Lesson 9

9.1 Revision

Marks Available : 47

Question 1

A larger cuboid has lengths that are nine times longer than a similar smaller cuboid.
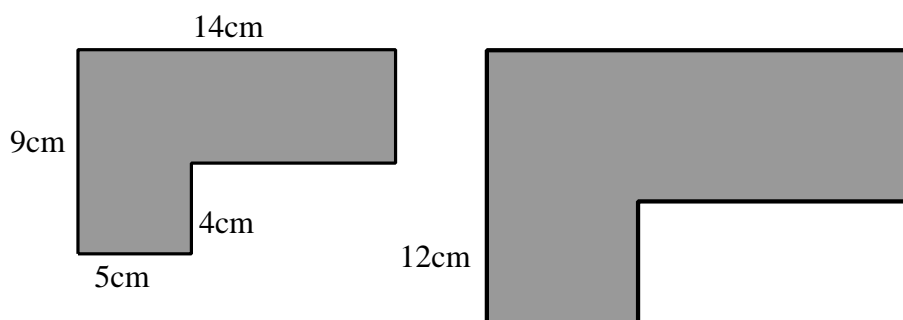The smaller cuboid measures 6 cm by 7 cm by 8 cm.
What are the measurements of the larger cuboid ?

[2 marks]

Question 2

The two shapes shown below are similar.

(**i**)   Work out the area of the left hand shape.

[2 marks]

(**ii**)   What is the *length* scale factor, greater than 1, of the similarity ?

[1 mark]

(**iii**)   What is the *area* scale factor, greater than 1 of the similarity ?

[1 mark]

(**iv**)   Work out the area of the right hand shape.

[2 marks]

Question 3
True or false ?
(**i**)   All squares are congruent.

[**1 mark**]

(**ii**)   All isosceles triangles are similar.
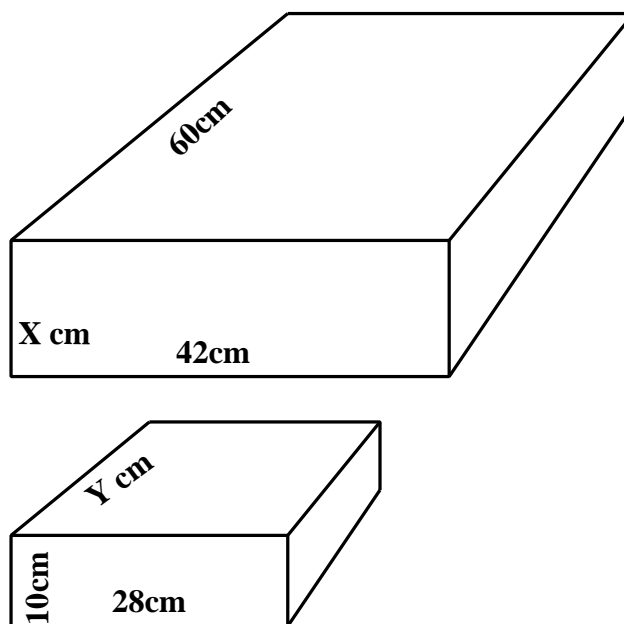
[**1 mark**]

(**iii**)   All spheres are similar.

[**1 mark**]

Question 4
The two cuboids shown below are similar.

(**i**)   What is the *length* scale factor, greater than 1, of the similarity ?

[**1 mark**]

(**ii**)   What is the length of the side marked X ?

[**1 mark**]

(**iii**)   What is the *length* scale factor, less than 1, of the similarity ?
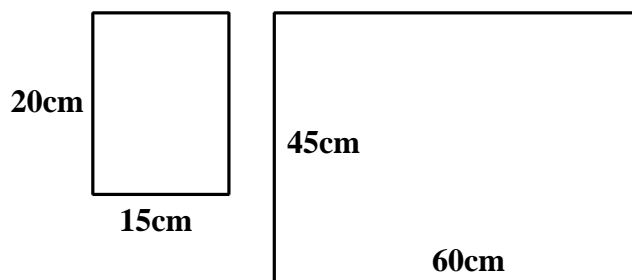
[**1 mark**]

(**iv**)   What is the length of the side marked Y ?

[**1 mark**]

Question 5

The following two rectangles are similar.
What is the *length scale factor* between them ?
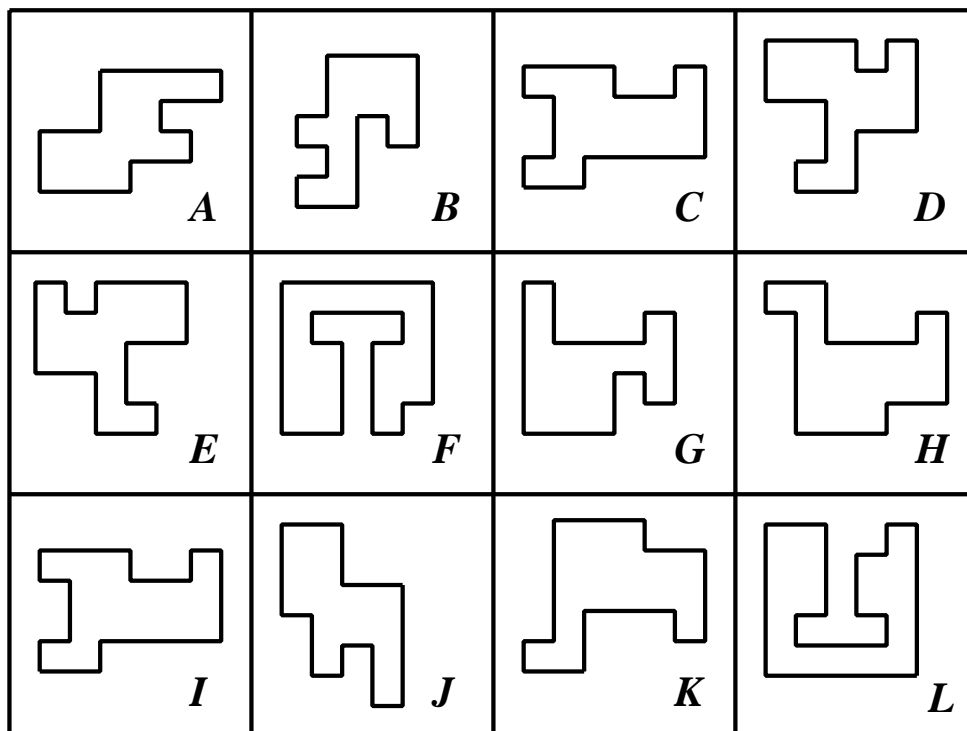
20cm

15cm

45cm

60cm

[2 marks]

Question 6

For the following shapes, shade in those that are *directly congruent* in one colour
and, in a different colour, those that are *indirectly congruent.*
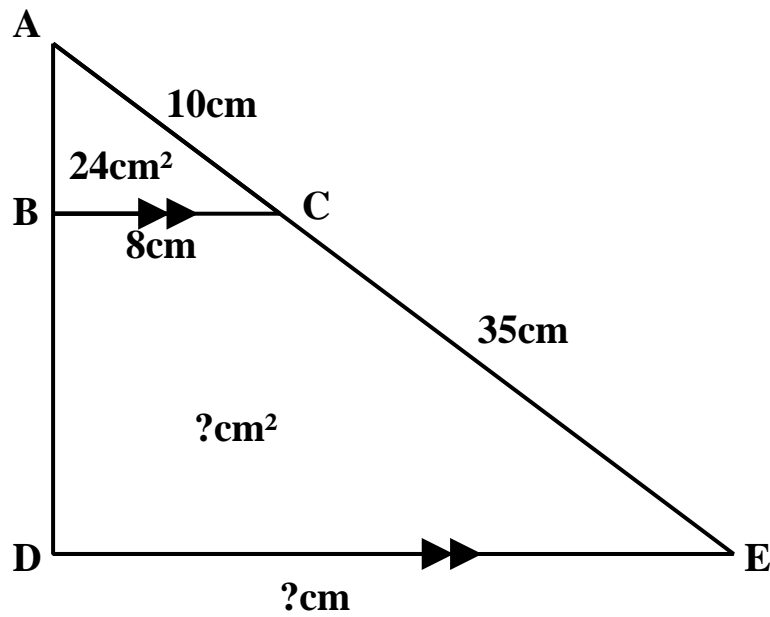Provide a key to explain what the colours used represent.

A	B	C	D
E	F	G	H
I	J	K	L

[6 marks]

Question 7

In the diagram below, $AC = 10$ cm, $BC = 8$ cm and $CE = 35$ cm.

The area of $\triangle ABC$ is 24 cm².

BC is parallel to DE.

A

10cm

24cm²

B   **C**

8cm

35cm

?cm²

D   **E**

?cm

Do **NOT** assume that $\triangle ABC$ is right angled at B

Find the length of DE and the area of the trapezium $BCED$

[6 marks]

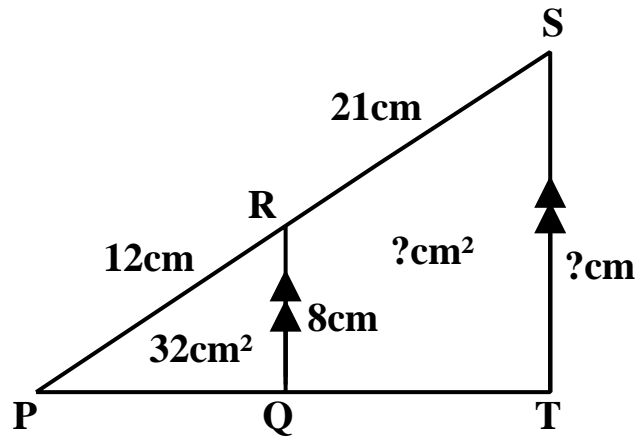Decide, giving a reason, if $\triangle ABC$ is right angled at B or not.

[2 marks]

Question 8
In the diagram below, $PR = 12$ cm, $RT = 21$ cm and $QR = 8$ cm.
The area of $\triangle PQR$ is 32 cm².
QR is parallel to TS.

S

21cm

R

12cm   ?cm²

?cm

8cm

32cm²

P   Q   T

Do **NOT** assume that $\triangle PQR$ is right angled at Q
Find the length TS and the area of the trapezium $QRST$

[6 marks]

Decide, giving a reason, if $\triangle PQR$ is right angled at Q or not.

[2 marks]

Question 9

In this question give your answers in the form $\frac{p}{q}$ in as simple a form as possible where p and q are integers and $q \neq 0$

What is the *length* scale factor that maps;

(i)　　A length of 12 cm onto a length of 21 cm ?

[**1 mark**]

(ii)　　A length of 24 cm onto a length of 32 cm ?

[**1 mark**]

(iii)　　A length of 36 cm onto a length of 63 cm ?

[**1 mark**]

Question 10

A mini-doughnut has a diameter of 3 cm.
A jumbo-doughnut, similar to the mini-doughnut, has a diameter of 12 cm.

(i)　　What is the *length* scale factor, greater than 1, of the similarity ?

[**1 mark**]

(ii)　　When considering food, it's volume that's important.
　　　　How many mini-doughnuts would Mr Stuff have to eat to have consumed
　　　　the same amount of doughnut material as Mr Munch, who has just eaten
　　　　FIVE jumbo-doughnuts ?

[**4 marks**]