Similarity

Question Paper 2

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Shape, Space and Measures
Sub Topic	Similarity
Booklet	Question Paper 2

Time Allowed: **57 minutes**

Score: **/47**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

1 In the diagram, *DAPS* and *CBQR* are straight lines.
AB is parallel to *QP* and *DC* is parallel to *RS*.
AD = 11 cm, *BC* = 5 cm, *PS* = 27.5 cm and *RS* = 42.5 cm.

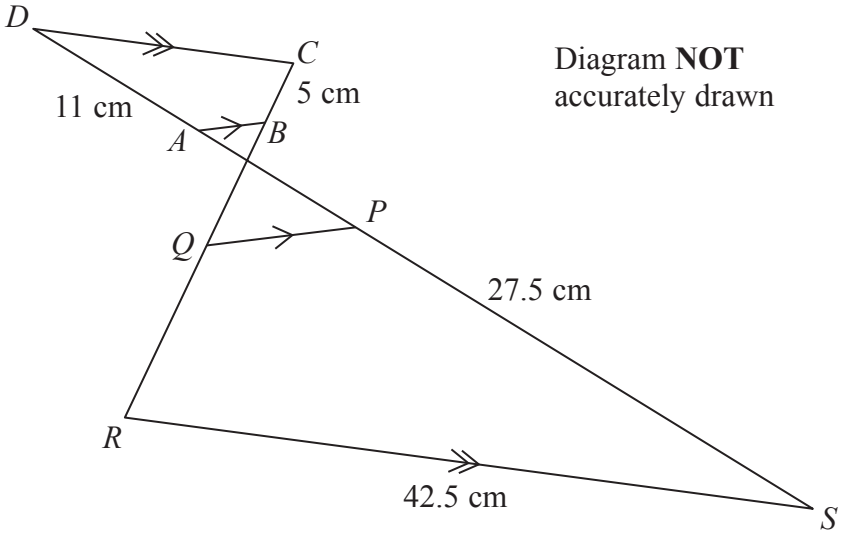


Diagram **NOT** accurately drawn

Quadrilateral *ABCD* is similar to quadrilateral *PQRS*.

(a) Find the ratio of the length of *AB* to the length of *PQ*.
Give your answer in the form 1 : *n*

1 : .....
(2)

(b) Work out the length of *RQ*.

..... cm
(2)

(c) Work out the length of *CD*.

..... cm
(2)

The area of quadrilateral $ABCD$ is 54 cm^2

(d) Work out the area of quadrilateral $PQRS$.

..... cm^2

(2)

(Total for Question 1 is 8 marks)

2 The diagram shows triangle ADC.

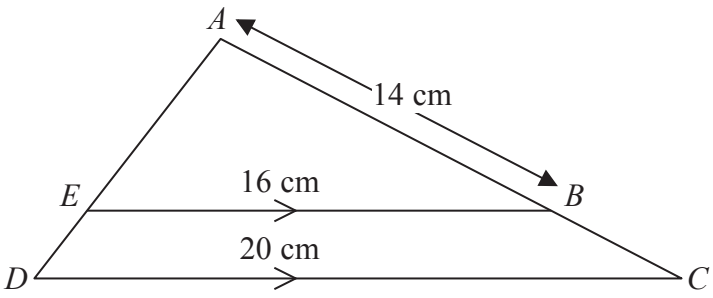


Diagram **NOT** accurately drawn

E is a point on AD and B is a point on AC so that EB is parallel to DC.
$AB = 14$ cm.
$EB = 16$ cm.
$DC = 20$ cm.

Calculate the length of BC.

..... cm

(Total for Question 2 is 3 marks)

3 Rob is making a scale model of the Solar System on the school field.
He wants the distance from the Sun to Jupiter to be 8 metres on his scale model.

The real distance from the Sun to Jupiter is 7.8×10^8 kilometres.

(a) Find the scale of the model.
Give your answer in the form 1: n, where n is written in standard form.

1: .....

(3)

Rob wants to put the position of a space probe on the scale model.
The real distance of the space probe from the Sun is 1.9×10^{10} kilometres, correct to 2 significant figures.

(b) Work out the maximum distance of the space probe from the Sun on the scale model.
Give your answer in metres.

..... m

(3)

(Total for Question 3 is 6 marks)

4

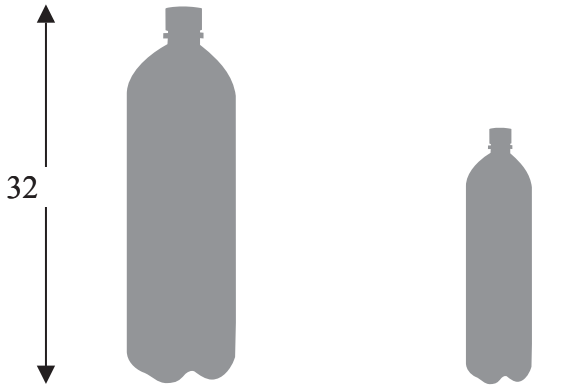


Diagram **NOT** accurately drawn

Zane buys mineral water in large bottles and in small bottles.
The large bottles are mathematically similar to the small bottles.
Large bottles have a height of 32 cm and a volume of 2000 cm^3
Small bottles have a volume of 500 cm^3

Work out the height of a small bottle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 4 is 3 marks)

5

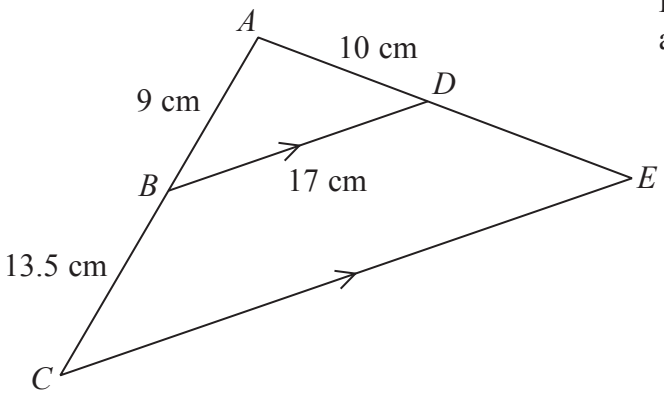


Diagram **NOT** accurately drawn

In the diagram ABC and ADE are straight lines.
BD is parallel to CE.

$AB = 9$ cm, $BC = 13.5$ cm, $AD = 10$ cm, $BD = 17$ cm

(a) Calculate the length of CE.

..... cm

(2)

(b) Calculate the length of DE.

..... cm

(2)

The area of triangle ABD is 36 cm^2

(c) Calculate the area of quadrilateral $BDEC$.

..... cm^2

(3)

(Total for Question 5 is 7 marks)

6 The ocean liner Queen Mary 2 is the longest of its type.
It has a length of 345 metres.

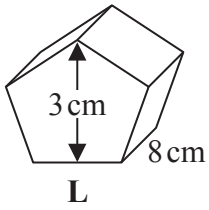
A scale model is made of the Queen Mary 2
The scale of the model is 1 : 200

Work out the length of the scale model.
Give your answer in centimetres.

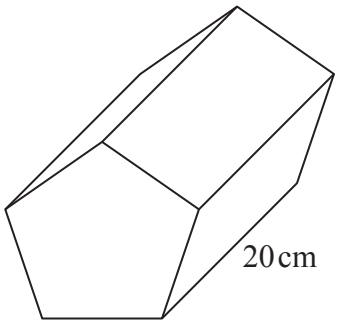
..... cm

(Total for Question 6 is 3 marks)

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



L



M

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**.

..... cm

(2)

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

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

..... cm^3

(2)

(Total for Question 7 is 4 marks)

8 *PQRS* and *PLMN* are similar quadrilaterals.

PN = 12 cm, *NS* = 8 cm, *PL* = 9 cm and *RS* = 13.5 cm.

LM is parallel to *QR* and *MN* is parallel to *RS*.

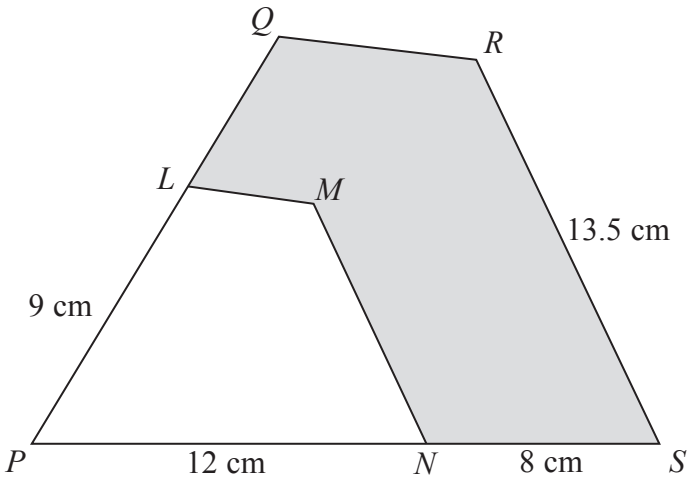


Diagram **NOT** accurately drawn

(a) Work out the length of *MN*.

..... cm

(2)

(b) Work out the length of *LQ*.

..... cm

(2)

The area of $PLMN$ is A cm^2
The area of $PQRS$ is kA cm^2

(c) Find the value of k.

$k =$ .....

(1)

The area of the shaded region is 105.6 cm^2

(d) Work out the value of A.

$A =$ .....

(3)

(Total for Question 8 is 8 marks)

9

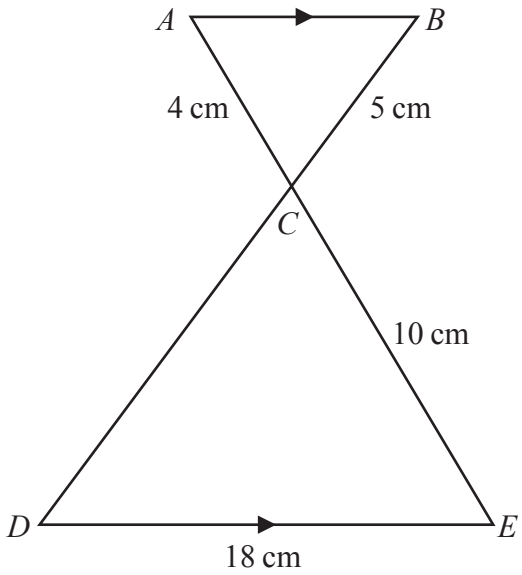


Diagram **NOT** accurately drawn

ACE and *BCD* are straight lines.
AB is parallel to *DE*.

(a) Calculate the length of *CD*.

.....cm

(2)

(b) Calculate the length of *AB*.

.....cm

(2)

The area of triangle *ABC* = *T* cm^2

(c) Find the area of triangle *CDE* in terms of *T*.

.....cm^2

(1)

(Total for Question 9 is 5 marks)