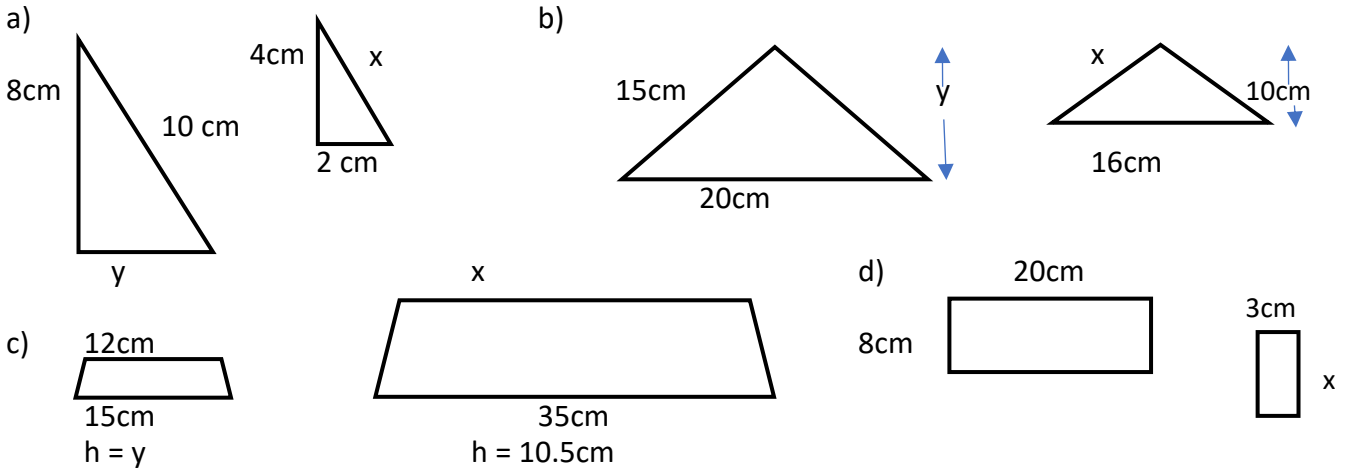
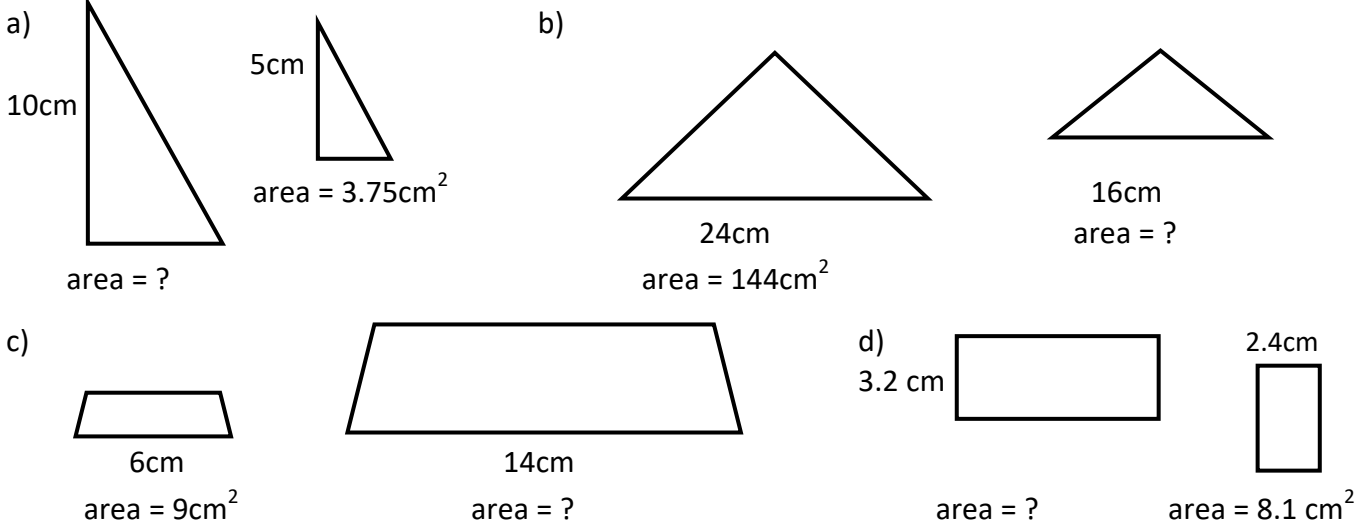


Higher IGCSE week 12 homework

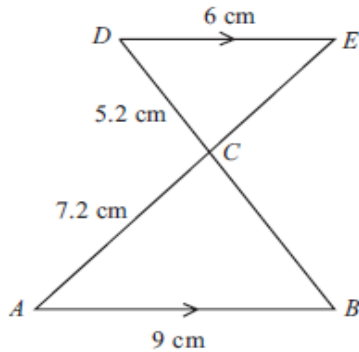
1 Find the missing side lengths on the pairs of similar shapes



2 Find the missing areas on the pairs of similar shapes



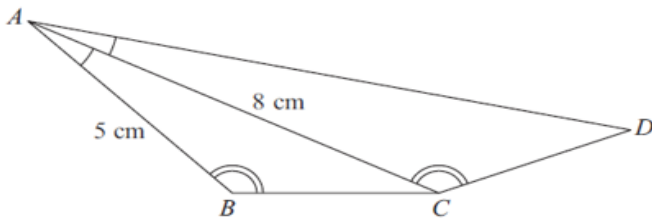
3



*AB is parallel to DE.
ACE and BCD are straight lines.
AB = 9 cm.
AC = 7.2 cm.
CD = 5.2 cm.
DE = 6 cm.*

- Calculate the length BC
 - calculate the length CE
- The area of CDE is 10cm^2
- calculate the area of ABC

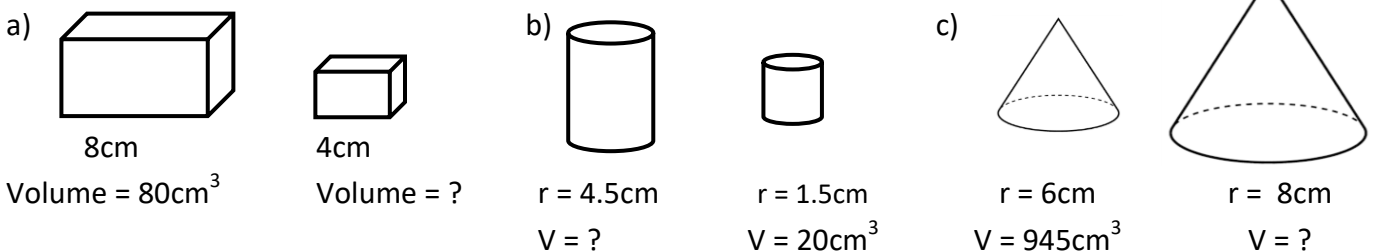
4



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

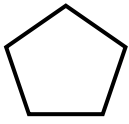
- Calculate the length AD
- The area of triangle ACD is 12.8cm^2
- calculate the area of triangle ABC

5 Find the missing volumes in these mathematically similar shapes

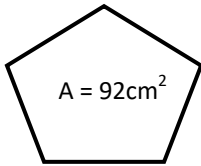


6 Find the missing lengths in these mathematically similar shapes

a)

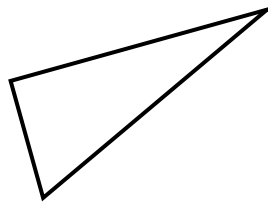


$A = 23\text{cm}^2$
 $H = 10\text{cm}$

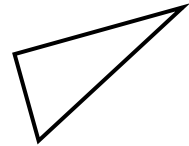


$H = ?$

b)



$A = 216\text{cm}^2$ $L = 12\text{cm}$



$A = 96\text{cm}^2$ $L = ?$

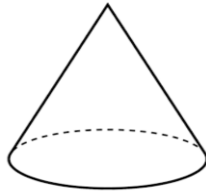
c)



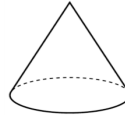
$V = 8\text{cm}^3$
 $H = 8\text{cm}$



$V = 216\text{cm}^3$
 $H = ?$



$V = 320\text{cm}^3$
 $H = 12\text{cm}$



$V = 135\text{cm}^3$
 $H = ?$



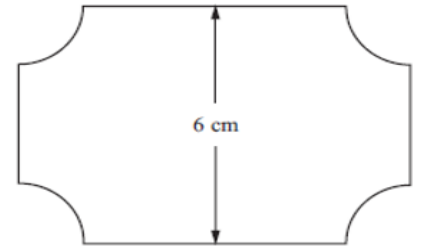
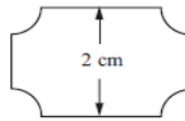
$V = 187.5\text{cm}^3$
 $H = ?$



$V = 40.5\text{cm}^3$
 $H = 6\text{cm}$

7 Here are two tickets

The two tickets are mathematically similar
The area of the smaller ticket is 7cm^2
Calculate the area of the larger ticket.



8 Two cylinders are mathematically similar

Cylinder A has a radius of 8cm and a volume of 3016cm^3
Find the radius of cylinder B

Cylinder B has a volume of 377cm^3

9 Two cuboids are mathematically similar.

Cuboid A has a surface area of 9.6cm^2 and cuboid B has a surface area of 240cm^2

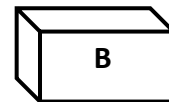
Cuboid A has a Volume of 43.2cm^3

What is the area scale factor from A to B?

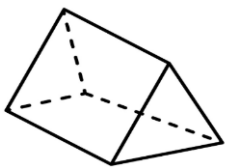
What is the linear scale factor?

What is the volume scale factor?

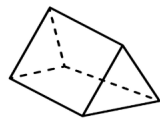
Work out the volume of cuboid B



10



Shape C



Shape D

Shape C has a volume of 500cm^3

Shape D has a volume of 32cm^3

What is the volume scale factor from shape C to D?

What is the linear scale factor?

What is the Area scale factor?

Shape C has a total surface area of 375cm^2

Work out the surface area of D

11 Two cylinders are mathematically similar

The smaller cylinder has a surface area of 240cm^2

The smaller cylinder has a volume of 360cm^3

The larger cylinder has a surface area of 540cm^2

Work out the volume of the larger cylinder

12 The areas of two mathematically similar solids are in the ratio $4 : 25$

The height of the smaller shape is 12cm

Work out the height of the bigger shape

13 The areas of two mathematically similar cones are in the ratio $25 : 16$

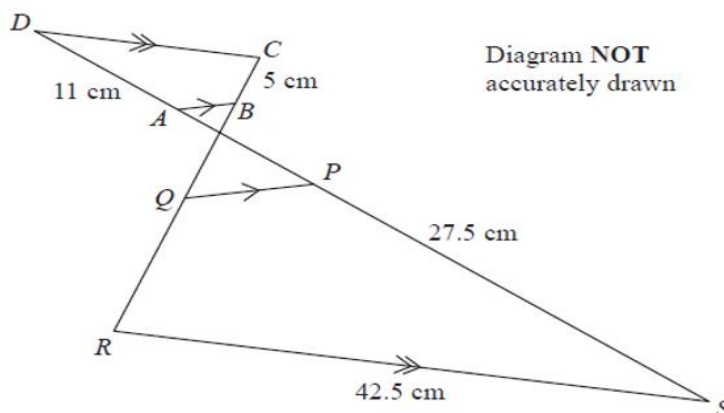
The volume of the larger cone is 1000cm^3

Work out the volume of the smaller shape

- 14 A tree of height 4m casts a shadow of length 6.5m.
Find the height of a house casting a shadow 26m long
- 15 A giant ball is made to promote the sales of a new make of golf ball
the surface area of an ordinary ball is 50 cm^2
The diameter of the giant ball is 100 times as great as a normal ball
Work out the surface area of the giant ball in
a) in cm^2 b) in m^2

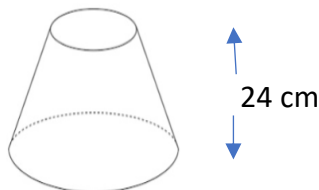
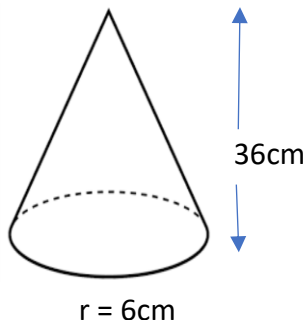
- 16 Quadrilateral ABCD is similar to quadrilateral PQRS
length DA = 11cm
length CB = 5cm
length PS = 27.5cm
length RS = 42.5cm

- a) Find the ratio of the length of AB to the length PG
Give your answer in the form $1 : n$
- b) Work out the length RQ
- c) Work out the length of CD



Be careful with this question you need knowledge of both similar shapes AND volumes

- 17 A vase is a truncated cone as shown



- The height of the cone is 36cm
The height of the truncated cone is 24cm
The radius of the cone is 6cm
Work out the radius of the cut off smaller cone
Work out the volume of the truncated cone round and to 3 sig figs