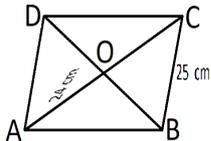
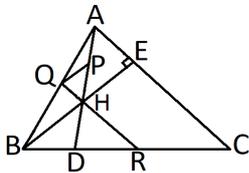


**CHAPTERS – TRAIANGLES, QUADRILATERALS AND CIRCLES**

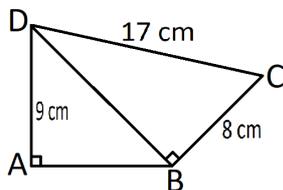
- 1 In the given figure, ABCD is a rhombus in which  $BC = 25\text{ cm}$  and  $AO = 24\text{ cm}$ . What will be the sum of the length of the diagonals?



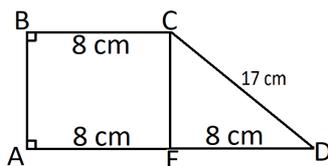
- 2 In the given figure,  $BE \perp AC$ . AD is any line from A to BC intersecting BE at H. P, Q and R are mid-points of AH, AB and BC respectively, then what will be the value of  $\angle PQR$ .



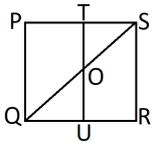
- 3 ABCD is a parallelogram. The diagonals AC and BD intersect at a point O. E, F, G and H are the mid-points of AO, DO, CO and BO respectively. What will be the ratio of  $(EF + FG + GH + HE)$  to  $(AD + DC + CB + BA)$  ?
- 4 ABCD is a rectangle inscribed in a quadrant of a circle of radius 10 cm. If AD is  $2\sqrt{5}$  cm, then what will be the area of the rectangle?
- 5 In  $\triangle ABC$ ,  $AB = 5\text{ cm}$ ,  $BC = 8\text{ cm}$  and  $CA = 7\text{ cm}$ . If D and E are respectively the mid-points of AB and BC, then what will be the length of DE?
- 6 ABCD is a square. If P, Q, R and S are points on the sides AB, BC, CD and DA respectively, such that  $AP = BQ = CR = DS$ , then what will be the value of  $\angle SPQ$ .
- 7 What will be the area of a quadrilateral ABCD?



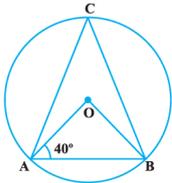
- 8 What will be the area of quadrilateral ABCD?



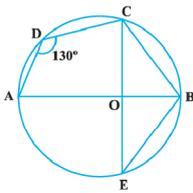
- 10 In the given figure, PQRS is a square and T & U are respectively the mid-points of PS and QR. What will be the area of  $\Delta OTS$ , if  $PQ = 8$  cm?



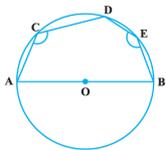
- 11 In figure, if  $\angle OAB = 40^\circ$ , then  $\angle ACB$  is equal to :



- 12 ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and  $\angle ADC = 140^\circ$ , then find the value of  $\angle BAC$  .
- 13 A chord of a circle is equal to its radius. What will be the measure of angle subtended by this chord at a point in major segment ?
- 14 In figure,  $\angle ADC = 130^\circ$  and chord  $BC =$  chord  $BE$ . What will be the measure of  $\angle CBE$ ?



- 15 In figure, AOB is a diameter of the circle and C, D, E are any three points on the semi-circle. What will be the value of  $\angle ACD + \angle BED$ ?



- 16 In  $\Delta ABC$  side AB is produced to D such that  $BD = BC$ . If  $\angle B = 60^\circ$  and  $\angle A = 70^\circ$ , then prove that (i)  $AD > CD$   
(ii)  $AD > AC$ .
- 17 In  $\Delta ABC$ ,  $AB = AC$  and  $\angle A = 36^\circ$ . If the internal bisector of  $\angle C$  meets AB at D, then prove that  $AD = BC$ .
- 18 In  $\Delta ABC$ ,  $AB = AC$  and  $\angle B = \frac{2}{5}$  of  $\angle A$ . Find the measures of  $\angle A$ .
- 19 Prove that, angles opposite to equal sides of a triangle are equal.
- 20 ABCD is a square. If X and Y are points on the sides AD and BC, such that  $AY = BX$ , then prove that  $\angle XAY = \angle YBX$ .
- 21 In an isosceles triangle, prove that the altitude from the vertex bisects the base.
- 22 If the altitudes AD, BE and CF of  $\Delta ABC$  are equal, then prove that  $\Delta ABC$  is an equilateral triangle.

- 23 Prove that any two sides of a triangle are together greater than twice the median drawn to the third side.
- 24 Prove that the perimeter of a triangle is greater than the sum of its three medians.
- 25 In a  $\Delta ABC$ , the sides  $AB$  and  $AC$  are equal and the base  $BC$  is produced to any point  $D$ . From  $D$ ,  $DE$  is drawn perpendicular to  $BA$  produced and  $DF$  perpendicular to  $AC$  produced. Prove that  $BD$  bisects  $\angle EDF$ .
- 26  $O$  is the circumcentre of  $\Delta ABC$  and  $D$  is the mid point of the base  $BC$ . Prove that  $\angle BOD = \angle A$ .
- 27 If a pair of opposite sides of a cyclic quadrilateral are equal, prove that its diagonals are also equal.
- 28 Two circles with centre  $O$  and  $O'$  intersect at two points  $A$  and  $B$ . A line  $PQ$  is drawn parallel to  $OO'$  through  $A$  (or  $B$ ) intersecting the circles at  $P$  and  $Q$ . Prove that  $PQ = 2 OO'$ .
- 29  $AB$  and  $AC$  are two chords of a circle of radius  $r$  such that  $AB = 2AC$ . If  $p$  and  $q$  are the distances of  $AB$  and  $AC$  from the centre, then prove that  $4q^2 = p^2 + 3r^2$ .
- 30 If  $PQ = 41$  cm is a diameter of the circle, while points  $R$  and  $S$  lie on the circumference. If  $PR = 40$  cm and  $QS = 9$  cm, then find the area of quadrilateral  $PSQR$ .