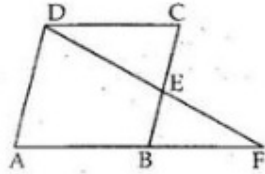




### Exercise 9B

Question 19:



Given : A parallelogram ABCD in which E is the mid point of side BC. DE and AB when produced meet at F.

To Prove :  $AF = 2AB$

Proof : In  $\triangle DEC$  and  $\triangle FEB$

$\angle DEC = \angle FEB$  [Vertically opposite angles]

$\angle DCE = \angle FBE$  [alternate angles]

$CE = EB$  [Given]

Thus by Angle-Angle-Side criterion of congruence, we have

$\triangle DEC \cong \triangle FEB$  [By AAS]

The corresponding parts of the congruent triangles are equal.

$\therefore DC = FB$  [By cpct]

So,  $AF = AB + BF$

$= AB + DC$

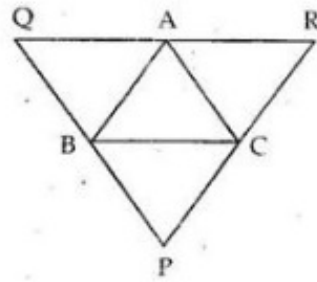
$= AB + AB$

$= 2AB$

$\therefore AF = 2AB$

Question 20:

Given : A  $\triangle ABC$  in which through points A, B and C, lines QR, QP and RP are drawn parallel to BC, CA and AB.



To prove :  $BC = \frac{1}{2} QR$

Proof : Since  $AR \parallel BC$  and  $AB \parallel RC$  [Given]

So, ABCR is a parallelogram. Therefore

$$AR = BC \quad \text{.....(i)}$$

Also,  $AQ \parallel BC$  and  $QB \parallel AC$

So, AQBC is a parallelogram. Therefore

$$QA = BC \quad \text{.....(ii)}$$

Adding both side of (i) and (ii), we get

$$AR + QA = BC + BC$$

$$\Rightarrow QR = 2BC$$

$$\Rightarrow BC = \frac{QR}{2}$$

$$\therefore BC = \frac{1}{2} QR$$

\*\*\*\*\* END \*\*\*\*\*