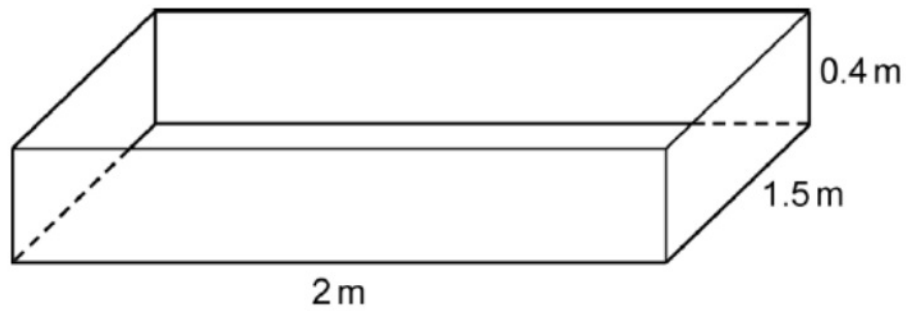


## **G37. Volume and Capacity**

OCR

13 Lily has an empty pool that is a cuboid with a height of 0.4 m.



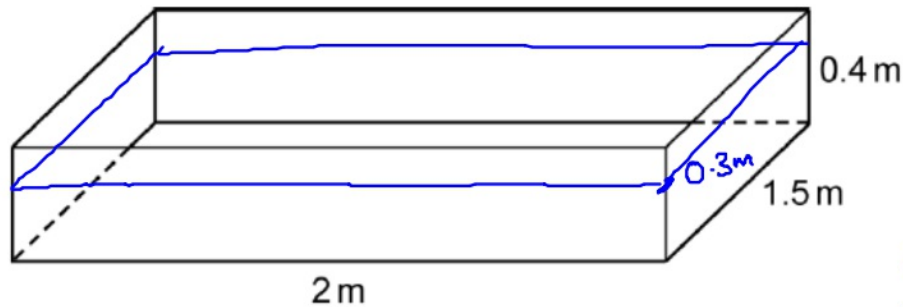
She fills the pool at a rate of 20 litres per minute.

How long does it take to fill the pool to a depth of 0.3 m?  
[1000 litres = 1 m<sup>3</sup>]

..... minutes [5]

13 Lily has an empty pool that is a cuboid with a height of 0.4 m.

Created by W Neill



She fills the pool at a rate of 20 litres per minute.

How long does it take to fill the pool to a depth of 0.3 m?  
[1000 litres = 1 m<sup>3</sup>]

$$1\text{m}^3 = 1000 \text{ Litres}$$

$$0.9\text{m}^3 = 900 \text{ Litres}$$

$$2\text{m} \times 1.5\text{m} \times 0.3\text{m}$$

$$2 \times 15 \times 3 = 90$$

$$= 0.9\text{m}^3$$

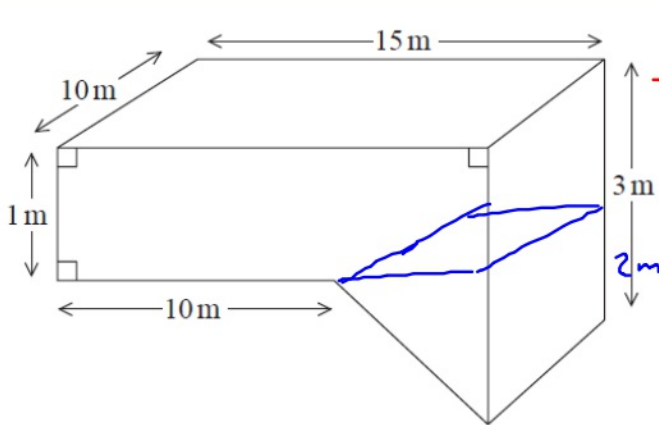
$$\frac{900 \text{ Litres}}{20} = \text{min}$$

$$90 \div 2 = 45 \checkmark$$

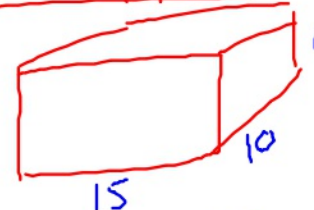
45

..... minutes [5]

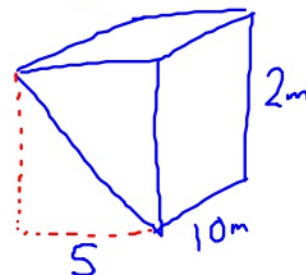
Edexcel



Volume of pool



$$L \times W \times H \\ = 150 \text{ m}^3$$



$$\frac{L \times W \times H}{2} \\ = \frac{100}{2} = 50 \text{ m}^3$$

$$\text{Total} = 200 \text{ m}^3$$

$$\text{Total Litres} = 200,000 \text{ Litres.}$$

The diagram shows a swimming pool.  
The swimming pool is in the shape of a prism.  
The swimming pool is filled with water at a rate of 5 litres per second.

Jeremy has 10 hours to fill the swimming pool.

$$1 \text{ m}^3 = 1000 \text{ litres.}$$

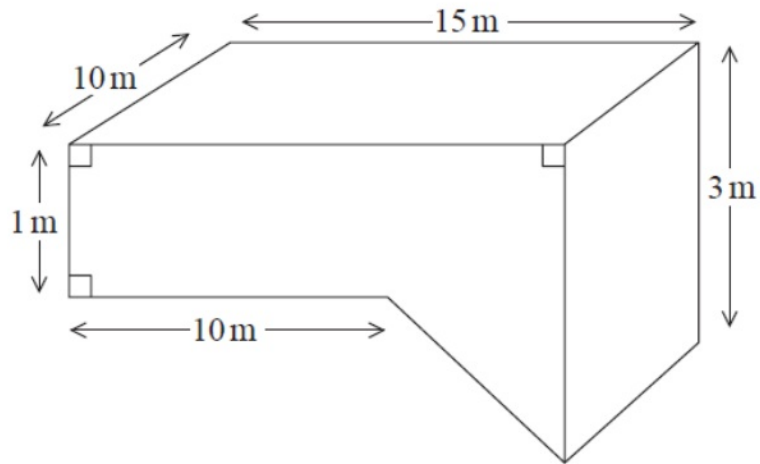
Will he completely fill the swimming pool in 10 hours?  
You must show all your working.

$$\begin{array}{l} \times 60 \left\{ \begin{array}{l} 5 \text{ Litres} = 1 \text{ sec} \\ 300 \text{ L} = 1 \text{ min} \end{array} \right. \downarrow \times 60 \\ \times 60 \left\{ \begin{array}{l} 18000 \text{ L} = 1 \text{ hr} \end{array} \right. \downarrow \times 60 \\ \times 10 \left\{ \begin{array}{l} 180000 \text{ L} = 10 \text{ hr} \end{array} \right. \downarrow \times 10 \end{array}$$

No it will not fill.  
Need 200,000 L  
but will fill 180,000 L.

(Total for Question is 5 marks)

4.



Video created by W Neill

The diagram shows a swimming pool.  
The swimming pool is in the shape of a prism.  
The swimming pool is filled with water at a rate of 5 litres per second.

Jeremy has 10 hours to fill the swimming pool.  
 $1 \text{ m}^3 = 1000 \text{ litres}$ .

Will he completely fill the swimming pool in 10 hours?  
You must show all your working.

(Total for Question 4 is 5 marks)

AQA



21 Eva thinks she can save water by having a shower instead of a bath.

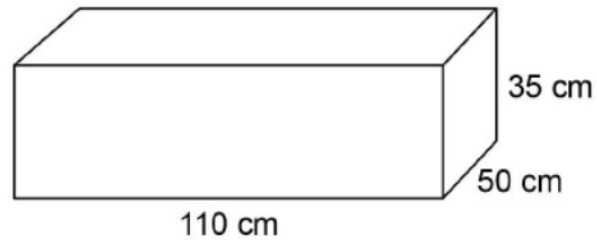
Video created by W Neill

Eva's shower

G31 uses 10.8 litres per minute

G37 lasts for 8 minutes.

Eva assumes that the water in her bath is in the shape of this cuboid.



$$1000 \text{ cm}^3 = 1 \text{ litre}$$

21 (a) Using Eva's assumption, work out how many litres of water she saves by having a shower instead of a bath.

[5 marks]

21 Eva thinks she can save water by having a shower instead of a bath.

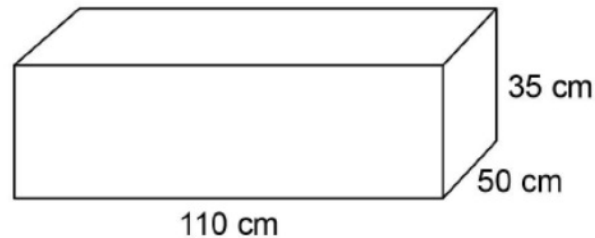
Video created by W Neill

Eva's shower

G31 uses 10.8 litres per minute

G37 lasts for 8 minutes.

Eva assumes that the water in her bath is in the shape of this cuboid.



$1000 \text{ cm}^3 = 1 \text{ litre}$

shower

$$10.8 \text{ L} \times 8 \text{ min} = 86.4 \text{ Litres}$$

Bath ... Volume

$$110 \times 50 \times 35 \\ = 192,500 \text{ cm}^3$$

192.5 Litres

21 (a) Using Eva's assumption, work out how many litres of water she saves by having a shower instead of a bath.

[5 marks]

$$192.5 \text{ L} - 86.4 \text{ L}$$

$$= 106.1 \text{ Litres}$$