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* || *BC*.

According to Thales theorem we have

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

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

$\Rightarrow 2=2$ (Proportional)

Hence, *DE* || *BC*.

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

We have to prove that *DE* || *BC*.

According to Thales theorem we have

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

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

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

Hence, *DE* || *BC*.

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

We have to prove that *DE* || *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* || *BC*.

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

We have to prove that *DE* || *BC*.

According to Thales theorem we have

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

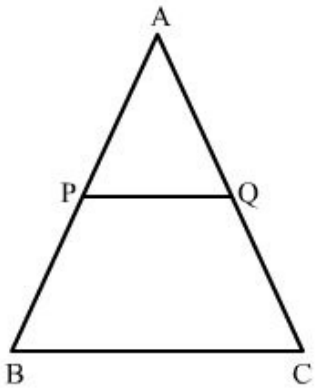
$$\Rightarrow \frac{5.7}{9.5}=\frac{3.3}{5.5}$$

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

Hence, *DE* || *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)

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

$$AB = AP + PB$$
$$= 2.4 + 3.6\text{cm}$$
$$= 6\text{cm}$$

Since PQ||BC, AB is a transversal, then

∠APQ = ∠ABC (corresponding angles)

Since PQ||BC, AC is a transversal, then

∠AQP = ∠ACB (corresponding angles)

In ΔAPQ and ΔABC,

∠APQ = ∠ABC (proved above)

∠AQP = ∠ACB (proved above)

so, Δ APQ ~ Δ ABC (Angle Angle Similarity)

Since the corresponding sides of similar triangles are proportional, then

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

$$\frac{AP}{AB} = \frac{PQ}{BC}$$
$$\frac{2.4}{6} = \frac{PQ}{6}$$
$$\text{so, } PQ = 2.4 \text{ cm}$$

********** END **********