

Functional Volume Exam Questions

13 The diagram shows a swimming pool in the shape of a prism.

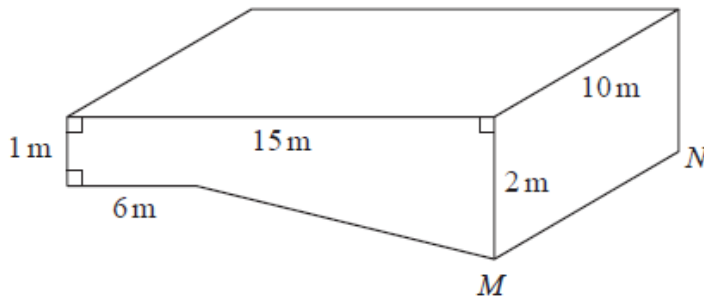


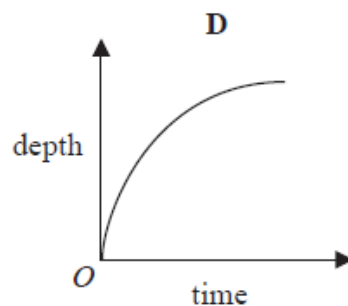
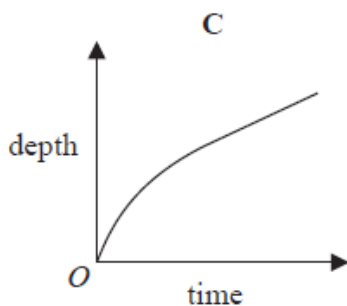
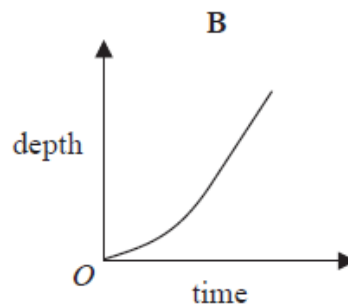
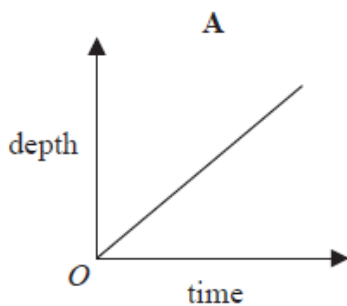
Diagram NOT accurately drawn

The swimming pool is empty.

The swimming pool is filled with water at a constant rate of 50 litres per minute.

- (a) Work out how long it will take for the swimming pool to be completely full of water.
Give your answer in hours.
($1 \text{ m}^3 = 1000 \text{ litres}$)

Here are four graphs.

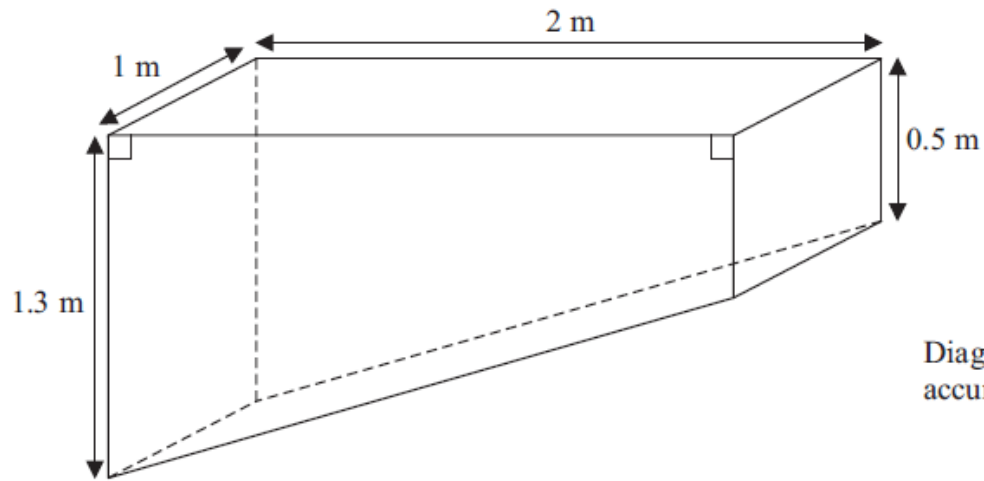


- (b) Write down the letter of the graph that best shows how the depth of the water in the pool above the line MN changes with time as the pool is filled.

.....
(1)

(Total for Question 13 is 6 marks)

17 Sumeet has a pond in the shape of a prism.



The pond is completely full of water.
Sumeet wants to empty the pond so he can clean it.
Sumeet uses a pump to empty the pond.

The volume of water in the pond decreases at a constant rate.
The level of the water in the pond goes down by 20 cm in the first 30 minutes.

Work out how much more time Sumeet has to wait for the pump to empty the pond completely.

23 The diagram shows a container for grain.

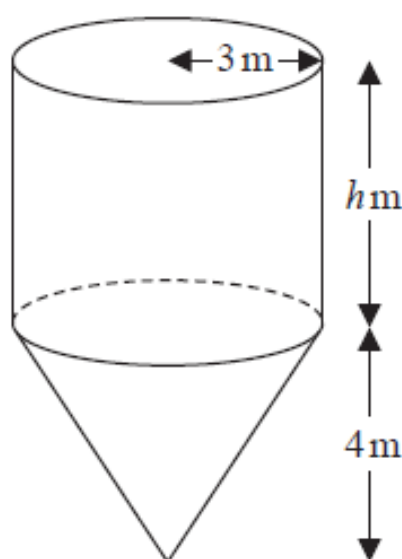


Diagram NOT
accurately drawn

The container is a cylinder on top of a cone.

The cylinder has a radius of 3 m and a height of h m.

The cone has a base radius of 3 m and a vertical height of 4 m.

The container is empty.

The container is then filled with grain at a constant rate.

After 5 hours the depth of the grain is 6 metres above the vertex of the cone.

After 9 hours the container is full of grain.

Work out the value of h .

Give your answer as a fraction in its simplest form.

You must show all your working.

6.

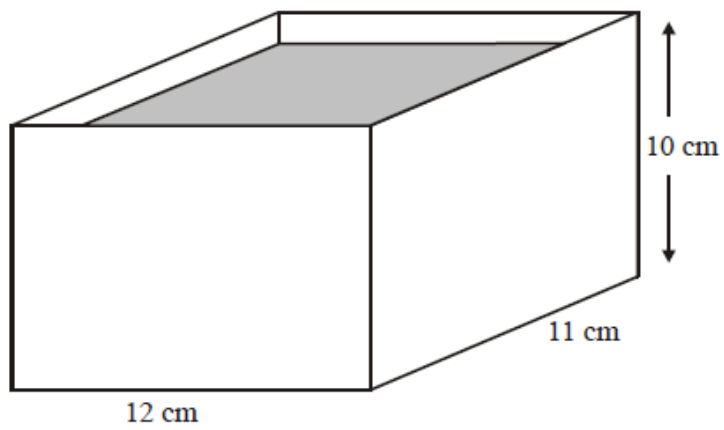
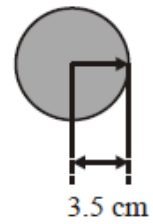


Diagram NOT
accurately drawn



A rectangular container is 12 cm long, 11 cm wide and 10 cm high.
The container is filled with water to a depth of 8 cm.

A metal sphere of radius 3.5 cm is placed in the water.
It sinks to the bottom.

Calculate the rise in the water level.
Give your answer correct to 3 significant figures.