GEOMETRY (Q 4, PAPER 2)

2003







4 (c) (i)

Draw a triangle *abc* whose sides have lengths of |ab| = 10.5 cm, |ac| = 8.5 cm and |bc| = 5 cm.

STEP 1: Draw a base using the longest side. Use a ruler to measure out a line segment [*ab*] of length 10.5 cm.

STEP 2. Take a compass and use a ruler to measure out a length of 8.5 cm. Put the point of the compass at a and draw out an arc of the circle. Do the same for the third side. Using your compass again measure out a length of 5 cm. Put the point of the compass at b and draw out an arc of the circle so that it intersects with the other arc.

STEP 3. c is the point of intersection of the two arcs. Join a to c and b to c to complete the construction.







NOTE: Only approximate lengths are shown in the diagrams.

4 (c) (ii) Mark a point *p* outside the triangle. Draw lines from *p* to each vertex of the triangle. Mark off the point a' that is 0.4 of the distance |pa|. Do the same for the other 2 points. Join the points a'b'c' to form the image of the triangle *abc*. The lengths of the 3 sides in the image are 0.4 of the lengths of the sides of the object. 8.5 cm 5 cm 10.5 cm 3.4 cm 2 cm 4.2 ¢m 4 (c) (iii) Image area $k^{2} =$ 2 Object area $k^{2} = \frac{|\text{Image area}|}{|\text{Object area}|} = \frac{|\text{Area of triangle } a'b'c'|}{|\text{Area of triangle } abc|}$ $\Rightarrow 0.4^2 = \frac{3.36}{|\text{Area of triangle } abc|}$ \therefore |Area of triangle abc| = $\frac{3.36}{0.4^2}$ = 21 cm²

