

# DWARKA INTERNATIONAL SCHOOL

## SUBJECT – MATHEMATICS

### CLASS – IX<sup>th</sup>

**NOTE: COMPLETE IN THE CLASS – WORK NOTEBOOK.**

#### **CH. – 8- QUADRILATERALS**

Q.1) Prove that opposite angles of a parallelogram are equal.

Q.2) The diagonals of a parallelogram ABCD intersect at O. A line through O intersects AB at X and DC at Y. Prove that  $OX = OY$ .

Q.3) The angles of a quadrilateral are in the ratio 3: 5: 7:9. Find the angles of the quadrilateral.

Q.4) ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that:

(i)  $\triangle APB \cong \triangle CQD$

(ii)  $AP = CQ$

Q.5) ABCD is a rhombus in which  $AC = 16$  cm and  $BC = 10$  cm. Find the length of the diagonal BD.

Q.6) Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.

Q.7) Prove that the diagonals of a square are equal and perpendicular to each other.

Q.8) Prove that a diagonal of a parallelogram divides it into two congruent triangles.

#### **ASSERTION – REASON QUESTIONS**

In the questions, statement of Assertion(A) is followed by a statement of Reason(R). Choose the correct option:

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

Q.9) Assertion(A) : In a parallelogram ABCD,  $\triangle ABC \cong \triangle CDA$ .

Reason (R) : A diagonal of a parallelogram divides it into two congruent triangles.

Q.10) Assertion (A) : In a square ABCD,  $AC = (5x - 7)$  cm and  $OB = (2x + 3)$  cm, then  $x = 13$

Reason (R) : The diagonals of a square are equal and bisect at right – angles.

#### **CH. – 9 - CIRCLES**

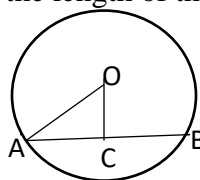
Q.1) If a circle is divided into five equal parts, find the angle subtended by each arc at the centre.

Q.2) AB and CD are two parallel chords of a circle such that  $AB = 10$  cm and  $CD = 24$  cm. If two Chords are on the opposite sides of the centre and the distance between them is 17 cm, find The radius of the circle.

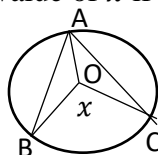
Q.3) A circular park of radius 20 m is situated in a colony. Three boys Aman, Raman and Sahil are Sitting at equal distance on its boundary each having a toy telephone in his hands to talk each other. Find the length of the string of each phone.

Q.4) Prove that the angle subtended by an arc at the centre is double the angle subtended by it at Any point on the remaining part of the circle.

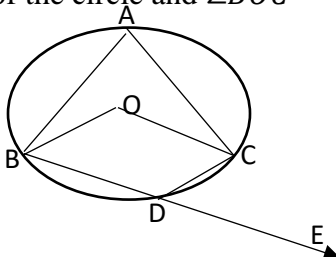
Q.5) In the given figure, OC is drawn perpendicular from the centre O of the circle to the chord AB. If OB= 5 cm and OC=3 cm, then find the length of the chord AB.



Q.6) Find the value of  $x$  if  $\angle ABO = 20^\circ$  and  $\angle ACO = 30^\circ$  from the given figure.



Q.7) In the given figure, O is the centre of the circle and  $\angle BOC = 120^\circ$ , find  $\angle CDE$ .



## CH. – 7 – TRIANGLES

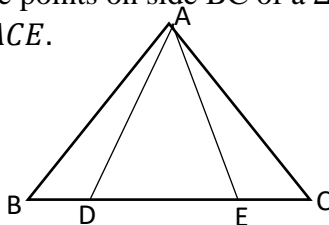
Q.1) In a right triangle, prove that the line segment joining the mid-point of the hypotenuse to the Opposite vertex is Half the hypotenuse.

Q.2) AD is an altitude of an isosceles triangle ABC in which  $AB=AC$ . Show that:

- (i) AD bisects BC (ii) AD bisects  $\angle A$ .

Q.3)  $\triangle ABC$  is an isosceles triangle in which  $AB = AC$ . Side BA is produced to point D such that  $AD=AB$ . Show that  $\angle BCD$  is a right – angle.

Q.4) In the given figure, D and E are the points on side BC of a  $\triangle ABC$  such that  $BD = CE$  and  $AD= AE$ . Show that  $\triangle ABD \cong \triangle ACE$ .



## CH. – 4 – LINEAR EQUATION IN TWO VARIABLES

Q.1) If the sum of twice of ordinate and abscissa of a point is 7. Express the statement in the form of a linear equation in two variables.

Q.2) Find any four different solutions of the equation :  $2x - 5y = 10$ .

Q.3) If the point ( 3 , 2 ) satisfies the equation :  $3y = ax + 5$ .

Q.4) If ( 2 , 3 ) and ( 4 , 0 ) are the solutions of an equation :  $px + qy = 1$ , find the value of  $p$  &  $q$ .