Also, it is given that

$$\angle PST = \angle PRQ (2)$$

So,

$$\angle PRQ = \angle PQR \quad [\text{From (1) and (2)}]$$

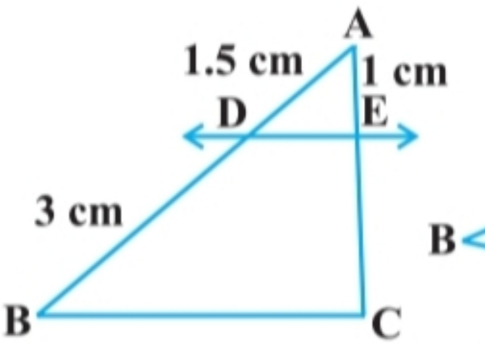
Therefore,

$$PQ = PR \quad (\text{Sides opposite the equal angles})$$

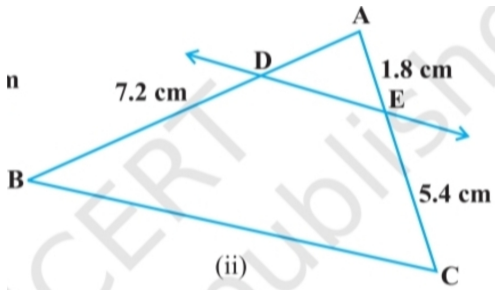
i.e., PQR is an isosceles triangle.

EXERCISE 6.2

1. In Fig. 6.17, (i) and (ii), $DE \parallel BC$. Find EC in (i) and AD in (ii).



(i)



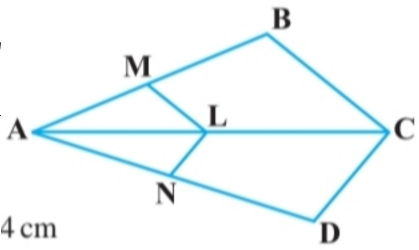
(ii)

2. E and F are points on the sides PQ and PR respectively of a $\triangle PQR$. For each of the following cases, state whether $EF \parallel QR$:

   (i) $PE = 3.9$ cm, $EQ = 3$ cm, $PF = 3.6$ cm and F

   (ii) $PE = 4$ cm, $QE = 4.5$ cm, $PF = 8$ cm and RF

   (iii) $PQ = 1.28$ cm, $PR = 2.56$ cm, $PE = 0.18$ cm a



3. In Fig. 6.18, if $LM \parallel CB$ and $LN \parallel CD$, prove that

$$\frac{AM}{AB} = \frac{AN}{AD}$$

4 cm

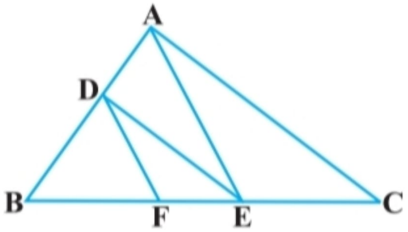


Fig. 6.19

4. In Fig. 6.19, $DE \parallel AC$ and $DF \parallel AE$. Prove that

$$\frac{BF}{FE} = \frac{BE}{EC}$$

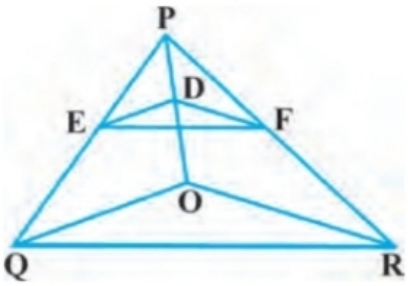


Fig. 6.20

5. In Fig. 6.20, $DE \parallel OQ$ and $DF \parallel OR$. Show that $EF \parallel QR$.

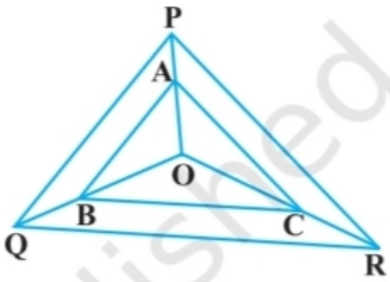


Fig. 6.21

6. In Fig. 6.21, A, B and C are points on OP, OQ and OR respectively such that $AB \parallel PQ$ and $AC \parallel PR$. Show that $BC \parallel QR$.

7. Using Theorem 6.1, prove that a line drawn through the mid-point of one side of a triangle parallel to another side bisects the third side. (Recall that you have proved it in Class IX.)

8. Using Theorem 6.2, prove that the line joining the mid-points of any two sides of a triangle is parallel to the third side. (Recall that you have done it in Class IX.)

9. $ABCD$ is a trapezium in which $AB \parallel DC$ and its diagonals intersect each other at the point O. Show that

$$\frac{AO}{BO} = \frac{CO}{DO}$$

10. The diagonals of a quadrilateral $ABCD$ intersect each other at the point O such that

$$\frac{AO}{BO} = \frac{CO}{DO}$$

Show that $ABCD$ is a trapezium.