Triangles Ex 4.5 Q7

Answer :

It is given that $BD \perp AC$, $AB = 5.7\text{cm}$, $DB = 3.8\text{cm}$, $CD = 5.4\text{cm}$ and $\angle ABC = 90^0$

We have to find BC.

Since $\Delta ABC \sim \Delta BDC$

$$\Rightarrow \frac{AB}{BD} = \frac{BC}{CD}$$

So

$$\Rightarrow \frac{5.7\text{cm}}{3.8\text{cm}} = \frac{BC}{5.4\text{cm}}$$

$$\Rightarrow BC = \frac{5.7\text{cm} \times 5.4\text{cm}}{3.8\text{cm}}$$

$$= 8.1\text{cm}$$

Hence, $\boxed{BC = 8.1\text{cm}}$

Triangles Ex 4.5 Q8

Answer :

It is given that $DE \| BC$, $AE = \frac{1}{4}AC$ and $AB = 6\text{cm}$.

We have to find AD.

Since $\Delta ADE \sim \Delta ABC$

$$\Rightarrow \frac{AD}{AB} = \frac{AE}{AC}$$

So

$$\Rightarrow \frac{AD}{6\text{cm}} = \frac{1\text{cm}}{4\text{cm}}$$

$$\Rightarrow 4\text{cm} \times AD = 6$$

$$\Rightarrow AD = \frac{6\text{cm}}{4\text{cm}}$$

$$\Rightarrow AD = \frac{3\text{cm}}{2\text{cm}}$$

Hence, $\boxed{AD = 1.5\text{cm}}$

Triangles Ex 4.5 Q9

Answer :

It is given that PA, QB and RC are each perpendicular to AC.

We have to prove that $\frac{1}{x}+\frac{1}{z}=\frac{1}{y}$

In ΔPAC we have $BQ \| AP$

$\Rightarrow \frac{BQ}{AP}=\frac{CB}{CA}$

$\Rightarrow \frac{y}{x}=\frac{CB}{CA}$ .....(1)

Now in ΔACR, we have $BQ \| CR$

$\Rightarrow \frac{BQ}{CR}=\frac{AB}{AC}$

$\Rightarrow \frac{y}{z}=\frac{AB}{AC}$ ..... (2)

Adding (1) and (2) we have

$$\frac{y}{x}+\frac{y}{z}=\frac{CB}{AC}+\frac{AB}{AC}$$

$$=\frac{AB+BC}{AC}$$

$$\Rightarrow \frac{y}{x}+\frac{y}{z}=\frac{AC}{AC}=1$$

$$\Rightarrow \frac{1}{x}+\frac{1}{z}=\frac{1}{y}$$

Hence, $\boxed{\frac{1}{x}+\frac{1}{z}=\frac{1}{y}}$.

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