

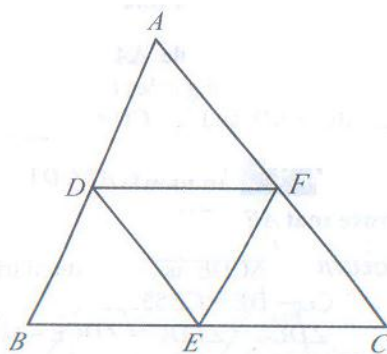
**Class: 9**

**Subject: Mathematics**

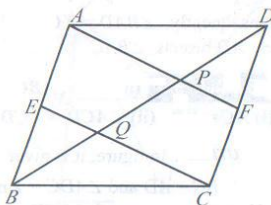
**Topic: Triangles**

**No. of Questions: 20**

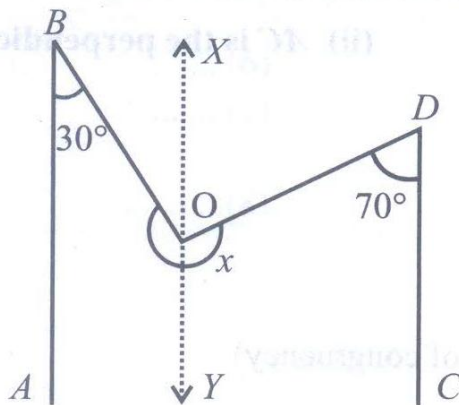
- Q1. If two sides of a triangle are unequal, then the angle opposite to the longer side is larger (or greater).
- Q2. In a triangle, the side opposite to the longer (greater) angle is longer.
- Q3. The sum of any two sides of a triangle is greater than its third side.
- Q4. If there are three or more parallel lines and the intercepts made by them on a transversal are equal, then the corresponding intercepts on any other transversal are also equal.
- Q5. In  $\triangle ABC$ , D, E and F are respectively the mid-points of sides AB, BC and CA. Show that  $\triangle ABC$  is divided into four congruent triangles by joining D, E and F.



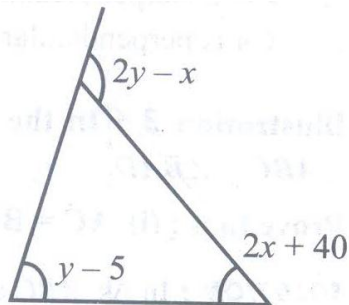
- Q6. ABCD is a parallelogram in which E and F are the mid-points of the sides AB and CD respectively. Prove that the segments CE and AF trisect the diagonal BD.



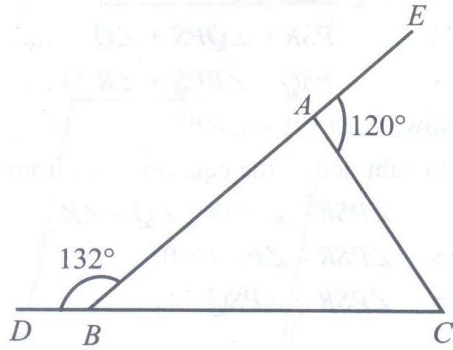
- Q7. The line segment joining the mid-points of any two sides of a triangle is parallel to the third side and equal of half of it.
- Q8. In the adjoining figure, ABC and BAD are two triangle on the same base AB such that  $BC = AD$   $\angle ABC = \angle BAD$ .  
Prove that:  
(i)  $AC = BD$   
(ii)  $\angle ACB = \angle BDA$   
(iii)  $CO = DO$
- Q9. In the given figure,  $AB \parallel CD$  and  $\angle ABO = 30^\circ$ ,  $\angle ODC = 70^\circ$ , find x.



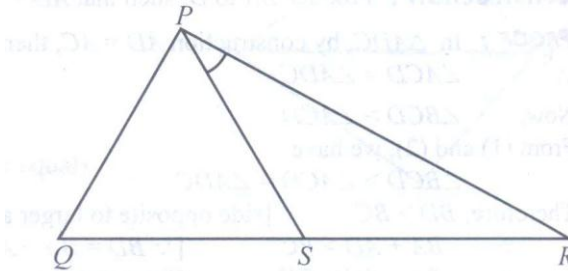
- Q10. In the given figure find y, if  $x = 5^\circ$



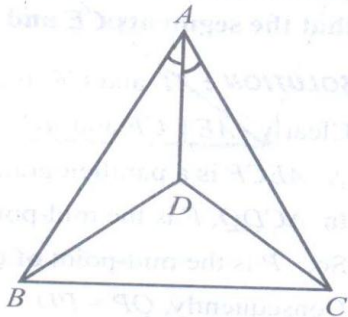
Q11. In figure,  $\angle DBA = 132^\circ$  and  $\angle EAC = 120^\circ$ . Show that  $AB > AC$



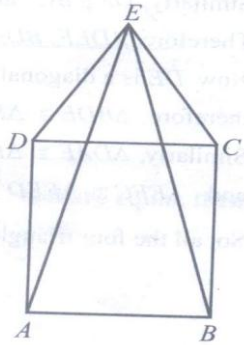
Q12. In the given figure,  $PR > PQ$  and PS bisect  $\angle QPR$ .  
Prove that:  $\angle PSR > \angle PSQ$ .



Q13. In figure,  $AB = AC$ . D is a point in the interior of  $\triangle ABC$  such that  $\angle DBC = \angle DCB$ . Prove that AD bisects  $\angle BAC$ .

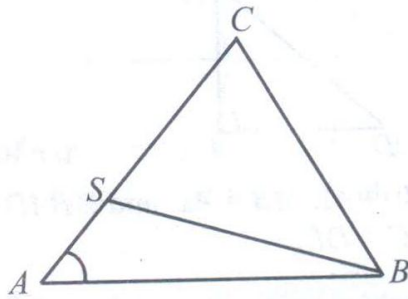


Q14. In figure, ABCD is a square and  $\triangle CDE$  is an equilateral triangle. Prove that  $AE = BE$ .

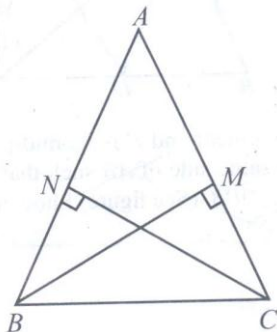


Q15. In an equilateral triangle ABC the mid-point of the side BC, CA and AB are D, E and F, respectively. Prove that  $\triangle DEF$  is an equilateral triangle.

Q16. In figure,  $AB = AC$  and S is any point on side AC. Prove that  $CS < BS$ .



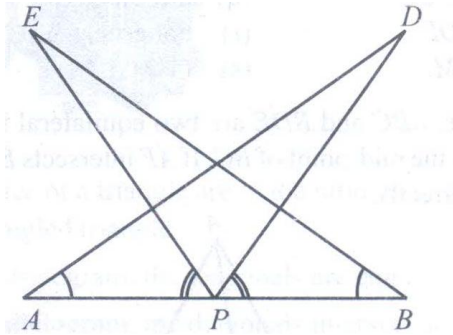
Q17. In the adjoining figure,  $AB = AC$ .  $BM \perp AC$  and  $CN \perp AB$ . Prove that  $BM = CN$



- Q18. AB is a line segment and P is its mid-point. D and E are points on the same side of AB such that  $\angle BAD = \angle ABE$  and  $\angle EPA = \angle DPB$ . (See figure)

Show that

- (i)  $\triangle DAP \cong \triangle EBP$   
(ii)  $AD = BE$



- Q19. Show that in a right angles triangle, the hypotenuse is the longest side.

- Q20. In figure, E is any point on medium AD of a  $\triangle ABC$ . Show that  $\text{ar}(\triangle ABE) = \text{ar}(\triangle ACE)$ .

