



Triangles Ex 4.2 Q2

Answer :

(i) It is given that D and E are point on sides AB and AC .

We have to prove that $DE \parallel BC$.

According to Thales theorem we have

$$\frac{AD}{DB} = \frac{AE}{CE}$$

$$\Rightarrow \frac{8}{4} = \frac{12}{6}$$

$$\Rightarrow 2 = 2 \quad (\text{Proportional})$$

Hence, $DE \parallel BC$.

(ii) It is given that D and E are point on sides AB and AC .

We have to prove that $DE \parallel BC$.

According to Thales theorem we have

$$\frac{AD}{DB} = \frac{AE}{CE}$$

$$\Rightarrow \frac{1.4}{4.2} = \frac{1.8}{5.4}$$

$$\Rightarrow \frac{1}{3} = \frac{1}{3} \quad (\text{Proportional})$$

Hence, $DE \parallel BC$.

(iii) It is given that D and E are point on sides AB and AC .

We have to prove that $DE \parallel BC$.

According to Thales theorem we have

$$\frac{AD}{DB} = \frac{AE}{CE}$$

So

$$AD = AB - DB = 10.8 - 4.5 = 6.3$$

And

$$EC = AC - AE = 4.8 - 2.8 = 2$$

Now

$$\frac{6.3}{4.5} = \frac{2.8}{2.0}$$

Hence, $DE \parallel BC$.

(iv) It is given that D and E are point on sides AB and AC .

We have to prove that $DE \parallel BC$.

According to Thales theorem we have

$$\frac{AD}{DB} = \frac{AE}{CE}$$

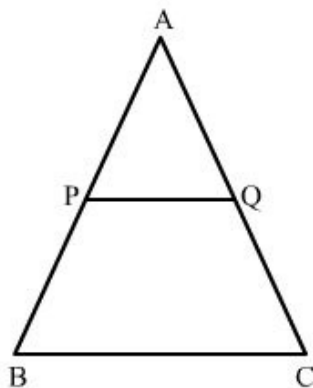
$$\Rightarrow \frac{5.7}{9.5} = \frac{3.3}{5.5}$$

$$\Rightarrow \frac{3}{5} = \frac{3}{5} \quad (\text{Proportional})$$

Hence, $DE \parallel BC$.

Triangles Ex 4.2 Q3

Answer :



It is given that $AP = 2.4\text{cm}$, $AQ = 2\text{cm}$, $QC = 3\text{cm}$ and $BC = 6\text{cm}$.

We have to find AB and PQ .

So $\frac{AP}{PB} = \frac{AQ}{QC}$ (by Thales theorem)

$$\text{Then } \frac{2.4}{PB} = \frac{2}{3}$$

$$\Rightarrow 2PB = 2.4 \times 3\text{cm}$$

$$\Rightarrow PB = \frac{2.4 \times 3}{2}\text{cm}$$

$$= 3.6\text{cm}$$

Now

$$\begin{aligned}AB &= AP + PB \\&= 2.4 + 3.6\text{cm} \\&= 6\text{cm}\end{aligned}$$

Since $PQ \parallel BC$, AB is a transversal, then
 $\angle APQ = \angle ABC$ (corresponding angles)

Since $PQ \parallel BC$, AC is a transversal, then
 $\angle AQP = \angle ACB$ (corresponding angles)

In $\triangle APQ$ and $\triangle ABC$,

$$\angle APQ = \angle ABC \quad (\text{proved above})$$

$$\angle AQP = \angle ACB \quad (\text{proved above})$$

so, $\triangle APQ \sim \triangle ABC$ (Angle Angle Similarity)

Since the corresponding sides of similar triangles are proportional, then

$$\frac{AP}{AB} = \frac{PQ}{BC} = \frac{AQ}{AC}$$

$$\begin{aligned}\frac{AP}{AB} &= \frac{PQ}{BC} \\ \frac{2.4}{6} &= \frac{PQ}{6}\end{aligned}$$

$$\text{so, } PQ = 2.4 \text{ cm}$$

***** END *****