Ch-7 Triangles

1. In $\triangle ABC$, AB = AC and the bisector of angles B and C intersect at point O. Prove that BO = CO and AO bisects ∠BAC.

2. Show that a median of a triangle divides it into two triangles of equal areas.

3. In a right angled triangle, one acute angle is double the other. Prove that the hypotenuse is double the smallest side.

4. Prove that angles opposite to equal sides of an isosceles triangle are equal.

5. A point O is taken inside an equilateral four sides figure ABCD such that its distances from the angular points D and B are equal. Show that AO and OC are in one and the same straight line.

6. ABCD is a quadrilateral in which AD = BC and ∠DAB = ∠CBA. Prove that $\triangle ABD \cong \triangle BAC$.
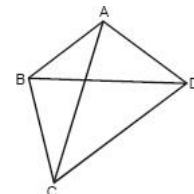
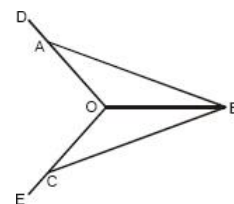7. In the given figure, triangles PQC and PRC are such that QC = PR and PQ = CR. Prove that ∠PCQ = ∠CPR.
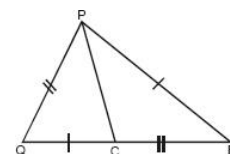
8. In the given figure, AB = AD, AC = AE and ∠BAD = ∠EAC, then prove that BC = DE.
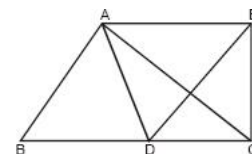

9. $\triangle PQR$ is given and the sides QP and RP have been produced to S and T such that PQ = PS and PR = PT. Prove that the segment QR || ST.

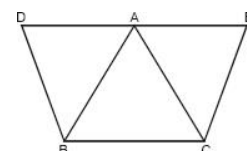10. In the given figure, AB = BC and ∠ABO = ∠CBO, then prove that ∠DAB = ∠ECB.

11. In the given figure, AD is the bisector of ∠BAC and ∠CPD = ∠BPD. Prove that $\triangle CAP \cong \triangle BAP$.
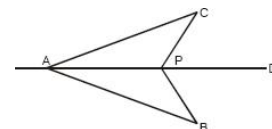
12. In the given figure, PS is median produced upto F and QE and RF are perpendiculars drawn from Q and R, prove that QE = RF.
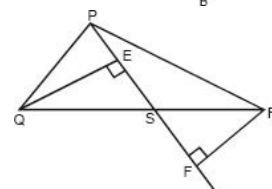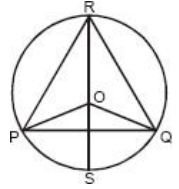

13. In the given figure, equilateral $\triangle ABD$ and $\triangle ACE$ are drawn on the sides of a $\triangle ABC$. Prove that CD = BE.
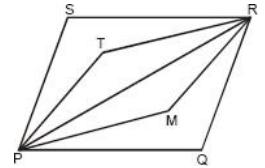

14. In given figure, RS is the diameter and PQ is the chord of a circle with centre O. Prove that –

a. ∠RPO = ∠OQR
b. ∠POQ = 2∠PRO

15. In the given figure, T and M are two points inside a parallelogram PQRS such that PT = MR and PT || MR. Then prove that –
    a. ∆PTR ≅ ∆RMP
    b. RT || PM and RT = RM
16. Prove that angles opposite to equal sides of an isosceles triangle are equal.
17. In a triangle ABC, E and F respectively are mid-points of equal sides AB and AC of ∆ABC. Show that BF = CE.
18. AD is an altitude of an isosceles ∆ABC in which AB = AC. Show that AD bisects BC.
19. D is a point on side BC of ∆ABC such that AD = AC. Show that AB > AD.
20. In ∆ABC, if BC = AB and ∠B = 80°, then find the measure of ∠A.
21. The angles of a triangle are in the ratio 2:3:4. Find the measure of the angles.
22. In ∆ABC, if ∠A = 80°, ∠B = 70°, then identify the longest and the shortest side of the triangle.
23. ABCD is a square. P is any point inside it such that, DPQR is another square. Prove that AP = CR.
24. In a ∆ABC, if ∠A = ∠B, then what is AB : BC?
25. Prove that any two sides of a triangle are together greater than twice the median drawn to the third side.