

Question 1.

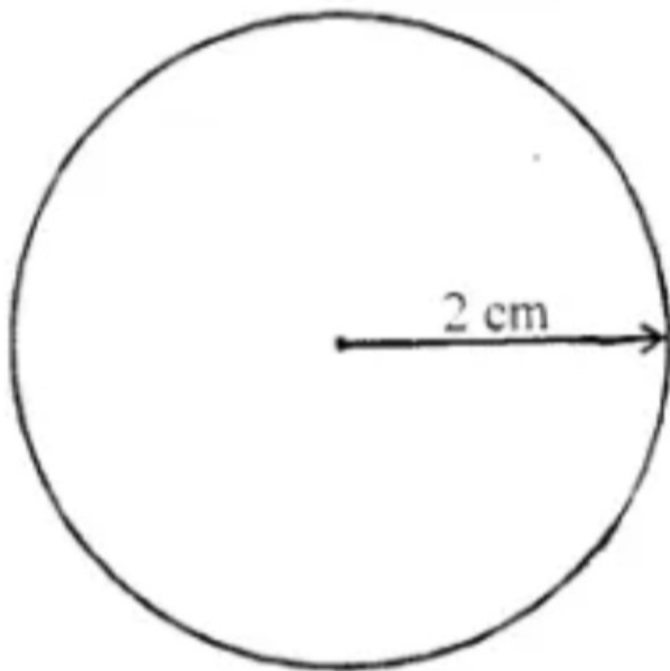
Construct a circle of radius:

- (i) 2 cm
- (ii) 3.5 cm

Solution:

- (a) 2 cm

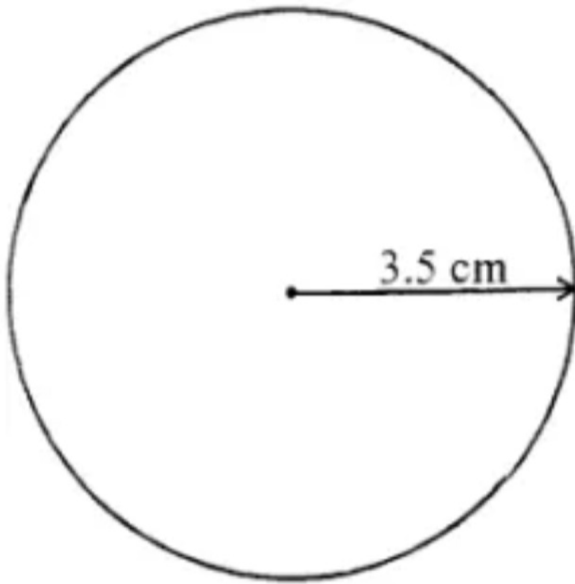
Steps of construction :



- (i) Open the compasses for the required radius 2 cm, by putting the pointer on 0 and opening the pencil up to 2 cm
- (ii) Draw a point with a sharp pencil and marks it as Q in the centre.
- (iii) Place the pointer of the compasses where the centre has been marked.
- (iv) Turn the compasses slowly to draw the circle.

(b) 3.5 cm

Steps of construction :



(i) Open the compasses for the required radius 3.5cm putting the pointer on 0 and opening the pencil up to 3.5 cm

(ii) Draw a Point with a sharp Pencil and mark it as O in the centre.

(iii) Place the pointer of the compasses where the centre has been marked.

(iv) Turn the compasses slowly to draw the circle.

Question 2.

With the same centre O, draw two circles of radii 2.6 cm and 4.1 cm.

Solution:

Steps of construction :

(a) For a circle of radius 4.1 cm

(i) Open the compasses for the required radius 4.1 cm, by putting the pointer on 0 and opening the pencil up to 4.1 cm.

(ii) Place the pointer of the compasses at O.

(iii) Turn the compasses slowly to draw the circle.

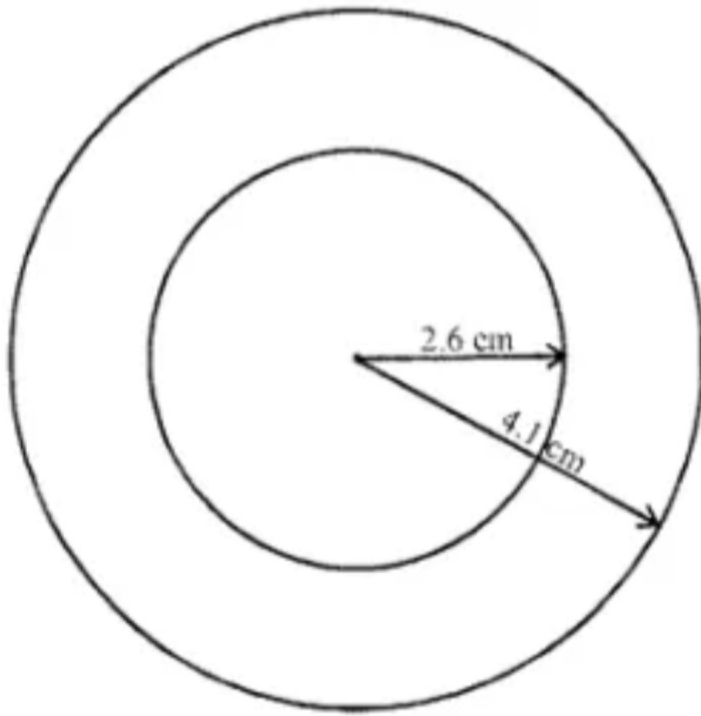
(b) For a circle of radius of 2.6 cm

(i) Open the compasses for the required radius 2.6 cm,

by putting the pointer on 0 and opening the pencil up to 2.6 cm.

(ii) Place the pointer of the compasses at O.

(iii) Turn the compasses slowly to draw the circle.



Question 3.

Draw any circle and mark points A, B and C such that

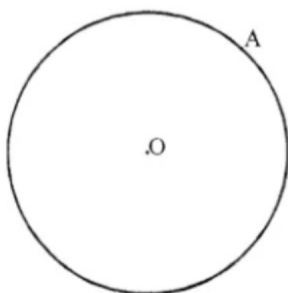
(i) A is on the circle.

(ii) B is in the interior of the circle.

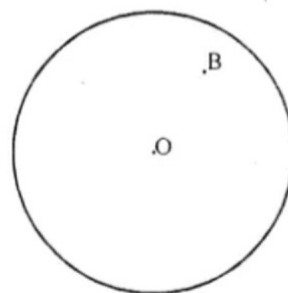
(iii) C is in the exterior of the circle.

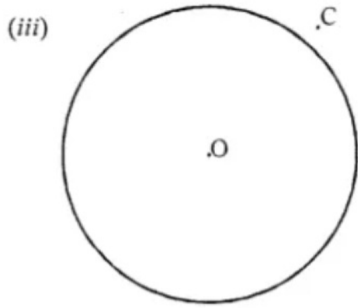
Solution:

(i)



(ii)



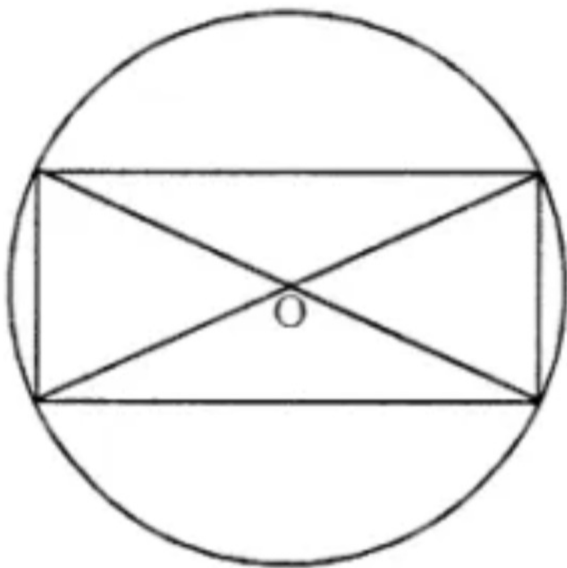


Question 4.

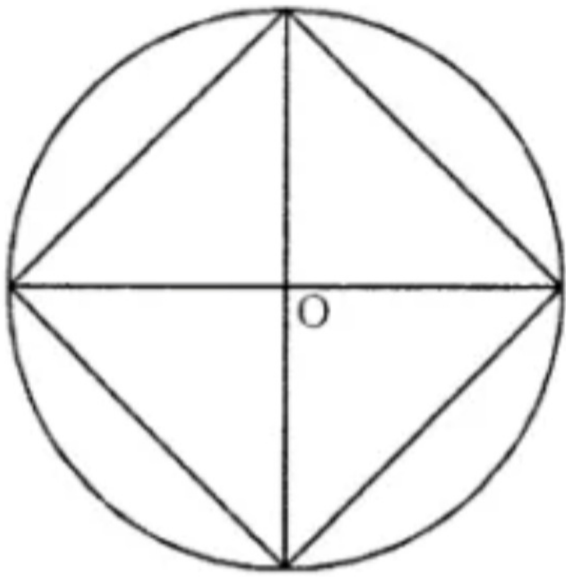
Draw a circle and any two of its (non-perpendicular) diameters. If you join the ends of these diameters, what is the figure obtained? What figure is obtained if the diameters are perpendicular to each other? How do you check your answer?

Solution:

(i) On joining the ends of any two diameters of the circle,
the figure obtained is a rectangle.



(ii) On joining the ends of any two diameters of the circle,
perpendicular to each other, the figure obtained is a square.

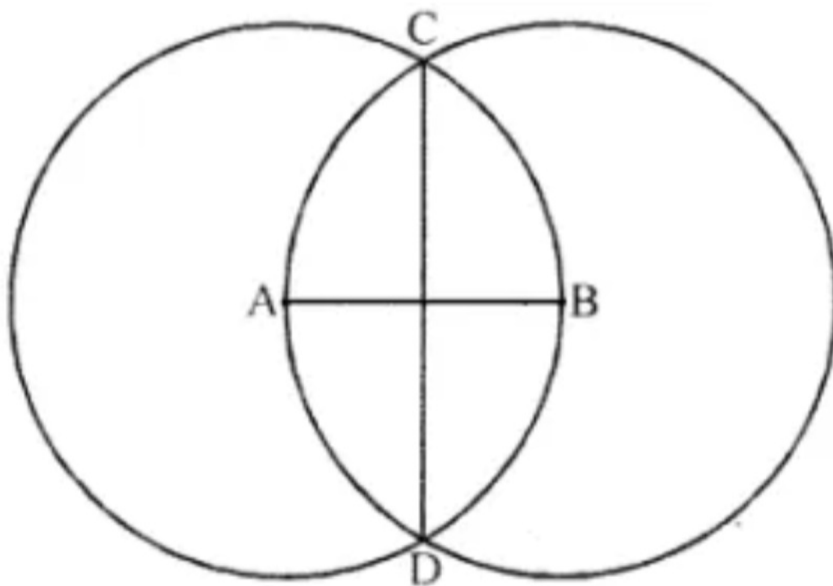


To check the answer,
we measured the sides and angles of the figure
obtained.

Question 5.

Let A, B be the centres of two circles of equal radii;
draw them so that each one of them passes through
the centre of the other. Let them intersect at C and D.
Examine whether \overline{AB} and \overline{CD} are at right angles.

Solution:



Yes! \overline{AB} and \overline{CD} are at right angles.

Question 6.

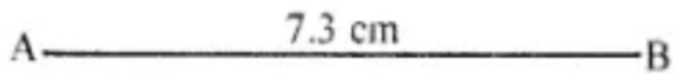
Construct a line segment of length of 6.3 cm using ruler and compass.

Solution:

Using ruler, we mark two points A and B which are 7.3 cm apart.

Join A and B and get AB.

\overline{AB} is a line segment of length 7.3 cm



Question 7.

Construct \overline{AB} of length 8.3 cm. From this cut off \overline{AC} of length 5.6 cm. Measure the length of BC . .

Solution:

Steps of construction :

(i) Draw a line l. Mark a point A on line l.

(ii) Place the compass pointer on the zero mark of the ruler.

Open it to place the pencil point upto the 8.3 cm mark.

(iii) Without changing the opening of the compass, place the pointer on A and swing an arc to cut l at B.

(iv) \overline{AB} is a line segment of required of length 8.3 cm.

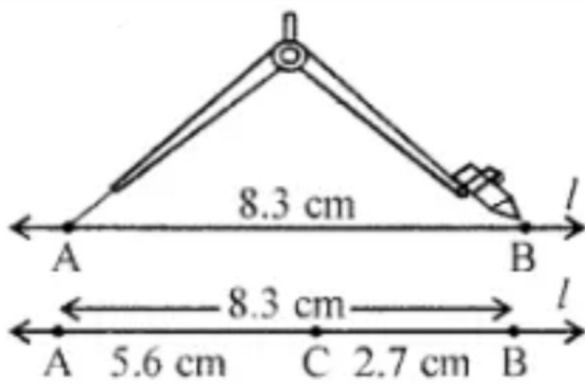
(v) Place the compass pointer on the zero mark of the ruler.

Open it to place the pencil point upto 5.6 cm mark.

(vi) Withtout changing the opening of the compass, place the pointer on A and swing ana rc to cut l at C.

(vii) \overline{AC} is a line segment of length 5.6 cm.

On measurement, $\overline{BC} = 2.7$ cm.



Question 8.

Draw any line segment \overline{PQ} . Without measure \overline{PQ} , construct a copy of \overline{PQ} .

Solution:

- (i) Given \overline{PQ} whose length is not known.
- (ii) Fix the compass pointer on P and the pencil end on Q.

The opening of the instrument now gives the length of \overline{PQ} .

- (iii) Draw any line l . Choose a point A on l .

Without changing the compass setting, place the pointer on A.

- (iv) Swing an arc that cuts l at a point, say, B. Now AB is a copy of \overline{PQ} .

Question 9.

Given some line segment \overline{AB} , whose length you do not know, construct \overline{PQ} such that the length of \overline{PQ} is twice that of \overline{AB} .

Solution:

- (i) Given \overline{AB} whose length is not known.
- (ii) Fix the compass pointer on A and the pencil end on B.

The opening of the instrument now gives the length of AB.

(iii) Draw any line l . Choose a point P on l .

Without changing the compass setting, place the pointer on P.

(iv) Strike an arc that cuts l at a point, say, X.

(v) Now fix the compass pointer on X.

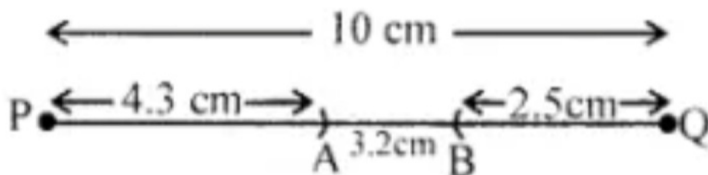
Strike an arc away from P that cuts l at a point, say, Q.

Now, the length of \overline{PQ} is twice that of AB.

Question 10.

Take a line segment \overline{PQ} of length 10 cm. From \overline{PQ} , cut off \overline{PA} of length 4.3 cm and \overline{BQ} of length 2.5 cm. Measure the length of segment \overline{AB} .

Solution:



\therefore Length of \overline{AB} is 3.2 cm.

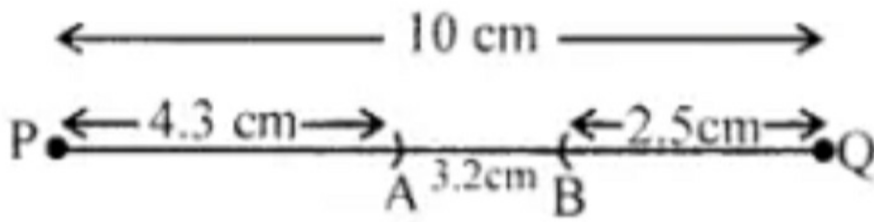
Question 11.

Given two line segments \overline{AB} and \overline{CD} of length 7.5 cm and 4.6 respectively. Construct line segments.

(i) \overline{PQ} of length equal to the sum of the lengths of \overline{AB} and \overline{CD} .

(ii) \overline{XY} of length equal to the difference of the lengths of \overline{AB} and \overline{CD} . Verify these lengths by measurements.

Solution:



\therefore Length of \overline{AB} is 3.2 cm .

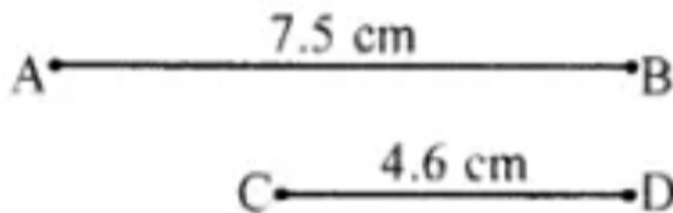
Question 11.

Given two line segments \overline{AB} and \overline{CD} of length 7.5 cm and 4.6 respectively. Construct line segments.

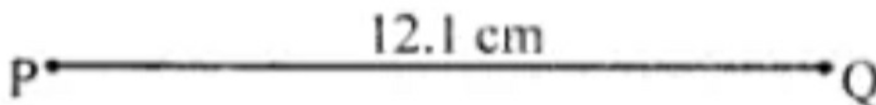
(i) \overrightarrow{PQ} of length equal to the sum of the lengths of \overline{AB} and \overline{CD} .

(ii) \overline{XY} of length equal to the difference of the lengths of \overline{AB} and \overline{CD} . Verify these lengths by measurements.

Solution:



(i) $\overrightarrow{PQ} = 12.1\text{ cm}$



(ii) $\overline{XY} = \overline{AB} - \overline{CD} = 7.5\text{ cm} - 4.6\text{ cm} = 2.9\text{ cm}$