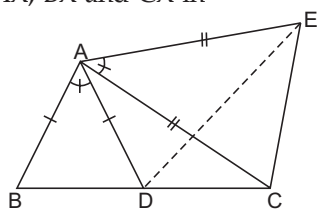
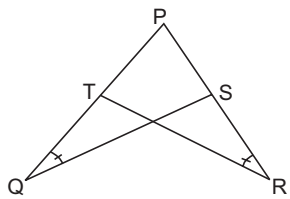
WORKSHEET 7

CHAPTER 7 – TRIANGLES

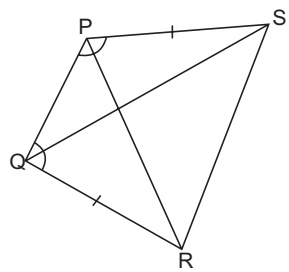
1. In an isosceles triangle, prove that the altitude from the vertex bisects the base.
2. Show that the sum of three altitudes of a triangle is less than the sum of the three sides of the triangle.
3. In ΔABC, ∠B = 35°, ∠C = 65° and the bisector of ∠BAC meets BC in X. Arrange AX, BX and CX in ascending order.
4. In the figure, AC = AE and AB = AD and∠BAD = ∠EAC. Prove that BC = DE.



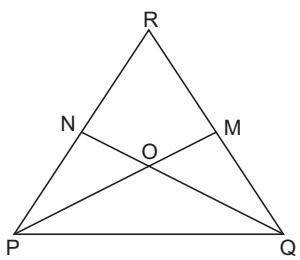
5. In the given figure, PQ = PR and ∠Q = ∠R. Prove that ΔPQS ≅ ΔPRT.



6. In the given figure, PS = QR and ∠SPQ = ∠RQP. Prove that:
   (*i*) ΔPQS ≅ ΔQPR
   (*ii*) PR = QS and ∠QPR = ∠PQS.



7. In the given figure, ∠QPR = ∠PQR and M and N are respectively on sides QR and PR of ΔPQR such that QM = PN. Prove that OP = OQ.



8. ΔABC and ΔDBC are two isosceles triangle on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that
   (*i*) ΔABD ≅ ΔACD
   (*ii*) ΔABP ≅ ΔACP
   (*iii*) AP bisects ∠A as well as ∠D
   (*iv*) AP is perpendicular bisector of BC.
9. The sides LM and LN of ΔLMN are extended to P and Q respectively. If $x > y$, show that LM > LN.
10. Find the measure of each exterior angle of an equilateral triangle.

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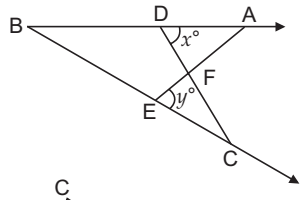
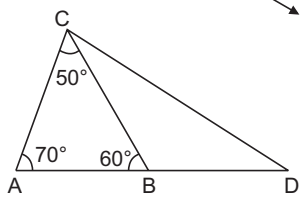
Class: IX ..... Date: .....

11. In the given figure, if $x = y$ and AB = CB, then prove that AE = CD.

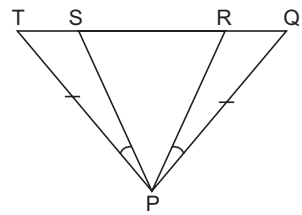


12. In ΔABC, side AB is produced to D such that BD = BC. If ∠B = 60° and ∠A = 70°, prove that
    (*i*) AD > CD
    (*ii*) AD > AC

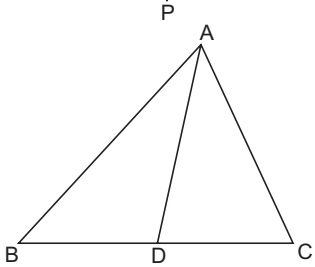


13. If O is a point within ΔABC, show that
    (*i*) AB + AC > OB + OC
    (*ii*) AB + BC + CA > OA + OB + OC
    (*iii*) $OA + OB + OC > \frac{1}{2}(AB + BC + CA)$

14. In the given figure, PQ = PT and ∠TPS = ∠QPR, prove that ΔPRS is isosceles.



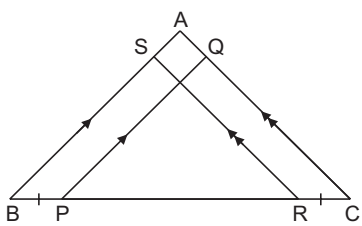
15. In ΔABC, if AB > AC, then show that AB > AD.



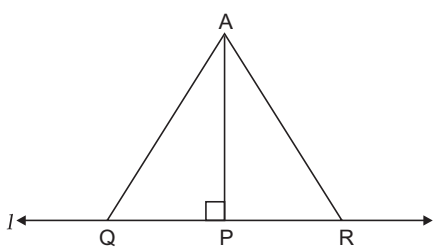
16. If the altitudes from two vertices of a triangle to the opposite sides are equal, prove that the triangle is isosceles.

17. PQRS is a quadrilateral in which PQ is its longest side and RS is its shortest side. Prove that ∠R > ∠P and ∠S > ∠Q.

18. In the given figure, BA ∥ PQ, CA ∥ RS and BP = RC. Prove that
    (*i*) BS = PQ
    (*ii*) RS = CQ



19. In the given figure, AP ⊥ *l* and PR > PQ. Show that AR > AQ.



20. In ΔABC, if ∠A = 36° and ∠B = 64°, name the longest and shortest sides of the triangle.

ANSWERS

WORKSHEET 7

3. BX > AX > CX

10. 120°

20. AB is longest and BC is shortest.