

FluidMaths

GCSE Mathematics (Grade 9-1)

Problem Solving

Surface Area and Volume Set 1

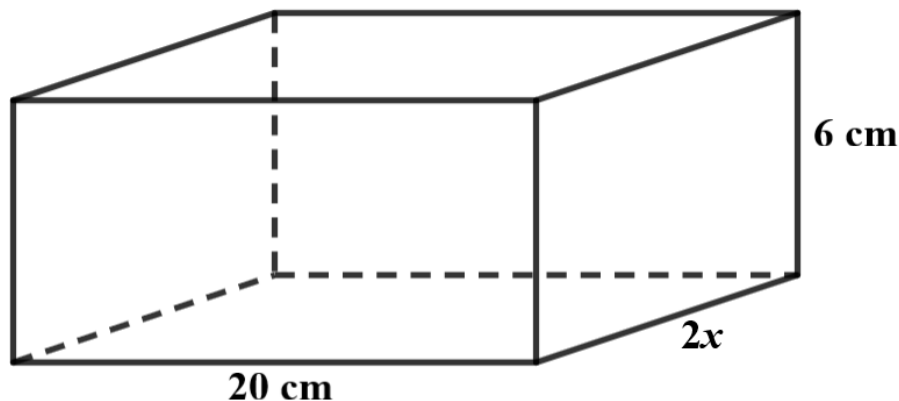
Prisms

Questions

Some useful strategies in problem-solving

- Read the question carefully
- Sketch a diagram where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite-size rather than as a whole
- Concentrate on the part of the problem you understand and start from there
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

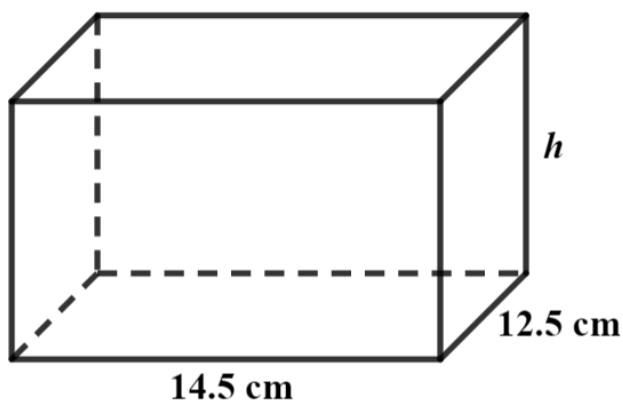
1 Here is a cuboid



The surface area of the cuboid is 500 cm^2
Calculate the volume of the cuboid

[4marks]

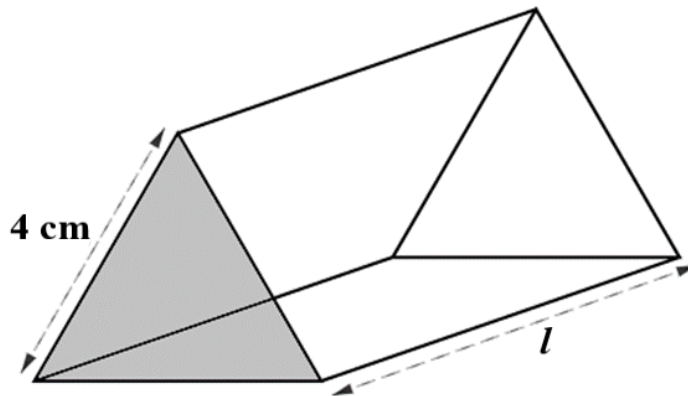
2 The volume of the cuboid below is 1812.50 cm^3



The length of the cuboid is 14.5 cm
The width of the cuboid is 12.5 cm
The height of the cuboid is h
Calculate the surface area of the cuboid.

[4marks]

3 Here is a triangular prism



The shaded cross-section is an equilateral triangle.

Each side of the triangle is 4 cm long

The area of the triangular cross-section is 14 cm^2

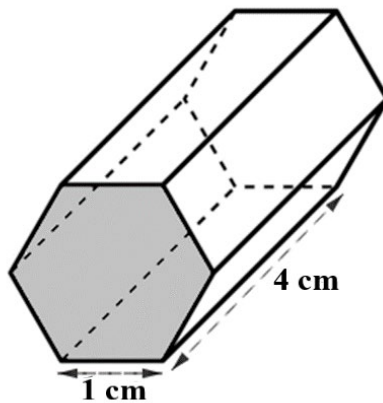
The volume of the prism is 63 cm^3

The length of the prism is l

Calculate the surface area of the prism.

[4marks]

4 Here is a prism



The cross-section of the prism is a regular hexagon.

The length of each side of the hexagon is 1 cm

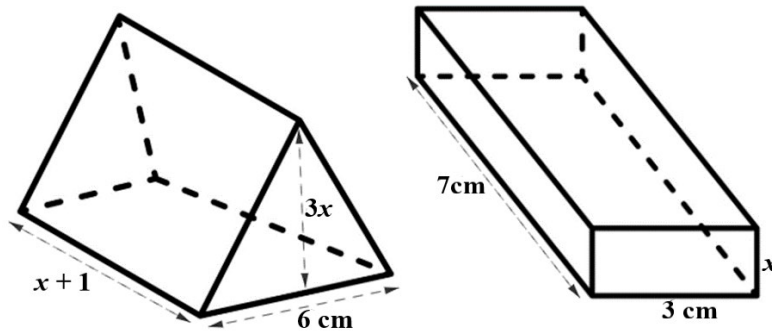
The length of the prism is 4 cm

The surface area of the prism is 40 cm^2

Calculate the volume of the prism

[4marks]

- 5 A triangular prism and a cuboid are shown below.



The length of the triangular prism is $x + 1$

The cross-section of the prism has a height of $3x$ and a base of 6 cm

The length and width of the cuboid are 7 cm and 3 cm respectively. The height of the cuboid is x .

The prism and the cuboid have the same volume.

Calculate the value of x

[5marks]

- 6 Here are tank A and tank B

Tank A is filled with water to a depth of 2.1 cm

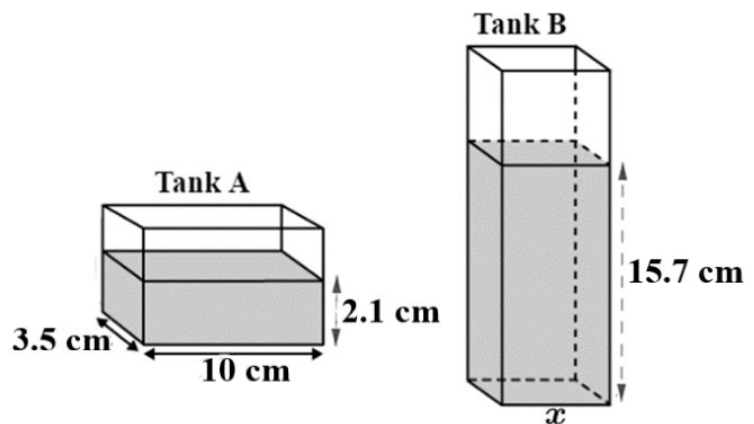
All the water from tank A is then transferred into tank B without any waste.

Tank B is a square-based prism.

The side of the square base is x

The water level in tank B is 15.7 cm

Calculate the value of x to 1 decimal place.



[4marks]