Chapter 6

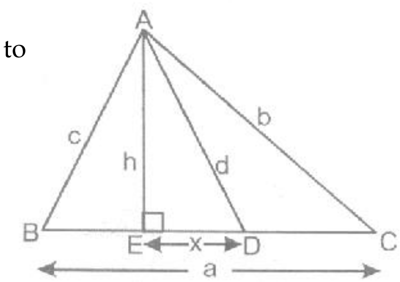
ASSIGNMENT

OBJECTIVE EXCERCISE - 6.1

1. The perimeters of two similar triangles are 25 cm and 15 cm respectively. If one side of first triangle is 9 cm, then the corresponding side of the other triangle is

(A) 6.2 cm (B) 3.4 cm (C) 5.4 cm (D) 8.4 cm

2. In the following figure, AE ⊥ BC, D is the mid point of BC, hen x is equal to



(A) $\frac{1}{a}\left[b^2 - d^2 - \frac{a^2}{4}\right]$ (B) $\frac{h+d}{3}$

(C) $\frac{c+d-h}{2}$ (D) $\frac{a^2+b^2+d^2-c^2}{4}$

3. Two triangles ABC and PQR are similar, if BC : CA : AB = 1 : 2 : 3 , then $\frac{QR}{PR}$ is

(A) $\frac{2}{3}$ (B) $\frac{1}{2}$ (C) $\frac{1}{\sqrt{2}}$ (D) $\frac{2}{3}$

4. In a triangle ABC, if angle B = 90^0 and D is the point in BC such that BD = 2 DC, then

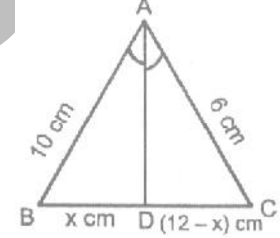
(A) $AC^2 = AD^2 + 3\ CD^2$ (B) $AC^2 = AD^2 + 5\ CD^2$ C) $AC^2 = AD^2 + 7\ CD^2$ (D) $AC^2 = AB^2 + 5\ BD^2$

5. P and Q are the mid points of the sides AB and BC respectively of the triangle ABC, right-angled at B, then

(A) $AQ^2 + CP^2 = AC^2$ (B) $AQ^2 + CP^2 = \frac{4}{5}AC^2$

(C) $AQ^2 + CP^2 = \frac{5}{4}AC^2$ (D) $AQ^2 + CP^2 = \frac{3}{5}AC^3$

6. In a ΔABC, AD is the bisector of ∠A, meeting side BC at D.
If AB = 10 cm, AC = 6 cm, BC = 12 cm, find BD.



(A) 3.3 (B) 18

(C) 7.5 (D) 1.33

7. In a triangle ABC, a straight line parallel to BC intersects AB and AC at point D and E respectively. If the area of ADE is one-fifth of the area of ABC and BC = 10 cm, then DE equals

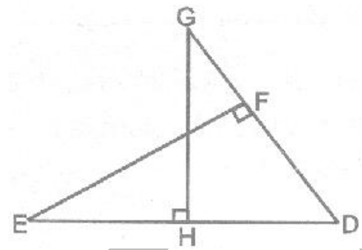
(A) 2 cm (B) $2\sqrt{5}$ cm (C) 4 cm (D) $4\sqrt{5}$ cm

8. ABC is a right-angle triangle, right angled at A . A circle is inscribed in it. The lengths of the two sides containing the right angle are 6 cm and 8 cm, then radius of the circle is

(A) 3 cm (B) 2 cm (C) 4 cm (D) 8 cm

SUBJECTIVE EXCERCISE - 6.2

1. Given $\angle GHE = \angle DFE = 90^0$, DH = 8, DF = 12, DG = 3x - 1 and DE = 4x + 2.

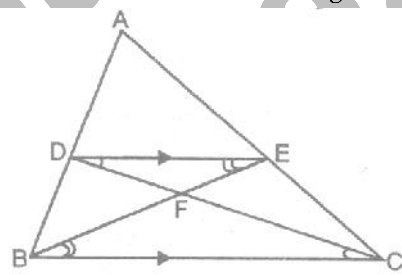


Find the lengths of segments DG and DE.

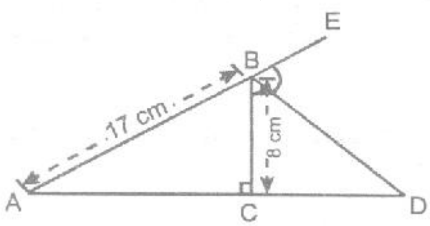
2. In the given **figure,** DE is parallel to the base BC of triangle ABC and AD : DB = 5 : 3. Find the ratio : -

(i) $\dfrac{AD}{AB}$ **[CBSE - 2000]**

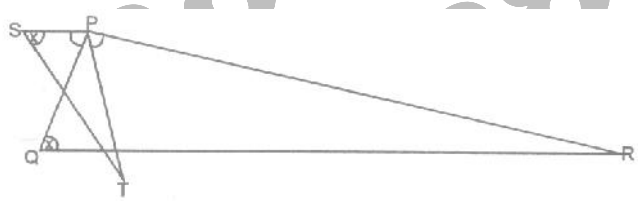
(ii) $\dfrac{\text{Area of } \Delta DEF}{\text{Area of } \Delta CFB}$



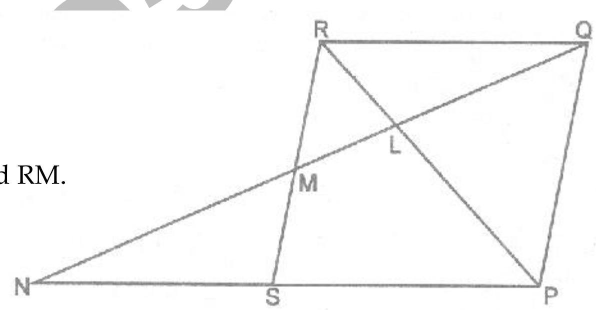
3. In **Figure,** ΔABC is a right-angled triangle, where $\angle ACB = 90^0$. The external bisector BD of $\angle ABC$ meets AC produced at D. If AB = 17 cm and BC = 8 cm, find the AC and BD.



4. In **figure,** $\angle QPS = \angle RPT$ and $\angle PST = \angle PQR$. Prove that $\Delta PST \sim \Delta PQR$ and hence find the ratio ST : PT, if PR : R = 4 : 5.



5. In the **figure,** PQRS is a parallelogram with PQ = 16 cm and QR = 10 cm. L is a point on PR such that RL : LP = 2 : 3. QL produced meets RS at M and PS produced at N.



Find the lengths of PN and RM.

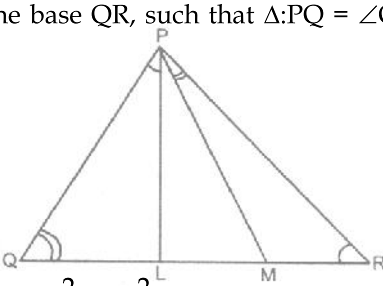
6. In Δ ABC, D and E are points on AB and AC respectively such that DE||BC. If AD = 2.4 cm, AE = 3.2 cm, DE = 2 cm and BC = 5 cm, find BD and CE.

7. In a triangle PQR, L an DM are two points on the base QR, such that Δ:PQ = $\angle$QRP and $\angle$RPM = $\angle$RQP. Prove that :

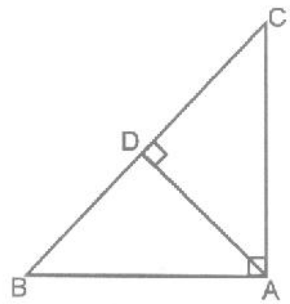
(i) Δ PQL ~ Δ RPM

(ii) QL × RM = PL × PM

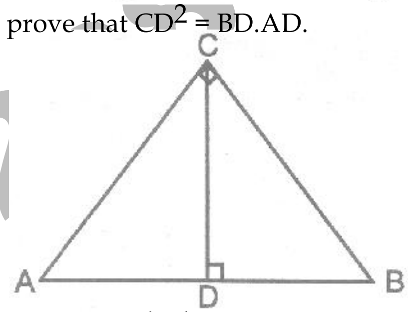
(iii) $PQ^2 = QR \times QL$



8. In **figure,** $\angle BAC = 90^0$, AD $\perp$ BC. prove that $AB^2 = BD^2 - CD^2$.



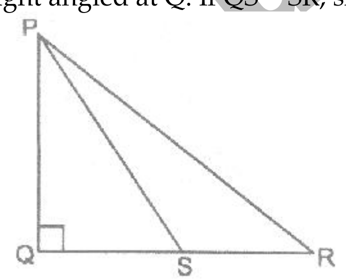
9. In **figure,** $\angle ACB = 90^0$, CD $\perp$ AB prove that CD^2 = BD.AD.



10. In a right triangle, prove that the square on the hypotenuse is equal to sum of the squares on the other two sides.

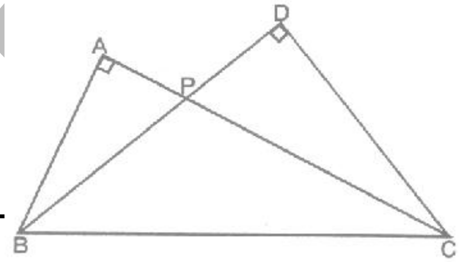
Using the above result, prove the following:

In **figure** PQR is a right triangle, right angled at Q. If QS = SR, show that $PR^2 = 4PS^2 - 3PQ^2$.

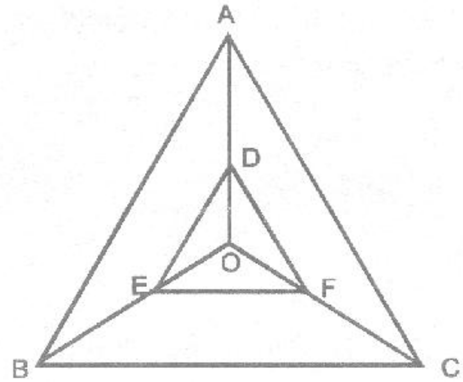


11. In Δ ABC, $\angle ABC = 135^0$. Prove that $AC^2 = AB^2 + BC^2 + 4ar$ (Δ ABC).

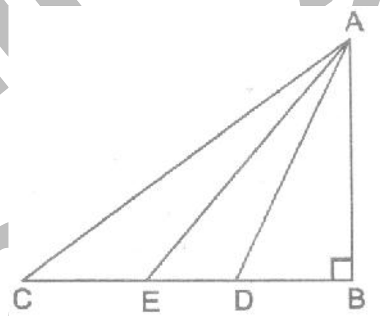
12. In **figure,** ABC and DBC are two right triangles with the common hypotenuse BC and with their sides AC and DB intersecting at P. Prove that AP × PC = DP × PB.



13. Any point O, inside ΔABC, in joined to its vertices. From a point D on AO, DE is drawn so that DE||AB and EF||BC as shown in figure. Prove that DF||AC. **[CBSE-2002]**



14. In **figure,** D and E trisect BC. Prove that $8AE^2 = 3AC^2 + 5AD^2$ **[CBSE - 2006]**



15. The perpendicular AD on the base BC of a ΔABC meets BC at D so that 2DB = 3CD. Prove that $5AB^2 = 5AC^2 + BC^2$. **[CBSE - 2007]**

16. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares on their corresponding sides.
Using the above, do the following :
The diagonals of a trapezium ABCD, with AB ||DC, intersect each other point O. If AB = 2 CD, find the ratio of the area of ΔAOB to the area of ΔCOD **[CBSE - 2008]**

17. D, E and F are the mid-points of the sides AB, BC and CA respectively of ΔABC. Find $\frac{ar(\Delta DEF)}{ar(\Delta ABC)}$. **[CBSE - 2008]**

18. D and E are points on the sides CA and CB respectively of ΔABC right-angled at C. Prove that $AE^2 + BD^2 = AB^2 + DE^2$.

19. In figure, $DB \perp BC$, $DE \perp AB$ and $AC \perp BC$. Prove that $\frac{BE}{DE} = \frac{AC}{BC}$ **[CBSE - 2008]**