Triangles Ex 4.2 Q1

Answer :

(i) It is given that ΔABC and $DE \| BC$

We have to find the AC

Since

$AD = 6\text{cm}$

$DB = 9\text{cm}$

$AE = 8\text{cm}$

$\Rightarrow AB = 15$

So $\frac{AD}{BD} = \frac{AE}{CE}$ (by Thales theorem)

Then $\frac{6}{9} = \frac{8}{x}$

$6x = 72\text{cm}$

$x = \frac{72}{6}\text{cm}$

$= 12\text{cm}$

Hence

$$\boxed{\begin{aligned} AC &= 12 + 8 \\ &= 20 \end{aligned}}$$

(ii)It is given that $\frac{AD}{BD}=\frac{3}{4}$ and $AC=15\text{cm}$

We have to find AE

Let $AE=x$

So $\frac{AD}{DB}=\frac{AE}{CE}$ (by Thales theorem)

Then $\frac{3}{4}=\frac{x}{15-x}$

$$45-3x=4x$$

$$-3x-4x=-45$$

$$7x=45$$

$$x=\frac{45}{7}$$

Hence

$$\boxed{x=6.43\text{cm}}$$

(iii)It is given that $\frac{AD}{BD}=\frac{2}{3}$ and $AC=18\text{cm}$

We have to find AE

Let $AE=x$ and $CE=18-x$

So $\frac{AD}{DB}=\frac{AE}{CE}$ (by Thales theorem)

Then $\frac{2}{3}=\frac{x}{18-x}$

$$3x=36-2x$$

$$5x=36\text{cm}$$

$$x = \frac{36}{5}\text{cm}$$

$$x = 7.2\text{cm}$$

Hence

$$\boxed{AE = 7.2\text{cm}}$$

(iv)It is given that $AD = 4\text{cm}$, $AE = 8\text{cm}$, $DB = x - 4$ and $EC = 3x - 19$.

We have to find x

So $\frac{AD}{DB} = \frac{AE}{CE}$ (by Thales theorem)

Then $\frac{4}{x-4} = \frac{8}{3x-19}$

$$4(3x-19) = 8(x-4)$$

$$12x - 76 = 8(x-4)$$

$$12x - 8x = -32 + 76$$

$$4x = 44\text{cm}$$

Hence

$$\boxed{x = 11\text{cm}}$$

(v) It is given that $AD = 8\text{cm}$, $AB = 12\text{cm}$ and $AE = 12\text{cm}$.

We have to find CE.

So $\frac{AD}{DB} = \frac{AE}{CE}$ (by Thales theorem)

Then $\frac{8}{4} = \frac{12}{CE}$

$$8CE = 4 \times 12\text{cm}$$

$$CE = \frac{4 \times 12}{8}\text{cm}$$

$$= \frac{48}{8}\text{cm}$$

$$= 6\text{cm}$$

Hence

$$\boxed{CE = 6\text{cm}}$$

(vi) It is given that $AD = 4\text{cm}$, $DB = 4.5\text{cm}$ and $AE = 8\text{cm}$.

We have to find AC.

So $\frac{AD}{DB} = \frac{AE}{CE}$ (by Thales theorem)

Then $\frac{4}{4.5} = \frac{8}{AC}$

$$AC = \frac{4.5 \times 8}{4}\text{cm}$$

$$= 9\text{cm}$$

Hence

$$\boxed{AC = 9\text{cm}}$$

(vii) It is given that $AD = 2\text{cm}$, $AB = 6\text{cm}$ and $AC = 9\text{cm}$.

We have to find AE.

Now

$DB = 6 - 2 = 4$ cm

So $\frac{AD}{DB} = \frac{AE}{CE}$ (by Thales theorem)

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