.



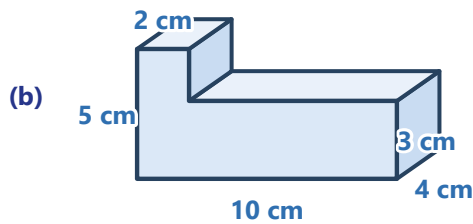
Answer: 216 cm^3

4 Work out the volume of each prism. The cross-section is an L-shape.

(a)



Answer: 280 cm^3



Answer: 136 cm^3

5 Work out the length of each prism.

- (a) A triangular prism has a triangle of base 6 cm and height 4 cm. Its volume is 180 cm^3 .

Answer: 15 cm

(b)

A prism has a trapezium cross-section with parallel sides 4 cm and 8 cm, 3 cm apart. Its volume is 216 cm^3 .

Answer: 12 cm

6 Work out the height of the triangular cross-section of each prism.

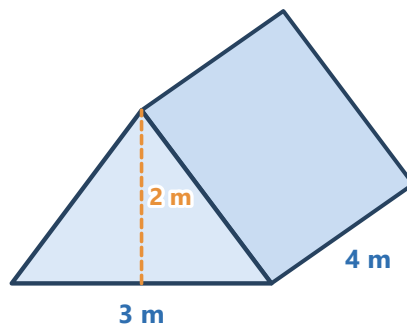
- (a) Base 6 cm, prism length 10 cm, volume 150 cm^3 .

Answer: 5 cm

- (b) Base 8 cm, prism length 5 cm, volume 160 cm^3 .

Answer: 8 cm

7 A tent is a triangular prism. The triangular ends have base 3 m and height 2 m, and the tent is 4 m long. Each person needs 2.5 m^3 of air. What is the greatest number of people who can sleep in the tent?

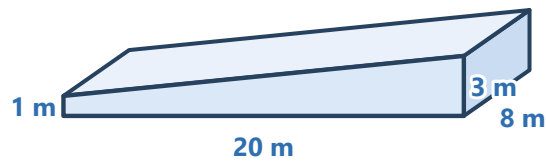


Answer: 4 people

8 A water trough is a triangular prism. The triangle has base 40 cm and perpendicular height 30 cm, and the trough is 100 cm long. Work out the capacity of the trough in litres.

Answer: 60 litres

9 The diagram shows a swimming pool. The pool is 20 m long and 8 m wide. The depth is 1 m at the shallow end and 3 m at the deep end, and the floor slopes steadily. The cross-section from the shallow end to the deep end is a trapezium.



- (a) Work out the volume of the pool in m^3 .

Answer: 320 m^3

- (b) How many litres of water are needed to fill the pool?

Answer: 320,000 litres

- 10 Show that a triangular prism with a triangle of base 8 cm and height 6 cm and length 10 cm has the same volume as a cuboid that is 5 cm by 6 cm by 8 cm.

Answer: Both volumes are 240 cm^3

- 11 Sam works out the volume of a triangular prism with a triangle of base 6 cm and height 4 cm, and a length of 10 cm. He writes $6 \times 4 \times 10 = 240 \text{ cm}^3$. What mistake has he made? What is the correct volume?

Answer: He forgot the $\frac{1}{2}$ for the triangle. Volume = 120 cm^3

- 12 A triangular prism has a triangle with base b cm and height h cm, and the prism has length L cm. Write what happens to the volume when (a) L is doubled, (b) b is doubled, (c) b and h are both doubled.

- (a) L doubled

Answer: Volume doubles

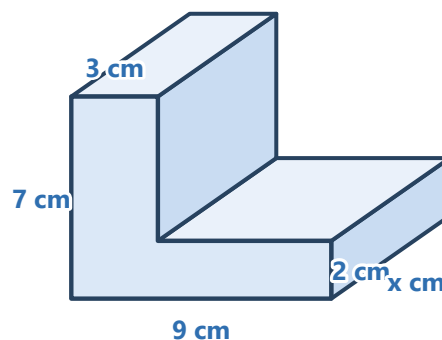
- (b) b doubled

Answer: Volume doubles

- (c) b and h both doubled

Answer: Volume is multiplied by 4

- 13 The diagram shows a prism whose cross-section is an L-shape. The length of the prism is x cm and its volume is 330 cm^3 . Work out x .



Answer: 10 cm

- 14 A prism has a cross-section with area 15 cm^2 and is 6 cm long. Work out its volume.

Answer: 90 cm^3

- 15** Work out the area of a triangle with base 6 cm and perpendicular height 4 cm.

Answer: 12 cm^2

- 16** A prism has a rectangle 5 cm by 4 cm as its cross-section and is 3 cm long. What is the name of this prism and what is its volume?

Answer: A cuboid; 60 cm^3