

# Niscort Fr. Agnel School

Self-Learning Worksheet

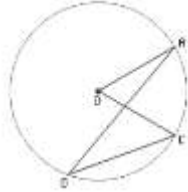
Subject-Mathematics

Class- IX

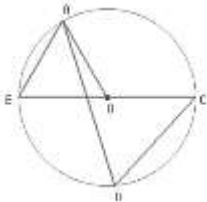
Chapter Name- Circles

(1) The bisectors of opposite angles of a cyclic quadrilateral ABCD intersect the circle circumscribing it at the points P and Q. If radius of the circle is 10 cm, find the distance between points P and Q.

(2) If O is center of the circle and  $\angle AOC = 60^\circ$ , the value of  $\angle ABC$  is:



(3) If BC is a diameter of the circle and  $\angle BAO = 60^\circ$ . Then find the value of  $\angle ADC$ .



(4) Two circles of radii 13 cm and 12 cm intersect at two points and the distance between their centres is 5 cm. Find the length of the common chord.

(5) Two circles with radii of 3 and 9 are drawn with the same centre. The smaller inner circle is painted black, and the part outside the smaller circle and inside the larger circle is painted blue. What is the ratio of the areas painted blue to the area painted black?

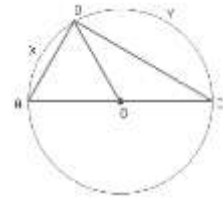
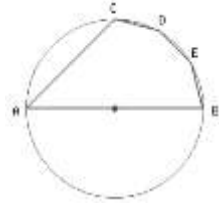
(6) The Ferris Wheel at the school fair has radius of 8 metres. It revolves at the rate of one revolution per 1 minute. How many seconds does it take a rider to travel from the bottom of the wheel to a point 4 vertical metres above the bottom?

(7) Two chords AB and AC of a circle subtends angles equal to  $120^\circ$  and  $80^\circ$ , respectively at the centre. Find  $\angle BAC$ , if AB and AC lie on the opposite sides of the centre.

(8) ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and  $\angle ADC = 155^\circ$ , then find the value of  $\angle BAC$ .

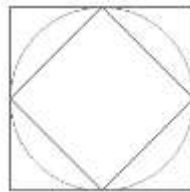
(9) A chord of a circle is equal to its radius. Find the angle subtended by this chord at a point in the major segment.

(10) If AB is a diameter of the circle and C, D, E are any three points on the semi-circle. Find the value of  $\angle ACD + \angle BED$ .



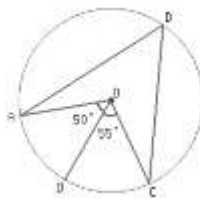
(11) AC is a diameter of the circle and arc AXB = 1/2 of arc BYC. Find  $\angle BOA$ .

(12) Given a circle, a circumscribed square is one that completely encloses the circle, and an inscribed square is one that is completely enclosed by the circle, as shown below:

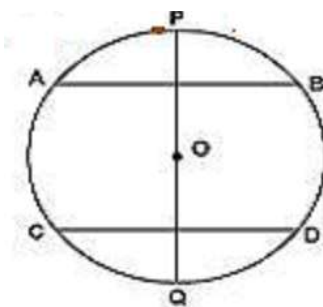


If the difference in the areas of the two squares is 28 sq. m., then what is the area of the circle?  
(Assume  $\pi = 22/7$ )

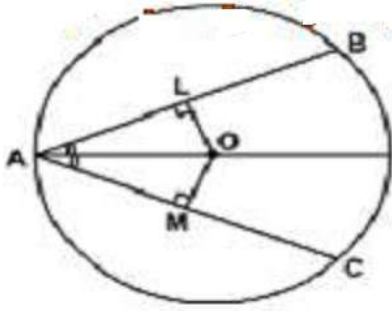
(13) If O is centre of the circle, find angle  $\angle ADC$ .



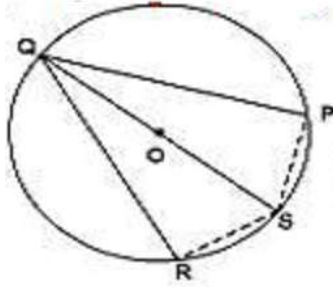
(14) In the given figure, if a diameter of a circle bisects each of the two chords of the circle, prove that the chords are parallel.



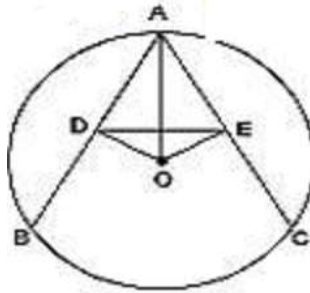
(15) In the given figure, if two chords of a circle are equally inclined to the diameter through their point of intersection, prove that the chords are equal.



(16) In the given figure, PQ and RQ are two chords equidistant from the centre. Prove that the diameter passing through Q bisects  $\angle PQR$  and  $\angle PSR$ .



(17) In the given fig, AB and AC are two equal chords of a circle whose centre is O. If  $OD \parallel AB$  and  $OE \parallel AC$ . prove that triangle ADE is an isosceles triangle.



**Niscort Fr. Agnel School**  
**Self-Learning Worksheet**  
**Subject- Mathematics**  
**Class – IX**  
**Chapter- Circles**

1. Construct a right triangle whose base is 12cm and sum of its hypotenuse and other side is 18 cm.
2. Construct an angle bisector of an angle of  $60^\circ$ .
3. Construct a perpendicular bisector of line segment AB of length 7cm.
4. Construct a triangle ABC in which  $AB = 5\text{ cm}$ ,  $BC = 7\text{ cm}$ ,  $\angle B = 75^\circ$ .
5. Construct a triangle ABC in which  $BC = 6\text{ cm}$ ,  $\angle B = 60^\circ$  and  $\angle C = 55^\circ$ .
6. Construct a triangle whose sides are 4.6 cm, 3.0 cm and 6.1 cm.
7. Construct a triangle ABC in which  $BC = 6\text{ cm}$ ,  $\angle B = 60^\circ$  and  $AB - AC = 3.5\text{ cm}$ .
8. Draw an angle of  $85^\circ$  with the help of a protractor and bisect it.
9. Construct a triangle whose sides are 4.6 cm, 3.0 cm and 6.1 cm.
10. Construct a triangle ABC in which  $BC = 6\text{ cm}$ ,  $\angle B = 60^\circ$  and  $AB - AC = 3.5\text{ cm}$ .
11. Draw an angle of  $85^\circ$  with the help of a protractor and bisect it.  
Construct a right triangle whose base is 12cm and sum of its hypotenuse and other side is 18 cm.
12. Construct a rectangle whose adjacent sides are of lengths 6 cm and 4.5 cm and one of its adjacent angle is  $75^\circ$ .
13. A right triangle when one side is 3.5 cm and sum of other sides and the hypotenuse is 5.5 cm.
14. Construct a triangle ABC in which,  $\angle B = 30^\circ$ ,  $\angle C = 30^\circ$  and its perimeter is 12 cm.
15. Construct a rhombus whose side is of length 4 cm and one of its angles is  $45^\circ$ .