

## GCSE QUESTIONS

### Q1. NON-CALCULATOR

The total surface area of a cube is  $294 \text{ cm}^2$ .

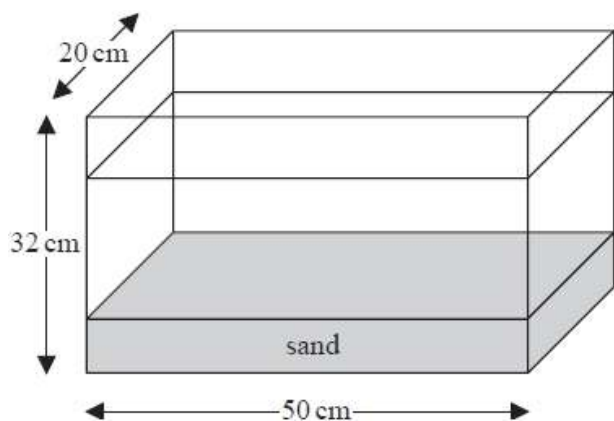
Work out the volume of the cube.

.....  $\text{cm}^3$

(Total for question = 4 marks)

### Q2. NON-CALCULATOR

The diagram shows a fish tank in the shape of a cuboid.



The dimensions of the tank are 50 cm by 32 cm by 20 cm.

The tank is  $\frac{3}{4}$  full of water and sand.

The ratio of the volume of water to the volume of sand is 5 : 1

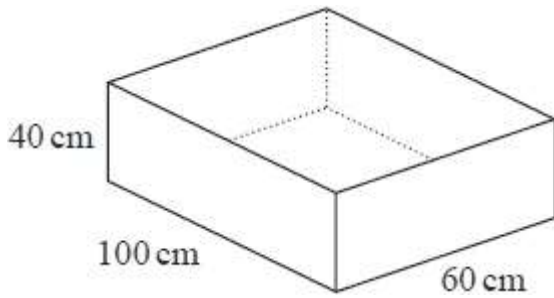
Work out the number of litres of water in the tank. You must show all your working.

..... litres

(Total for question = 5 marks)

**Q3. NON-CALCULATOR**

The diagram shows a sand pit.  
The sand pit is in the shape of a cuboid.



Sally wants to fill the sand pit with sand.  
A bag of sand costs £2.50  
There are 8 litres of sand in each bag.

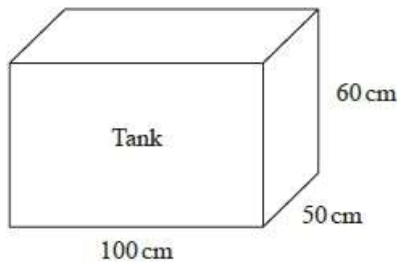
Sally says  
"The sand will cost less than £70"  
Show that Sally is wrong.

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**Q4. NON-CALCULATOR**

(Total for question is 5 marks)



The diagram shows the dimensions of a tank in the shape of a cuboid.

The tank is  $\frac{1}{3}$  full of water.

The diagram also shows a barrel that contains water. Tina is told that there is 18 000 cm<sup>3</sup> of water in the barrel. Tina is going to empty all the water from the barrel into the tank.

(a) What will the depth of water in the tank then be?

..... cm  
(4)

Tina finds out that the barrel contains less than 18 000 cm<sup>3</sup> of water.

(b) Explain what effect this will have on your answer to part (a).

.....

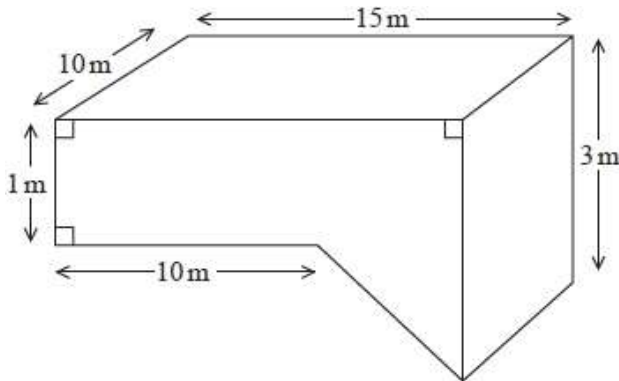
.....

.....

(1)

(Total for question = 5 marks)

**Q5. NON-CALCULATOR**



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.

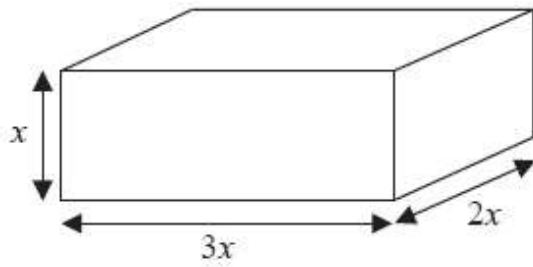
Jeremy has 10 hours to fill the swimming pool.  
 1 m<sup>3</sup> = 1000 litres.

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

(Total for question = 5 marks)

**Q6. NON-CALCULATOR**

Here is a cuboid.



All measurements are in centimetres.

$x$  is an integer.

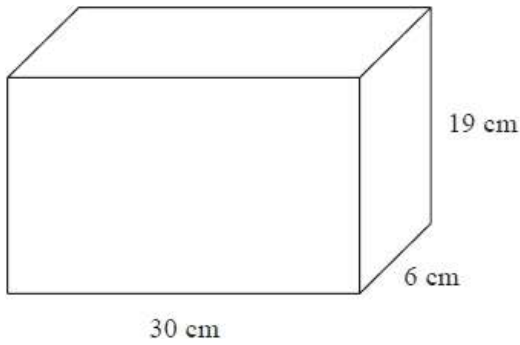
The total volume of the cuboid is less than  $900 \text{ cm}^3$

Show that  $x \leq 5$ .

(Total for question = 3 marks)

**Q7. CALCULATOR ALLOWED**

A container is in the shape of a cuboid.



The container is  $\frac{2}{3}$  full of water.

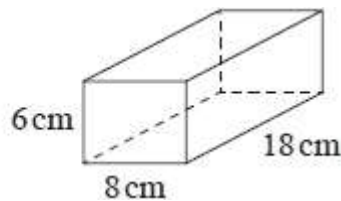
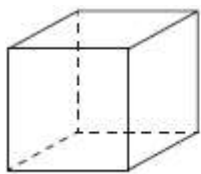
A cup holds 275 ml of water.

What is the greatest number of cups that can be completely filled with water from the container?

.....  
(Total for question = 4 marks)

**Q8. CALCULATOR ALLOWED**

The diagram shows a cube and a cuboid.



The total surface area of the cube is equal to the total surface area of the cuboid.

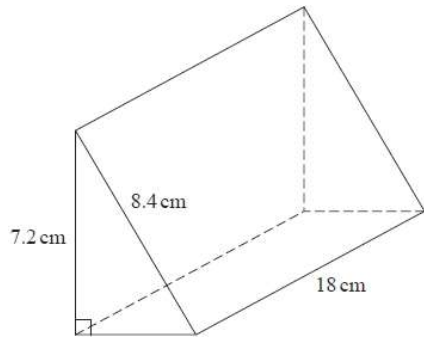
Janet says,

"The volume of the cube is equal to the volume of the cuboid."

Is Janet correct? You must show how you get your answer.

(Total for question = 5 marks)

**Q9. CALCULATOR ALLOWED**



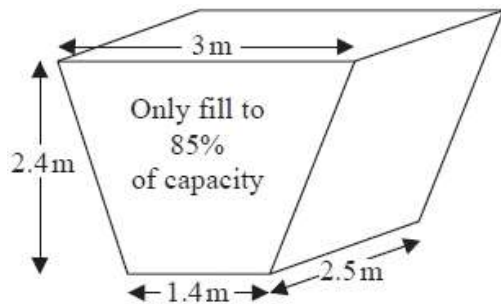
Here is a triangular prism.

Work out the volume of the prism. Give your answer correct to 3 significant figures.

..... cm<sup>3</sup>

**(Total for question = 5 marks)**

**Q10. CALCULATOR ALLOWED**



The diagram shows an oil tank in the shape of a prism. The cross section of the prism is a trapezium.

The tank is empty.

Oil flows into the tank.

After one minute there are 300 litres of oil in the tank.

Assume that oil continues to flow into the tank at this rate.

(a) Work out how many **more** minutes it takes for the tank to be 85% full of oil. (1 m<sup>3</sup> = 1000 litres)

..... minutes

(5)

The assumption about the rate of flow of the oil could be wrong.

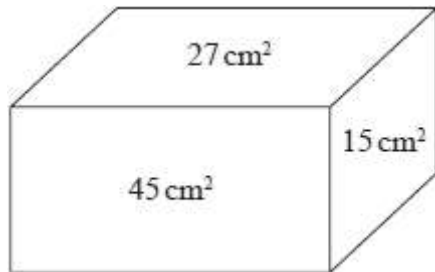
(b) Explain how this could affect your answer to part (a).

.....  
 .....

(1)

(Total for question = 6 marks)

**Q11. CALCULATOR ALLOWED**



The diagram shows a solid metal cuboid.

The areas of three of the faces are marked on the diagram.

The lengths, in cm, of the edges of the cuboid are whole numbers.

The metal cuboid is melted and made into cubes.

Each of the cubes has sides of length 2.5 cm.

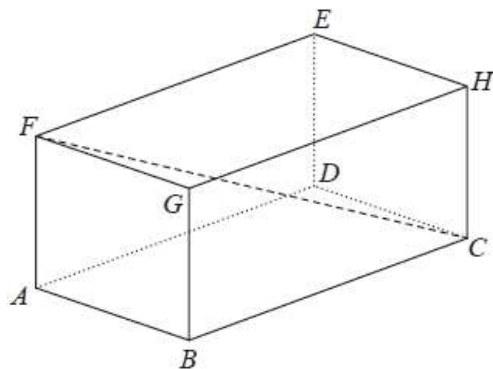
Work out the greatest number of these cubes that can be made.

.....

(Total for question = 5 marks)

**Q12. CALCULATOR ALLOWED**

The diagram shows a cuboid  $ABCDEFGH$ .



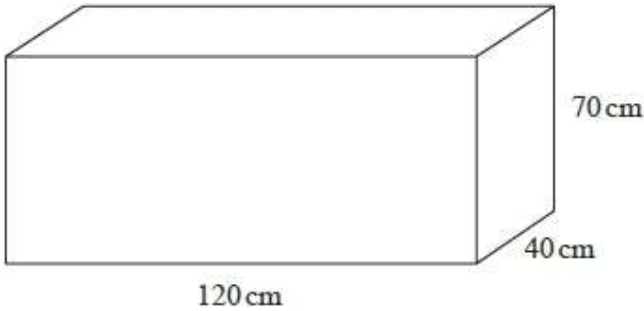
$AB = 7$  cm,  $AF = 5$  cm and  $FC = 15$  cm.

Calculate the volume of the cuboid. Give your answer correct to 3 significant figures.

..... cm<sup>3</sup>

(Total for question is 4 marks)

**Q13. CALCULATOR ALLOWED**



The diagram shows Helen's fish tank.  
The fish tank is in the shape of a cuboid.  
All the dimensions are correct to the nearest centimetre.

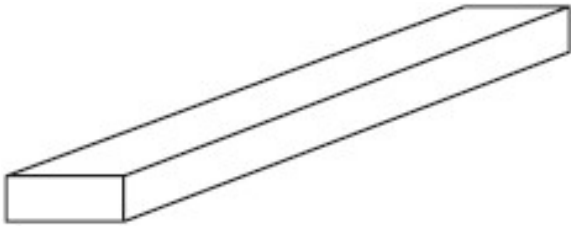
Helen is going to use a bucket to fill the fish tank completely with water.  
There are 14 litres, correct to the nearest litre, of water in a full bucket.

Will 25 full buckets of water definitely fill the fish tank? Justify your answer.

(Total for question = 4 marks)



**Q14. CALCULATOR ALLOWED**



A solid cuboid has a volume of  $40 \text{ cm}^3$   
The cuboid has a total surface area of  $100 \text{ cm}^2$   
One edge of the cuboid has length  $2 \text{ cm}$ .

Find the length of a diagonal of the cuboid.  
Give your answer correct to 3 significant figures.

..... cm

(Total for question = 6 marks)