MATHEMATICS

Class – 9th | **Topic – Triangles**

1. In ΔXYZ, ∠X = 55° and ∠Y = 75°. Find ∠Z.

2. In the ΔXYZ, ∠Y = 5∠Z and ∠X= 3∠Z. Find the angles of the triangle.

3. Line segment AB is parallel to another line-segment CD. O is the mid-point of AD. Show that

   (i)   ΔAOB ≅ ΔDOC

    (ii) O is the also the mid-point of BC
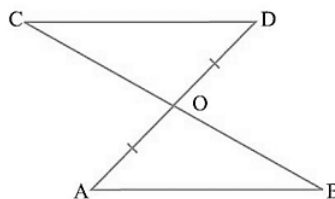
4. AD and BC are equal perpendiculars to a line segment AB. Show that CD bisects AB.
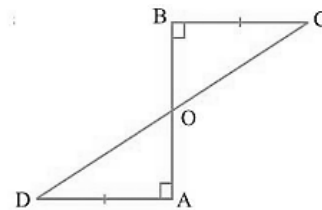
5. Line l is the bisector of an angle ∠A and B is any point on l. BP and BQ are perpendiculars from B to the arms of ∠A. Show that:

    (i)   ΔAPB ≅ ΔAQB

    (ii)   BP = BQ or B is equidistant from the arms of ∠A.
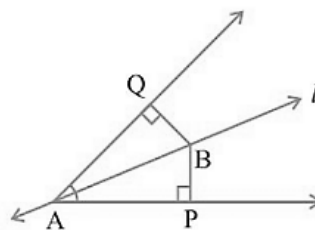
6. AB is a line segment and P is its mid-point. D and E are points on the same side of AB such that ∠BAD = ∠ABE and ∠EPA = ∠DPB. Show that

    (i)   ΔDAP ≅ ΔEBP

    (ii) AD = BE
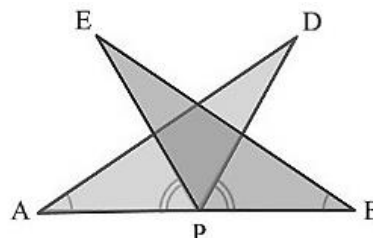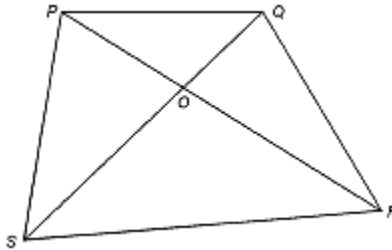
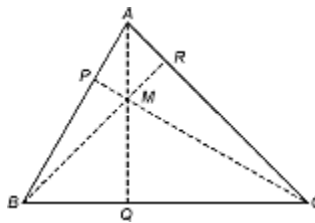7. In ΔPQR, PQ = QR = RP = 7 cm, then find the each angle of ΔPQR.
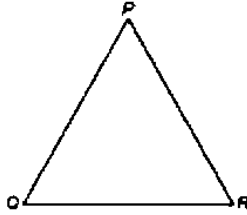
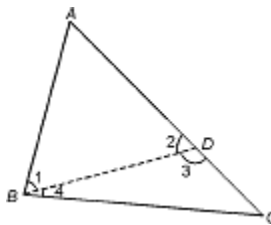8. In a quadrilateral PQRS, the diagonals PR and QS intersect each other at O. Show that
   (i) PQ + QR + RS + SP > PR + QS.
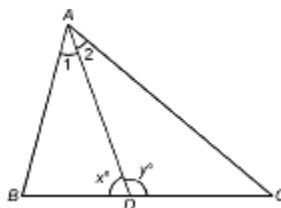   (ii) PQ + QR + RS + SP < 2 (PR + QS).

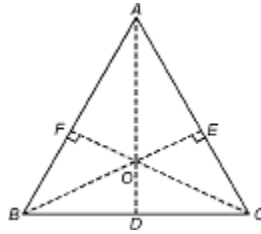9. Show that the sum of the three altitudes of a triangle is less than the sum of the three sides of the triangle.

10. Prove that the difference of any two sides of a triangle is less than the third side.

11. In ΔABC, AC > AB and AD is the bisector of ∠A show that y > x.

12. Prove that the medians of an equilateral triangle are equal.

Answer

1. $\angle Z = 50°$
2. $\angle X = 60°$, $\angle Y = 100°$ and $\angle Z = 20°$
7. $\angle P = \angle Q = \angle R = 60°$