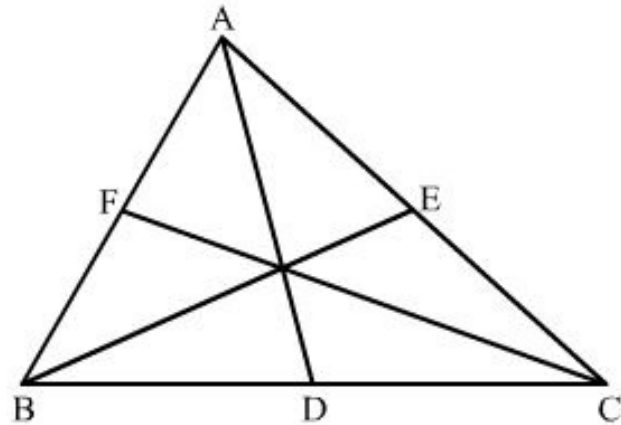




Triangles Ex 4.3 Q5

Answer :



It is given that $AB = 5\text{cm}$, $BC = 8\text{cm}$ and $CA = 4\text{cm}$.
We have to find AF , CE and BD .

Since AD is bisector of $\angle A$

$$\text{So } \frac{AB}{AC} = \frac{BD}{CD}$$

Then,

$$\begin{aligned}\frac{5}{4} &= \frac{BD}{BC-BD} \\ \Rightarrow \frac{5}{4} &= \frac{BD}{8-BD} \\ \Rightarrow 40 - 5BD &= 4BD \\ \Rightarrow 9BD &= 40 \\ \text{So, } BD &= \frac{40}{9}\end{aligned}$$

Since BE is the bisector of $\angle B$.

So,

$$\begin{aligned}\frac{AB}{BC} &= \frac{AE}{EC} \\ \Rightarrow \frac{AB}{BC} &= \frac{AC-EC}{EC} \\ \frac{5}{8} &= \frac{4-CE}{CE} \\ 5CE &= 32 - 8CE \\ 5CE + 8CE &= 32 \\ 13CE &= 32\end{aligned}$$

So

$$CE = \frac{32}{13} \text{ cm}$$

Now since CF is the bisector of $\angle C$

$$\text{So } \frac{BC}{CA} = \frac{BF}{AF}$$

$$\frac{8}{4} = \frac{AB - AF}{AF}$$

$$\frac{8}{4} = \frac{5 - AF}{AF}$$

$$8AF = 20 - 4AF$$

$$12AF = 20$$

So

$$3AF = 5 \text{ cm}$$

$$AF = \frac{5}{3} \text{ cm}$$

Hence $AF = \frac{5}{3} \text{ cm}$

$$CE = \frac{32}{13} \text{ cm}$$

And $BD = \frac{40}{9} \text{ cm}$

***** END *****