



EXAM PAPERS PRACTICE

GCSE OCR Math J560

Similarity - Area &

Volume

Question Paper

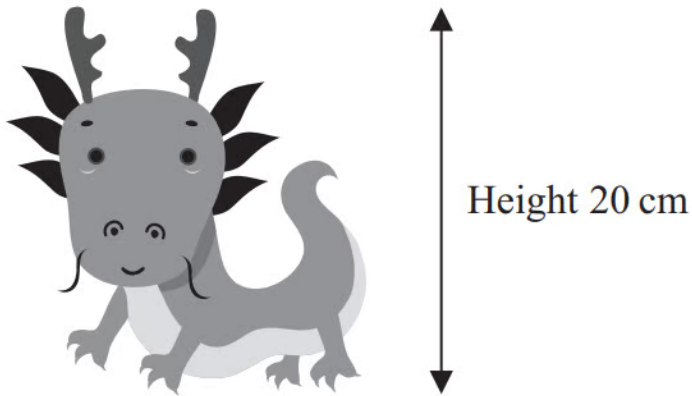
*"We will help you to
achieve A Star "*



Question 1

A company makes monsters.

The company makes small monsters with a height of 20 cm.



A small monster has a surface area of 300 cm^2 .

The company also makes large monsters with a height of 120 cm.

A small monster and a large monster are mathematically similar.

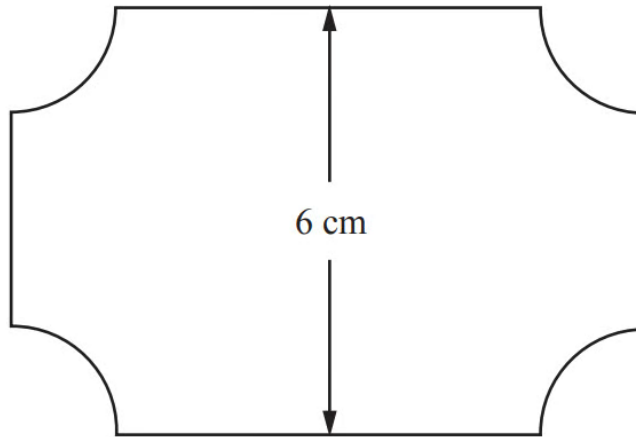
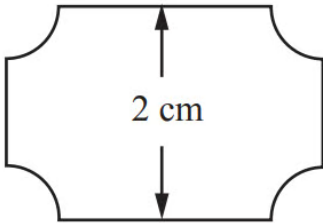
Work out the surface area of a large monster.

[3 marks]



Question 2

Here are two supermarket price tickets.



Diagrams **NOT**
accurately drawn

The two supermarket price tickets are mathematically similar.

The area of the smaller ticket is 7 cm^2 .

Calculate the area of the larger ticket.

[2 marks]



Question 3

L and **M** are two mathematically similar prisms.

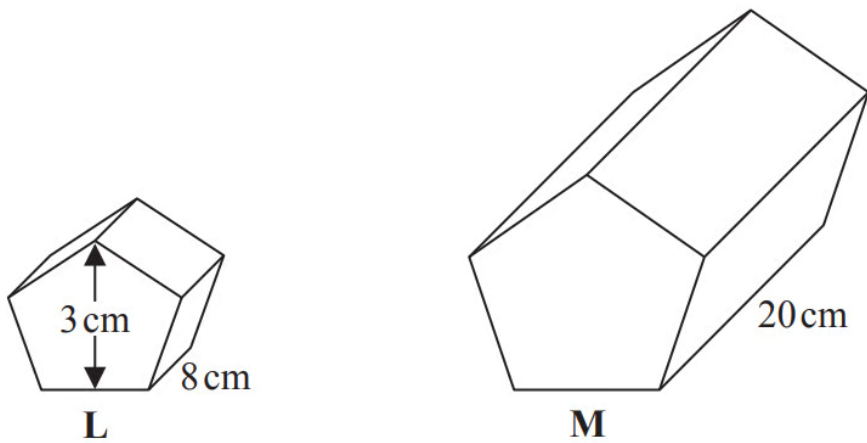


Diagram **NOT** accurately drawn

Prism **L** has length 8 cm.

Prism **M** has length 20 cm.

Prism **L** has height 3 cm.

(a) Work out the height of prism **M**.

[2 marks]



Question 4

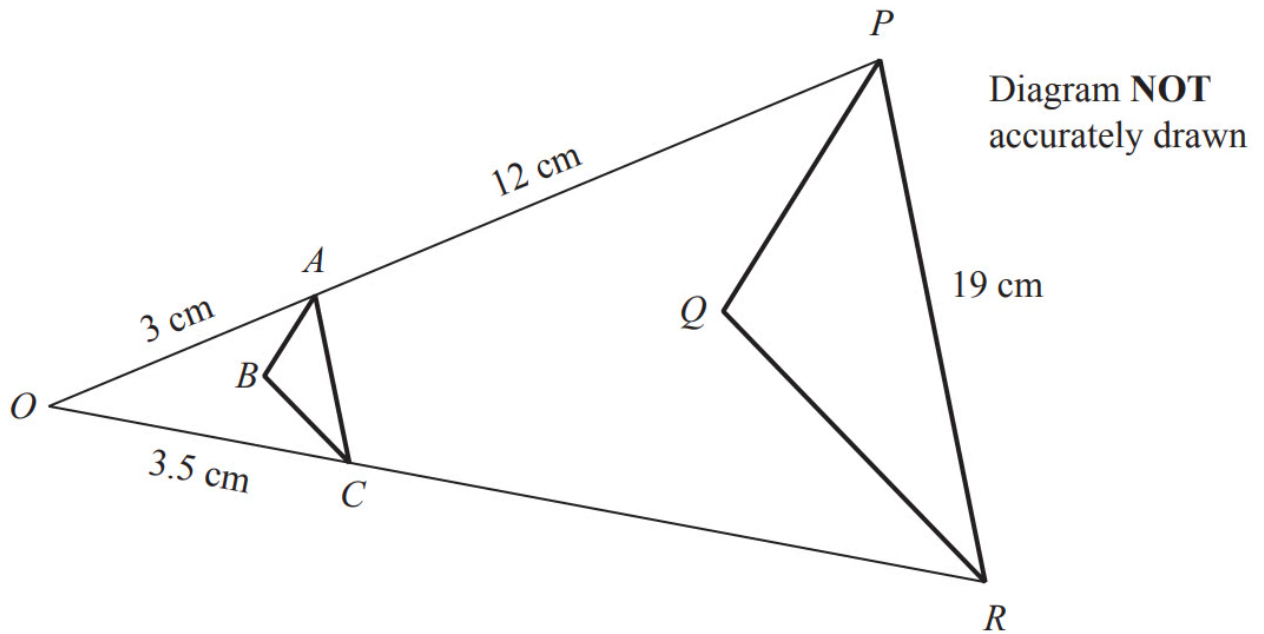
Prism **M** has a volume of 1875 cm^3

(b) Work out the volume of prism **L**.

[2 marks]



Question 5



Triangle PQR is an enlargement, centre O , of triangle ABC .

OAP and OCR are straight lines.

$OA = 3$ cm.

$AP = 12$ cm.

$OC = 3.5$ cm.

$PR = 19$ cm.

(a) Work out the length of CR .

[2 marks]



Question 7

Fred is making two rectangular flower beds.

The dimensions of the larger rectangle will be three times the dimensions of the smaller rectangle.

There is going to be the same depth of soil in each flower bed.
Fred needs 180 kg of soil for the smaller flower bed.

Work out how much soil Fred needs for the larger flower bed.

[2 marks]



Question 8

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 cm^2

The statue will have a base area of 253.5 cm^2

Mark used 2 kg of clay to make the model.

Clay is sold in 10 kg bags.

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

How many bags of clay will Mark need to buy?

[3 marks]



Question 9

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 cm^3 .

Show that the volume of solid **A** is 120 cm^3 .

[3 marks]



Question 10

$ABCD$ and $APQR$ are two similar quadrilaterals.

$PQ = 9$ cm.

$BC = 6$ cm.

$AD = 5$ cm.

$QR = 12$ cm.

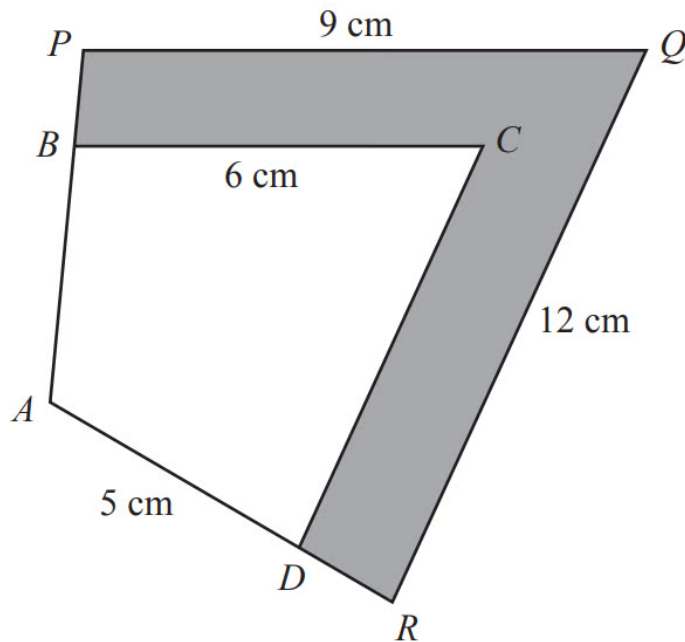


Diagram **NOT** accurately drawn

(a) Find the length of DC .

[2 marks]



Question 11

Here are two similar solid shapes.

A



B



surface area of shape **A** : surface area of shape **B** = 3 : 4

The volume of shape **B** is 10 cm^3

Work out the volume of shape **A**.

Give your answer correct to 3 significant figures.

[3 marks]



Question 12

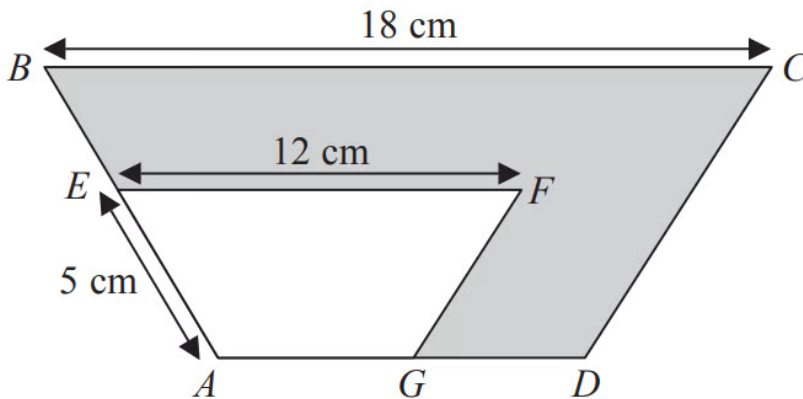


Diagram **NOT**
accurately drawn

$ABCD$ and $AEFG$ are mathematically similar trapeziums.

$$AE = 5 \text{ cm}$$

$$EF = 12 \text{ cm}$$

$$BC = 18 \text{ cm}$$

(a) Work out the length of AB .

[2 marks]



Question 13

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 cm^2

Show that the surface area of cone **B** is 132 cm^2

[3 marks]



Question 14

Triangles ABC and ACD are similar.

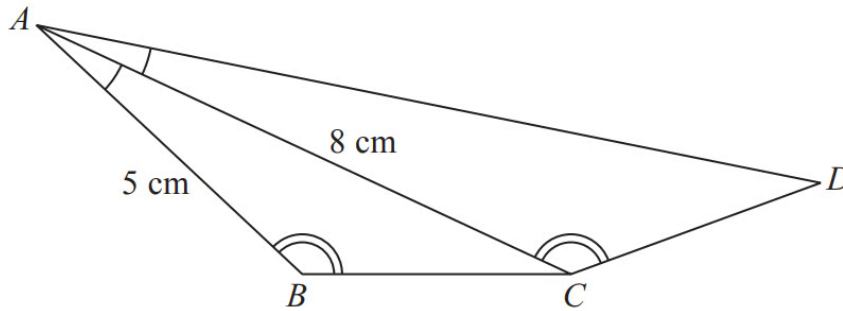


Diagram **NOT**
accurately drawn

Angle $BAC =$ angle CAD .
Angle $ABC =$ angle ACD .
 $AB = 5$ cm and $AC = 8$ cm.

(a) Calculate the length of AD .

[2 marks]



Question 15

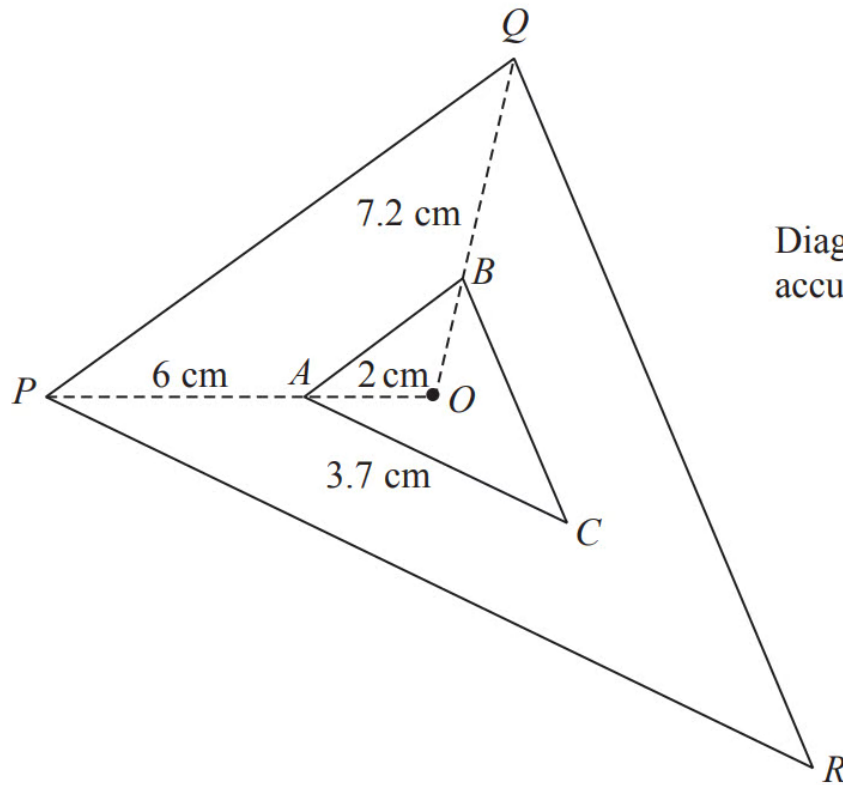


Diagram **NOT** accurately drawn

Triangle PQR is an enlargement, centre O , of triangle ABC .

OAP and OBQ are straight lines.

$$OA = 2 \text{ cm.}$$

$$AP = 6 \text{ cm.}$$

$$BQ = 7.2 \text{ cm.}$$

$$AC = 3.7 \text{ cm.}$$

(a) Work out the length of OB .

[2 marks]