

GCSE Maths: Volume of prisms (Higher): worksheet

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

Name: _____

Date: _____

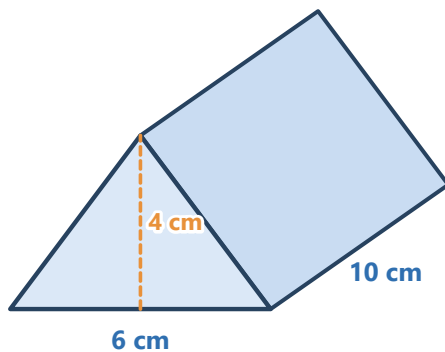
Score: _____

15 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch19-volume-surface-area-3d/higher/volume-of-prisms/

Exercise 19E Volume of prisms Non-calculator

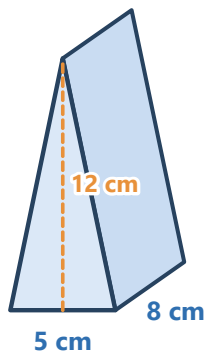
1 Work out the volume of each triangular prism.

(a)



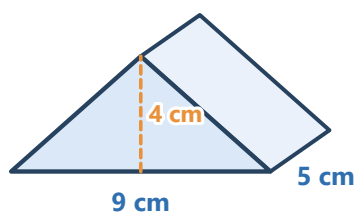
Answer: _____

(b)



Answer: _____

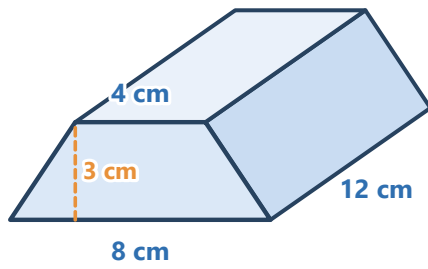
(c)



Answer: _____

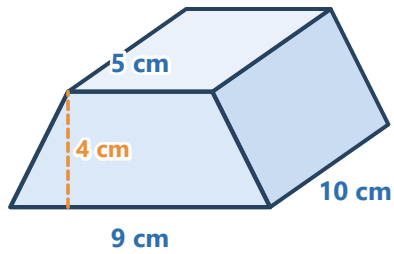
2 Work out the volume of each prism. The cross-section is a trapezium.

(a)



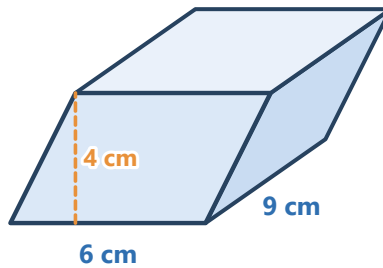
Answer:

(b)



Answer:

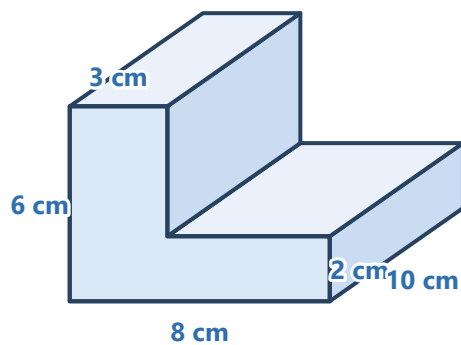
- 3** The cross-section of this prism is a parallelogram. Work out the volume.



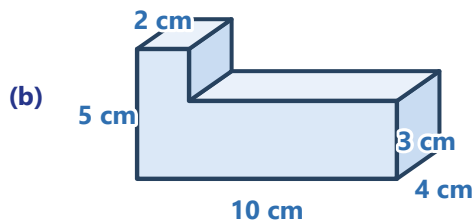
Answer:

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

(a)



Answer:



Answer:

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:

- (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:

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

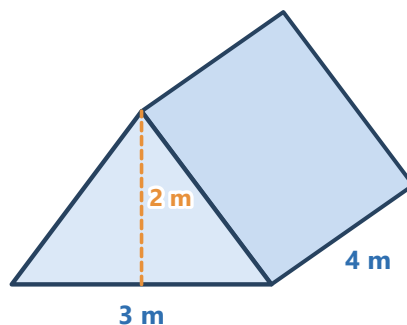
- (a) Base 6 cm, prism length 10 cm, volume 150 cm^3 .

Answer:

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

Answer:

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?

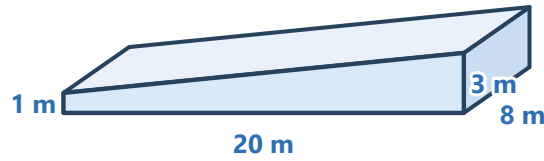


Answer:

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:

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:

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

Answer:

- 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:

- 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:

- 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:

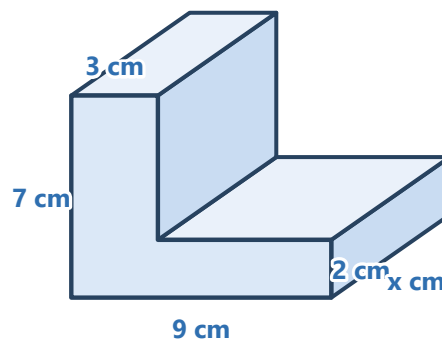
- (b) b doubled

Answer:

- (c) b and h both doubled

Answer:

- 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:

- 14 A triangular prism has a triangular cross-section with base x cm and height $2x$ cm. The prism is 5 cm long. (a) Show that its volume is $5x^2 \text{ cm}^3$. (b) The volume is 500 cm^3 . Work out x .

- (a) Show that the volume is $5x^2$.

Answer:

(b) Work out x .

Answer:

- 15** A cuboid-shaped prism has cross-section area 24 cm^2 . A second triangular prism has the same length and its cross-section is a triangle of base 6 cm and height 4 cm. Write the ratio of the volume of the cuboid prism to the volume of the triangular prism, in its simplest form.

Answer:
