Exercise 19.3

Q.1 Draw a line segment of length 8.6 cm. Bisect it and measure the length of each part.

Solution:

(I) Draw a line segment AB of length 8.6 cm.

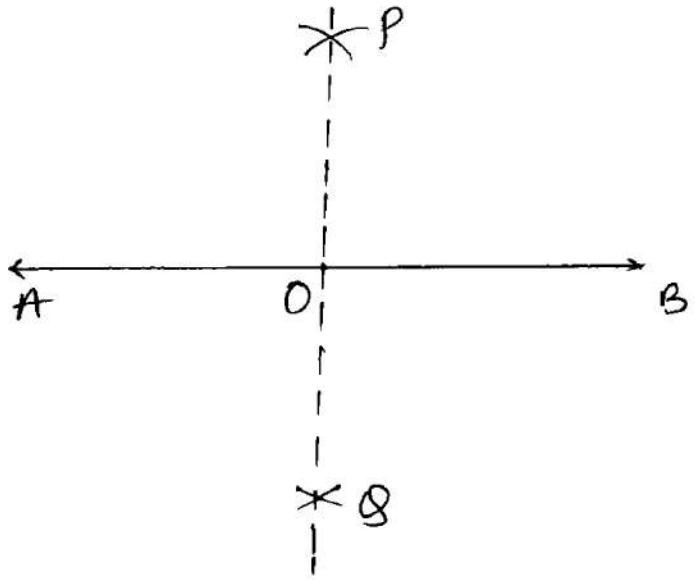
(II) Taking A and B as centres and an arc of length more than half of AB cut arcs both sides of AB.

(III) Mark these points as P and Q.

(IV) Join PQ, which intersects AB at point O.

Now 'O' is the mid point of AB.

By measuring $OA = OB = 4.3$ cm.



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Q.2 Draw a line segment AB of length 5.8 cm. Draw the perpendicular bisector of this line segment.

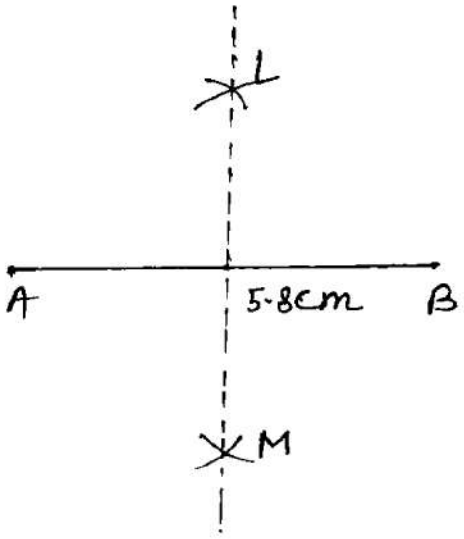
Solution: (i) Draw a line segment AB = 5.8 cm.

(ii) With A as centre and radius more than half of AB, draw two arcs, one on each side of AB.

(iii) With B as centre and the same radius, draw two arcs cutting the arcs drawn in previous step at L and M respectively.

(iv) Draw the line segments with L and M as end points.

The line segment LM is the required perpendicular bisector of PQ.



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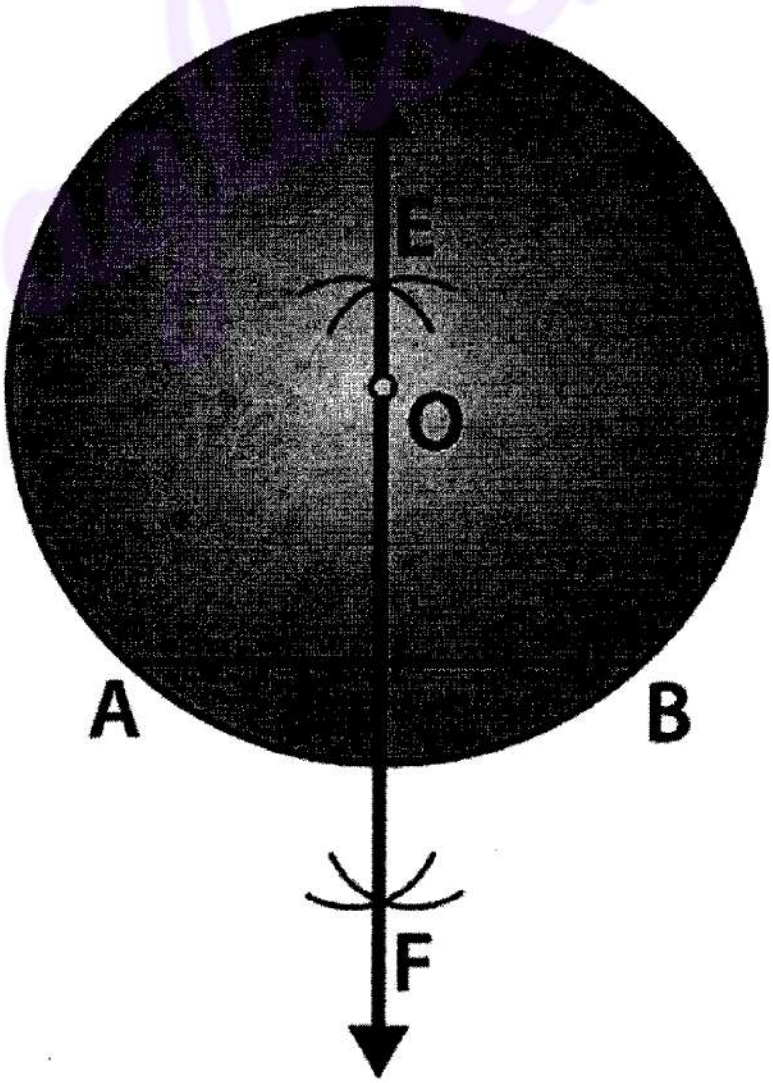
Q.3 Draw a circle with centre at point O and radius 5 cm. Draw its chord AB, draw the perpendicular bisector of line segment AB. Does it pass through the centre of the circle.

Solution: (i) Draw a circle of radius 5 cm.

(ii) Draw a chord AB.

(iii) Now Draw perpendicular bisector of AB.

By Construction we get that perpendicular bisector EF of AB passes through centre of circle.



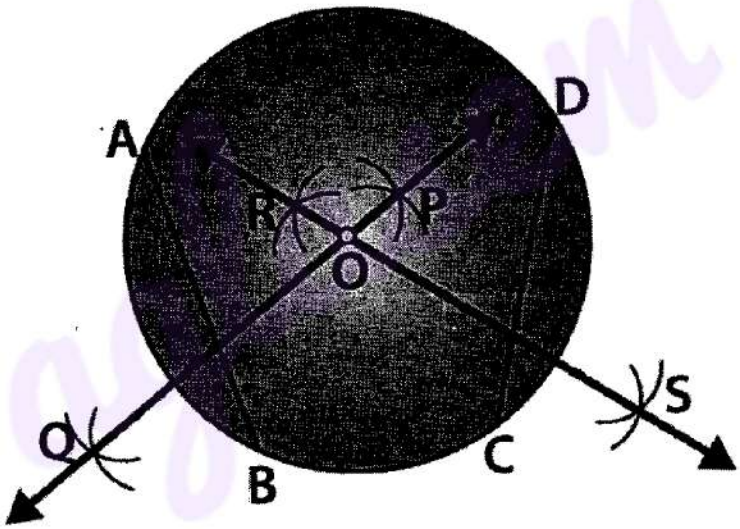
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Q4 Draw a circle with centre at a point O. Draw its two chords AB and CD such that AB is not parallel to CD. Draw the perpendicular bisector of AB and CD. At what point do they intersect?

Solution: (i) Draw a circle with centre O

(ii) Draw chords AB and CD such that AB is not parallel to CD.



Q5 Draw a line segment of length 10 cm and bisect it. Further bisect one of the equal parts and measure its length.

Solution: Draw a line segment AB of length 10 cm and draw QP its perpendicular bisector which intersect AB at point C.

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Now $AC = BC$

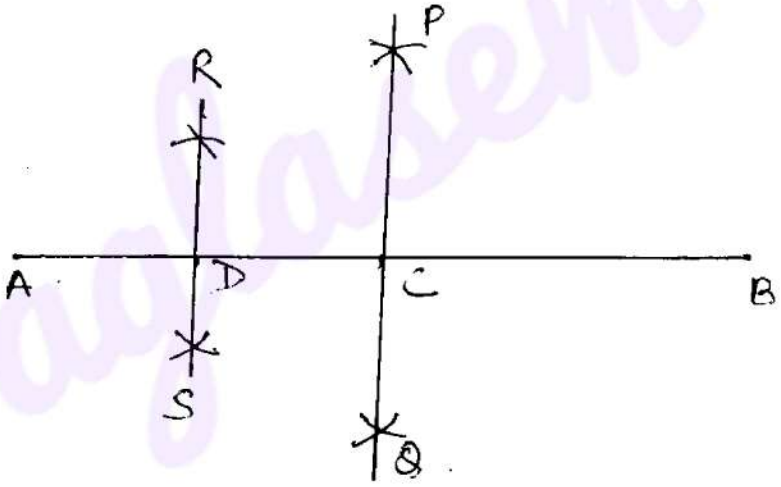
further again draw perpendicular bisector RS of AC which intersect AC at D such that $AD = DC$

$\because AD = \frac{1}{2} AC$

also $AC = \frac{1}{2} BC$

$\therefore AD = \frac{1}{4} AC$

also By Measuring $AD = 2.5$ cm.



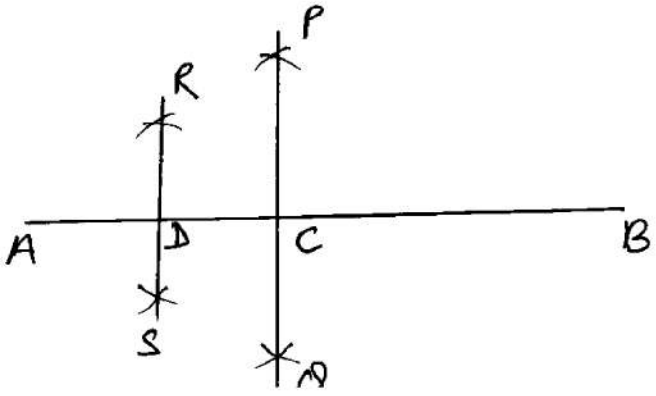
Q6 Draw a line segment AB and bisect it. Bisect one of the equal parts to obtain a line segment of length $\frac{1}{2}(AB)$

Solution:

here $AC = \frac{1}{2} AB$

$AD = \frac{1}{2} AC$

$\Rightarrow AD = DC = \frac{1}{4} AB$



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Q7 Draw a line segment AB and by ruler and compasses, obtain a line segment of length $\frac{3}{4}$ (AB).

Solution: (i) Draw a line AB.

(ii) Draw bisector of it. let it cuts AB at point C

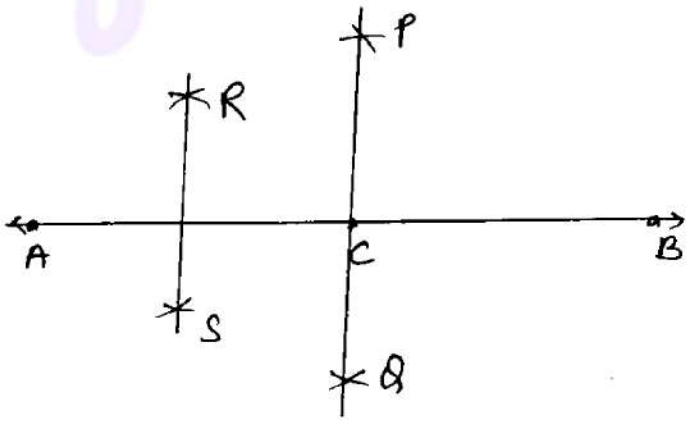
(iii) Now, again draw bisector of AC which intersects AC at D.

we know that, $AD = \frac{1}{4} AB = DC$

also $CB = \frac{1}{2} AB$

so $BD = DC + BC$

$= \frac{1}{4} AB + \frac{1}{2} AB = \frac{1+2}{4} AB = \frac{3}{4} AB$



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