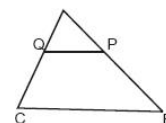
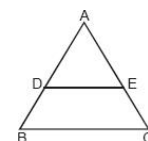


## Ch-6 Triangles

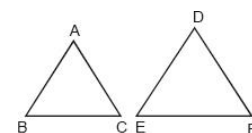
1. In the fig., P and Q are points on the sides AB and AC respectively of  $\triangle ABC$  such that  $AP = 3.5$  cm,  $PB = 7$  cm,  $AQ = 3$  cm and  $QC = 6$  cm. If  $PQ = 4.5$  cm, find  $BC$ .



2. In the fig.,  $PQ \parallel BC$  and  $AP : PB = 1 : 2$ . Find  $\frac{\text{Ar}(\triangle APQ)}{\text{Ar}(\triangle ABC)}$ .
3. The perimeter of two similar triangles  $ABC$  and  $LMN$  are 60 cm and 48 cm respectively. If  $LM = 8$  cm, then what is the length of  $AB$ ?
4. In  $\triangle ABC$  shown in figure,  $DE \parallel BC$ . If  $BC = 8$  cm,  $DE = 6$  cm and area of  $\triangle ADE = 45 \text{ cm}^2$ , what is the area of  $\triangle ABC$ ?



5. If the areas of two similar triangles are in ratio 25 : 64, write the ratio of their corresponding sides.
6. If one diagonal of a trapezium divides the other diagonal in the ratio 1 : 3. Prove that one of the parallel sides is three times the other.
7. In the given figure,  $\triangle ABC$  and  $\triangle DEF$  are similar,  $BC = 3$  cm,  $EF = 4$  cm and area of  $\triangle ABC = 54 \text{ cm}^2$ . Determine the area of  $\triangle DEF$ .



8. In the given figure,  $ABC$  is a triangle in which  $AB = AC$ ,  $D$  and  $E$  are points on the sides  $AB$  and  $AC$  respectively, such that  $AD = AE$ . Show that the points  $B, C, E$  and  $D$ , are concyclic.
9.  $ABC$  is a triangle.  $PQ$  is a line segment intersecting  $AB$  in  $P$  and  $AC$  in  $Q$  such that  $PQ \parallel BC$  and divides  $\triangle ABC$  into two parts equal in area. Find  $\frac{BP}{AB}$ .
10.  $ABC$  is a triangle in which  $AB = AC$  and  $D$  is any point in  $BC$ . Prove that :  $(AB)^2 - (AD)^2 = BD \times CD$ .
11.  $AD$  is the median of  $\triangle ABC$ ,  $O$  is any point on  $AD$ .  $BO$  and  $CO$  produced meet  $AC$  and  $AB$  in  $E$  and  $F$  respectively.  $AD$  is produced to  $X$  such that  $OD = DX$ . Prove that  $AO : AX = AF : AB$ .
12. In a triangle  $ABC$ ,  $P$  divides the sides  $AB$  such that  $AP : PB = 1 : 2$ ,  $Q$  is a point on  $AC$  such that  $PQ \parallel BC$ . Find the ratio of the areas of  $\triangle APQ$  and trapezium  $BPQC$ .
13. In  $\triangle LMN$ ,  $\angle L = 50^\circ$  and  $\angle N = 60^\circ$ . If  $\triangle LMN$  is similar to  $\triangle PQR$ , then find  $\angle Q$ .
14. If areas of two similar triangles are in the ratio 25 : 64, write the ratio of their corresponding sides.
15.  $D, E$  and  $F$  are mid points of sides  $BC, AC$  and  $AB$  respectively of triangle  $ABC$ . Find  $\frac{\text{ar}(\triangle DEF)}{\text{ar}(\triangle ABC)}$ .
16. If one diagonal of a trapezium divides the other diagonal in the ratio 1 : 2. Prove that one of the parallel sides is double the other.
17.  $ABC$  is a right triangle, right angled at  $A$ , and  $D$  is the mid-point of  $AB$ . Prove that  $BC^2 = CD^2 + 3BD^2$ .
18. If the diagonals of a quadrilateral divide each other proportionally, prove that it is a trapezium.
19. Triangle  $ABC$  is right angled at  $B$  and  $D$  is the mid-point of  $BC$ . Prove that  $AC^2 = 4AD^2 + 3AB^2$ .
20.  $E$  is a point on the side  $AD$  produced of a parallelogram  $ABCD$  and  $BE$  intersects  $CD$  at  $F$ . Show that  $\triangle ABC$  is similar to  $\triangle CFB$ .

21. Two sides and the perimeter of one triangle are respectively three times the corresponding sides and the perimeter of the other triangle. Are the two triangles similar?
22.  $\triangle ABC \sim \triangle PQR$  with  $\frac{BC}{QR} = \frac{1}{3}$ , then find  $\frac{\text{ar}(\triangle PQR)}{\text{ar}(\triangle ABC)}$ .
23. Is the triangle with sides 14cm, 12cm and 17cm a right triangle? Why?
24. The lengths of diagonals of a rhombus are 24 cm and 32 cm. Find the length of its sides.
25. PQR is an isosceles triangle with  $QP=QR$ . If  $PR^2 = 2QR^2$ , prove that  $\triangle PQR$  is right-angled.
26. In a triangle ABC, line DE is drawn parallel to side BC such that  $\frac{AD}{DB} = \frac{AE}{EC}$ . Show that BAC is an isosceles triangle.
27. A 20 m long vertical pole casts a shadow 10 m long on the ground. At the same time a tower casts a shadow 50 m long on the ground. Find the height of the tower.
28. State and prove basic proportionality theorem.
29. L and M are two points on the sides DE and DF of the  $\triangle DEF$  such that  $DL = 4$ ,  $LE = \frac{4}{3}$ ,  $DM = 6$  and  $DF = 8$ . Is LM parallel to EF? Why?
30. In  $\triangle PQR$  and  $\triangle MST$ ,  $\angle P = 55^\circ$ ,  $\angle Q = 25^\circ$ ,  $\angle M = 100^\circ$  and  $\angle S = 25^\circ$ . Is  $\triangle PQR$  similar to  $\triangle TSM$ ? Why?