

## GCSE QUESTIONS

### Q1. NON-CALCULATOR

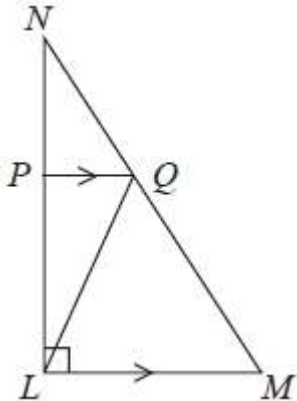
Solid **A** and solid **B** are mathematically similar.

The ratio of the surface area of solid **A** to the surface area of solid **B** is 4:9

The volume of solid **B** is  $405\text{cm}^3$ . Show that the volume of solid **A** is  $120\text{cm}^3$ .

(Total for question = 3 marks)

### Q2. NON-CALCULATOR



LMN is a right-angled triangle.

Angle  $NLM = 90^\circ$

$PQ$  is parallel to  $LM$ .

The area of triangle  $PNQ$  is  $8\text{ cm}^2$

The area of triangle  $LPQ$  is  $16\text{ cm}^2$

Work out the area of triangle  $LQM$ .

.....  $\text{cm}^2$

(Total for question = 4 marks)

**Q3. NON-CALCULATOR**

Three solid shapes **A**, **B** and **C** are similar.

The surface area of shape **A** is  $4 \text{ cm}^2$

The surface area of shape **B** is  $25 \text{ cm}^2$

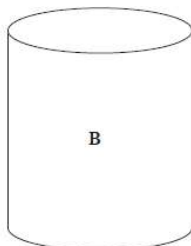
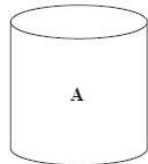
The ratio of the volume of shape **B** to the volume of shape **C** is  $27 : 64$

Work out the ratio of the height of shape **A** to the height of shape **C**. Give your answer in its simplest form.

.....

(Total for question = 4 marks)

**Q4. NON-CALCULATOR**



**A** and **B** are two similar cylindrical containers.

the surface area of container **A** : the surface area of container **B** =  $4 : 9$

Tyler fills container **A** with water.

She then pours all the water into container **B**.

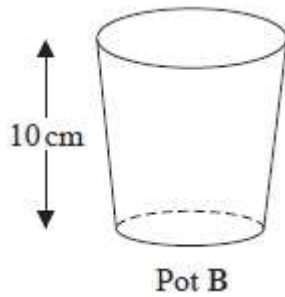
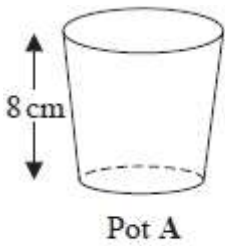
Tyler repeats this and stops when container **B** is full of water.

Work out the number of times that Tyler fills container **A** with water. You must show all your working.

.....

(Total for question = 4 marks)

**Q5. CALCULATOR ALLOWED**



Here are two pots.

Pot **A** and pot **B** are mathematically similar.

The area of the base of pot **B** is  $160 \text{ cm}^2$ .

Work out the area of the base of pot **A**.

.....  $\text{cm}^2$

**(Total for question = 2 marks)**

**Q6. CALCULATOR ALLOWED**

Two solid cones are mathematically similar.

Cone **A** has a volume of  $120 \text{ cm}^3$

Cone **B** has a volume of  $960 \text{ cm}^3$

Work out the ratio of the surface area of cone **A** to the surface area of cone **B**.

.....

**(Total for question = 3 marks)**

**Q7. CALCULATOR ALLOWED**

The circumference of circle **B** is 90% of the circumference of circle **A**.

(a) Find the ratio of the area of circle **A** to the area of circle **B**.

.....  
(2)

Square **E** has sides of length  $e$  cm. Square **F** has sides of length  $f$  cm.

The area of square **E** is 44% greater than the area of square **F**.

(b) Work out the ratio  $e : f$

.....  
(2)  
(Total for question = 4 marks)

**Q8. CALCULATOR ALLOWED**

Cone **A** and cone **B** are mathematically similar.

The ratio of the volume of cone **A** to the volume of cone **B** is  $27 : 8$

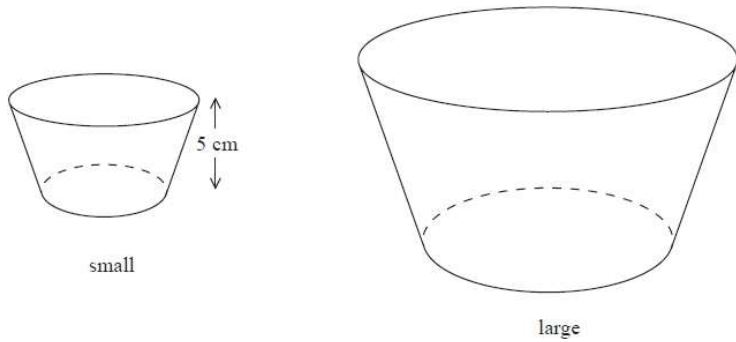
The surface area of cone **A** is  $297 \text{ cm}^2$

Show that the surface area of cone **B** is  $132 \text{ cm}^2$

(Total for question = 3 marks)

**Q9. CALCULATOR ALLOWED**

A factory makes ice cream tubs in two sizes, small and large.



The tubs are similar in shape.

The height of the small tub is 5 cm

The volume of the small tub is  $150 \text{ cm}^3$

The volume of the large tub is  $500 \text{ cm}^3$

Work out the height of the large tub.

Give your answer correct to 3 significant figures.

..... cm

(Total for question = 2 marks)

**Q10. CALCULATOR ALLOWED**

Mark has made a clay model.

He will now make a clay statue that is mathematically similar to the clay model.

The model has a base area of  $6 \text{ cm}^2$ . The statue will have a base area of  $253.5 \text{ cm}^2$

Mark used 2kg of clay to make the model. Clay is sold in 10kg bags.

Mark has to buy all the clay he needs to make the statue.

How many bags of clay will Mark need to buy?

.....

(Total for question is 3 marks)