Circle

Exercise 14.1

Question: 1

Explain the following:

(i) Circle

(ii) Radius

(iii) Centre

(iv) Diameter

(v) Chord

(vi) Interior of a circle

Solution:

(i) A circle is a set of all those points in a plane, whose distance from a fixed point remains constant.

(ii) Radius of a circle is a line segment with one end at its centre and the other end on the circle. (It is the constant distance between all the points on the circle and its centre.)

(iii) The centre of a circle is that fixed point from which all points remain at a constant distance.

(iv) Diameter of a circle is a line segment passing through the centre of a circle, and having its end points on the circle.

(v) A chord of a circle is a line segment with its end points lying on the circle.

(vi) Interior of a circle is a set of all those points which lie inside the circle.

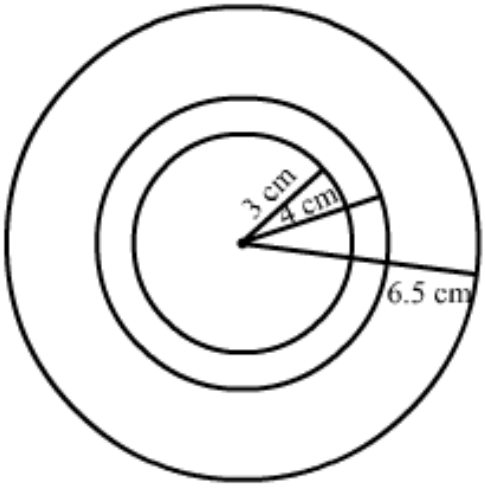
Question: 2

Take a point on your notebook and draw circle of radii 4 cm, 3 cm and 6.5 cm, each having the same centre 0.

Solution:

The given figure shows circles of radii 4 cm, 3 cm and 6.5 cm, respectively.

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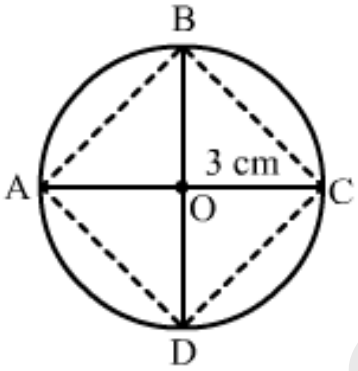


Question: 3

Draw a circle with centre o and any radius. Draw AC and BC two perpendicular diameters of the circle. Join AB, BC, CD and DA.

Solution:

The figure is shown below:



Question: 4

Draw a circle with centre 0 and radius 6 cm. Mark points P, Q, R such that

(i) P lies on the circle,

(ii) Q lies in the interior of the circle, and

(ii) R lies in the exterior of the circle,

Rewrite each of the following statements using the correct symbol (=, < or >):

(i) OO....5 cm

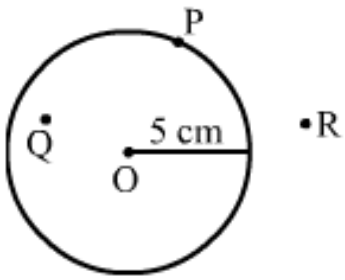
(ii) OR...5 cm

(iii) OR ....5 cm

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Solution:

The given figure shows the points P, Q and R such that



(i) Plies on the circle.

(ii) Q lies in the interior of the circle.

(iii) R lies on the exterior of the circle.

correct symbol

(i) OQ < 5 cm

(ii) OP = 5 cm

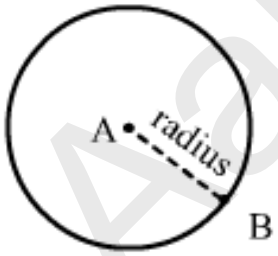
(iii) OR > 5 cm

Question: 5

Take two points A and B on the page of your note book. Draw a circle with centre A which passes through B.

Solution:

The figure is shown below:



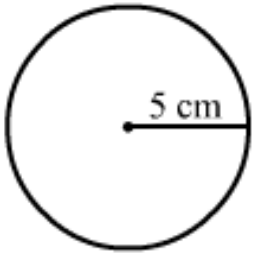
Question: 6

Draw a semi-circle with centre O and radius 5 cm. Is the diameter that determines the semi-circle, a part of the semi-circle?

Solution:

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The semi -circle with centre O and radius 5 cm is shown below:



The end point of a diameter of a circle divides it into two equal parts, and each part is called a semi-circle. So, it is not the diameter, but end points of the diameter that determines the semi-circle or a part of the semi-circle.

Question: 7

The diameter of a circle is 14 cm, find its radius.

Solution:

The radius of a circle is half of its diameter. Therefore, the radius = diameter/2

Radius = 14/2 = 7 cm

Question: 8

Given a circle with centre O and radius 2.5 cm, what is the length of the longest chord of the circle.

Solution:

The diameter of a circle is its longest chord. The diameter of a circle is twice of its radius. Length of the longest chord is: 2 x 2.5 = 5 cm

Question: 9

Fill in the blanks:

(i) The diameter of a circle is ….. times its radius.

(ii) The diameter of a circle is the ….. chord of the cirlce.

(iii)The diameter of a circle pass through ……..

(iv) A chord of a circle is a line segment with its end points on the.....

(v) If join any two points on a circle by a line segment, we obtain..... of the circle.

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(vi) A radius of a circle is a line segment with one end at ..... and the other end at…..

(vii) All radii of a circle are……

(viii) The diameters of a circle are ……

(ix) The total number of diameters of a circle is …….

(x) Every point on a circle is ……. from its centre.

(xi) A chord of a circle contains exactly ……. points of the circle.

(xii) A diameter is the longest …….

(xiii) Concentric circles are circles having …….

Solution:

(i) two

(ii) longest

(iii) The centre of the circle

(iv) circle

(v) chord

(vi) the centre, on the circle

(vii) equal

(viii) concurrent

(ix) infinite

(x) equidistant

(xi) two

(xii) chord

(xiii) the same centre point

Question: 10

In each of the following, state if the statement is true (T) of false (F);

(i) Every circle has a centre.

(ii) The centre of a circle is a point of the circle.

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(iii) Any two radii of a circle make up a diameter.

(iv) Every chord of a circle is parallel to some diameter of the circle.

(v) A circle is symmetric about each of its diameters.

(vi) The diameter is twice the radius.

(vii) A radius is a chord of the circle.

(viii) Concentric circles have the same radii.

(ix) The nearer a chord to the centre of a circle, the longer is its length.

Solution:

(i) T

(ii) F

(iii) F

(iv) F

(v) T

(vi) T

(vii) F

(viii) F

(ix) T

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