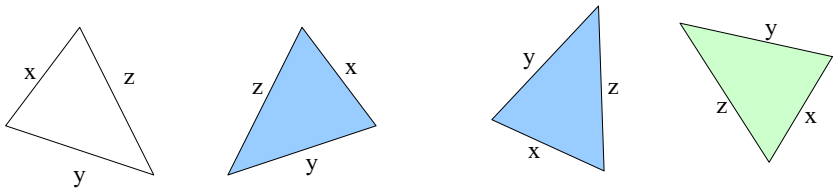
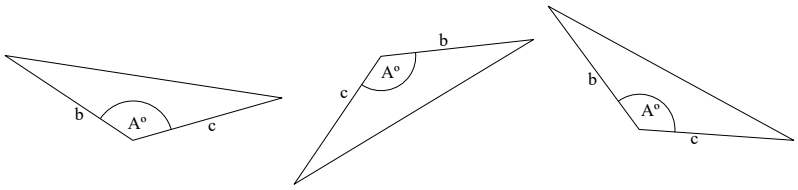
Similarity and Congruence

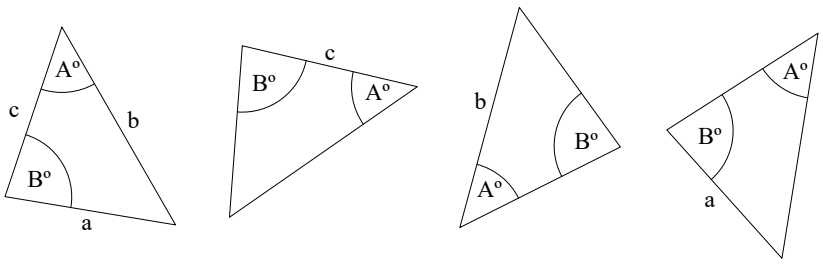
Congruent shapes are exactly the same size as each other.
Check for:
Side Side Side: Three sides the same size. All these shapes are congruent to the one on the left. The blue ones have been reflected and rotated. The green one has just been rotated.



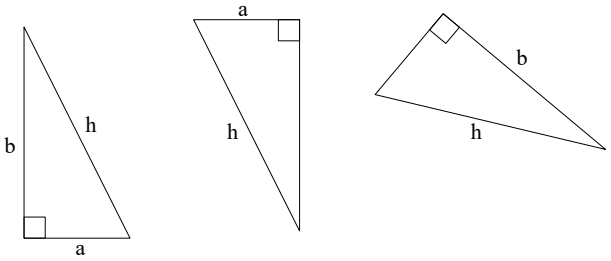
Side Angle Side: Two sides and the angle between them are the same in both triangles.



Angle Angle Side: Two angles and a side on one triangle are the same as two angles and the corresponding side on a second triangle makes the triangles congruent.



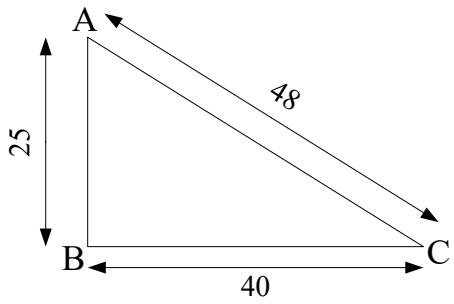
Right Angle Hypotenuse Side: The right angle and the hypotenuse plus one other side being the same in both triangles means they are congruent to each other.

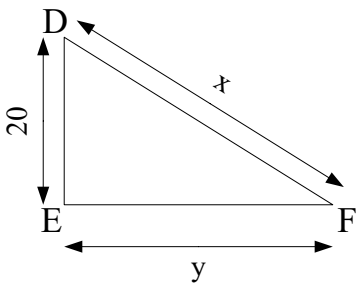


Do NOT scale with all diagrams. All dimensions are given in mm unless otherwise stated.

Q1 ABC and DEF are similar triangles.

Calculate the lengths of x and y.



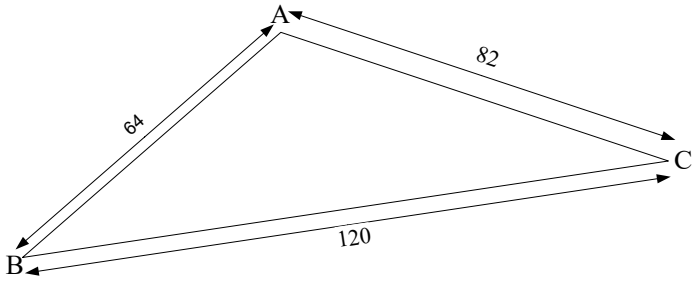


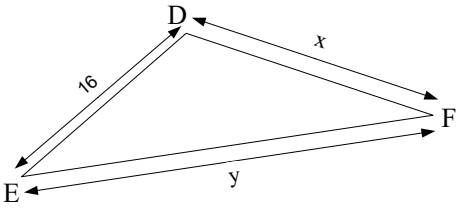
x= .....

y= .....

Q2 ABC and DEF are similar triangles.

Calculate the lengths of x and y.



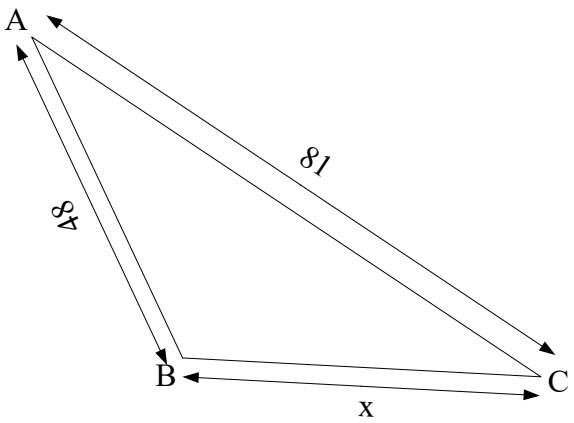


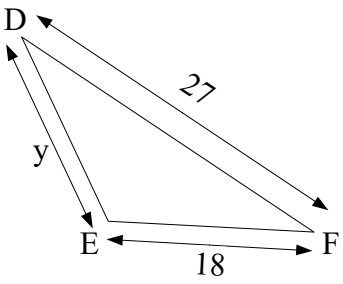
x= .....

y= .....

Q3 ABC and DEF are similar triangles.

Calculate the lengths of x and y.



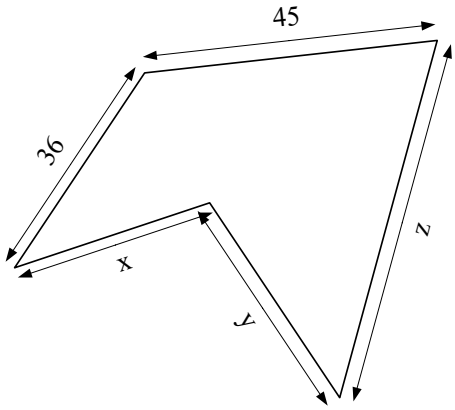


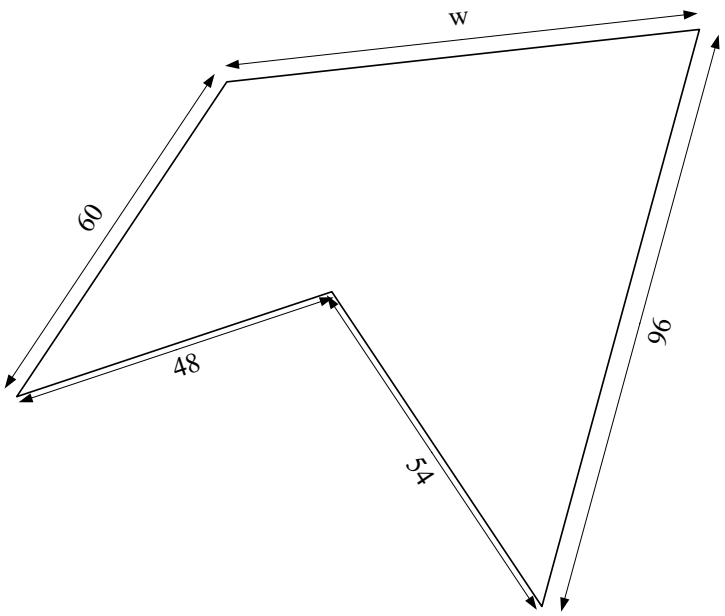
x= .....

y= .....

Q4 ABC and DEF are similar pentagons.

Calculate the lengths of w, x, y and z.

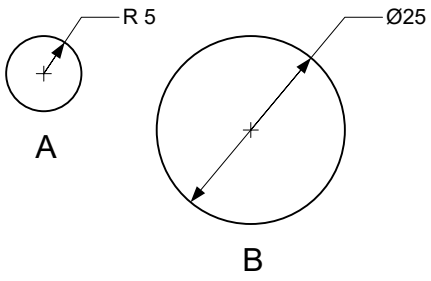




w= ..... x= ..... y= ..... z= .....

Q5 A and B are circles.

Circle A has a radius of 5 cm. Circle B has a diameter of 25cm.



a Write the ratio of the areas of A and B.

.....

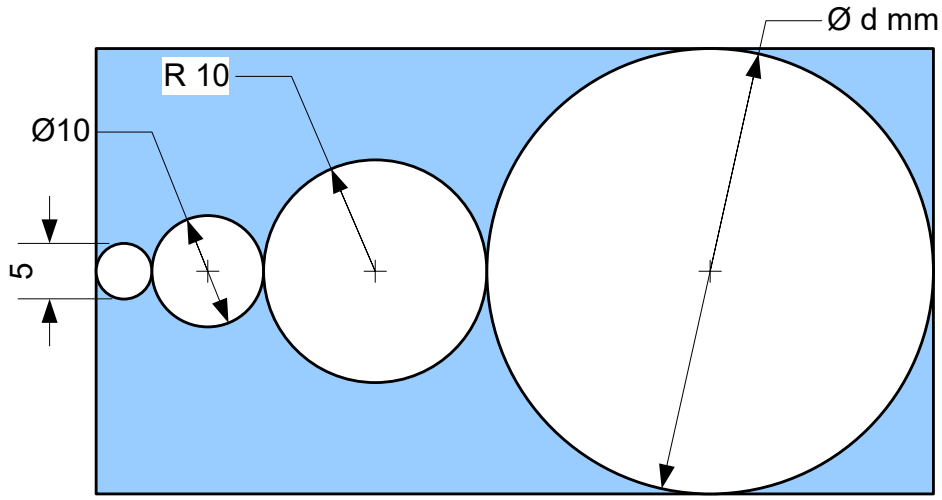
b Write the ratio of the circumferences of A and B.

.....

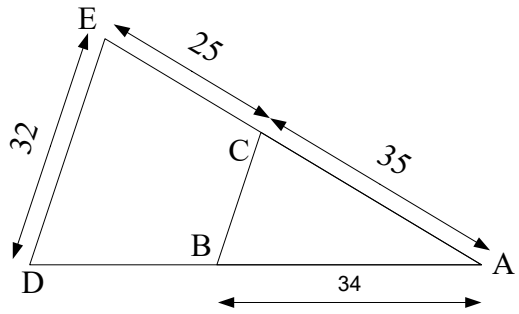
Q6 Below is an oblong with four circles.

The radius of each successive circle increases as if it were a member of a geometric sequence.

Find the area of the shaded part of the oblong.



Q7 ABC and ADE are two similar triangles.



a Find the length of BC.

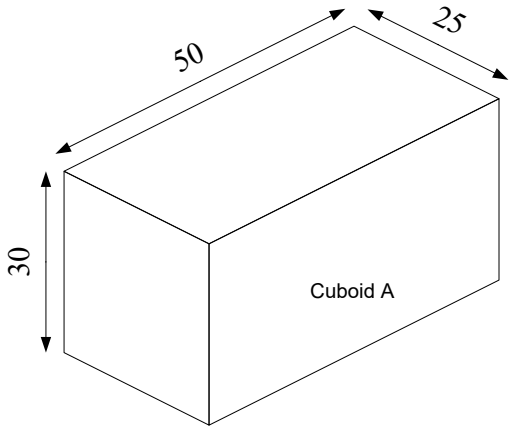
.....

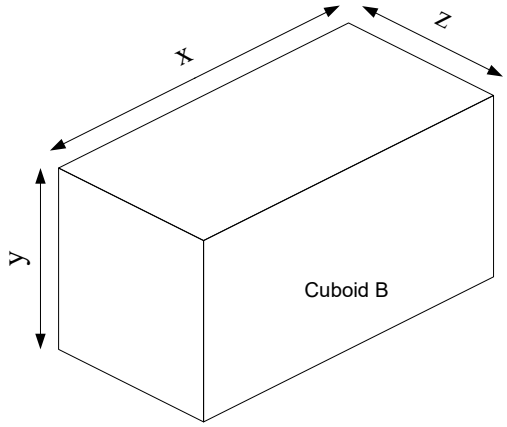
b Find the length of the edge AD.

.....

Q8 The two cuboids shown are similar.

Cuboid B has a volume of 4,687.5 mm^3.

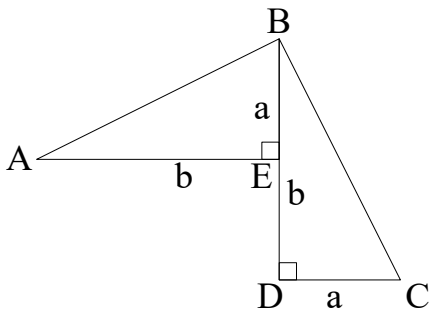




Find the lengths of x, y and z.

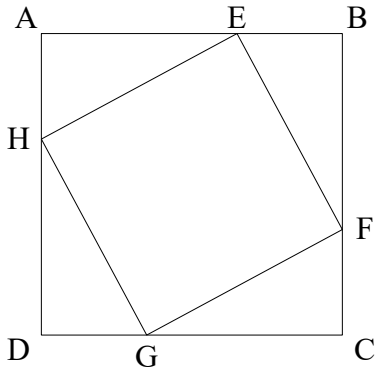
x= ..... y= ..... z= .....

Q9 Show that angle ABC is a right angle.



Q10 ABCD and EFGH are squares laid out as shown.

E intersects AB so that AE:EB is 2:1.



Find an expression to determine the area of the square EFGH.

Develop this term to show Pythagoras' Theorem.