



Triangles Ex 4.3 Q1

Answer :

(i) It is given that $BD = 2.5\text{cm}$, $AB = 5\text{cm}$ and $AC = 4.2\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find DC .

Since AD is $\angle A$ bisector

$$\text{Then } \frac{AB}{AC} = \frac{BD}{DC}$$

$$\frac{5}{4.2} = \frac{2.5}{DC}$$

$$5DC = 4.2 \times 2.5$$

$$DC = \frac{4.2 \times 2.5}{5}$$

$$= 2.1$$

Hence $DC = 2.1\text{cm}$

(ii) It is given that $BD = 2\text{cm}$, $AB = 5\text{cm}$ and $DC = 3\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find AC .

Since AD is $\angle A$ bisector

$$\text{So } \frac{AB}{AC} = \frac{BD}{DC} \quad (AD \text{ is bisector of } \angle A \text{ and side } BC)$$

Then

$$\frac{5}{AC} = \frac{2}{3}$$

$$\Rightarrow 2AC = 5 \times 3$$

$$\Rightarrow AC = \frac{15}{2}$$

$$= 7.5$$

Hence $\boxed{AC = 7.5\text{cm}}$

(iii) It is given that $AB = 3.5\text{cm}$, $AC = 4.2\text{cm}$ and $DC = 2.8\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find BD .

Since AD is $\angle A$ bisector

So $\frac{AB}{AC} = \frac{BD}{DC}$ (AD is bisector of $\angle A$ and side BC)

Then

$$\frac{3.5}{4.2} = \frac{BD}{2.8}$$

$$\Rightarrow BD = \frac{3.5 \times 2.8}{4.2}$$

$$\Rightarrow BD = \frac{7}{3}$$

$$= 2.3$$

Hence $\boxed{BD = 2.3\text{cm}}$

(iv) It is given that $AB = 10\text{cm}$, $AC = 14\text{cm}$ and $BC = 6\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find BD and DC .

Since AD is $\angle A$ bisector

So $\frac{AB}{AC} = \frac{BD}{DC}$ (AD is bisector of $\angle A$ and side BC)

Then

$$\frac{10}{14} = \frac{x}{6-x}$$

$$\Rightarrow 14x = 60 - 6x$$

$$\Rightarrow 20x = 60$$

$$\Rightarrow x = \frac{60}{20}$$

Hence $\boxed{BD = 3\text{cm}}$ and $\boxed{DC = 3\text{cm}}$

(v) It is given that $AC = 4.2\text{cm}$, $DC = 6\text{cm}$ and $BC = 10\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find AB .

Since AD is $\angle A$ bisector

So $\frac{AC}{AB} = \frac{DC}{BD}$

Then

$$\frac{4.2}{AB} = \frac{6}{4}$$

$$\Rightarrow 6AB = 4.2 \times 4$$

$$\Rightarrow AB = \frac{4.2 \times 4}{6}$$

$$= \frac{16.8}{6}$$

Hence $\boxed{AB = 2.8\text{cm}}$

(vi) It is given that $AB = 5.6\text{cm}$, $BC = 6\text{cm}$ and $DC = 3\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find BC .

Since AD is $\angle A$ bisector

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

Then

$$\frac{6}{5.6} = \frac{3}{DC}$$

$$\Rightarrow DC = 2.8$$

So

$$BC = 2.8 + 3$$

$$= 5.8$$

Hence $\boxed{BC = 5.8\text{cm}}$

(vii) If it is given that $AB = 5.6\text{ cm}$, $BC = 6\text{cm}$ and $BD = 3.2\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D

$$\therefore \frac{AB}{AC} = \frac{BD}{DC}$$

$$\frac{5.6\text{ cm}}{AC} = \frac{3.2\text{ cm}}{2.8\text{ cm}} \quad [DC = BC - BD]$$

$$AC = \frac{5.6 \times 2.8}{3.2} \text{ cm} = 4.9\text{ cm}$$

(viii) It is given that $AB = 10\text{cm}$, $AC = 6\text{cm}$ and $BC = 12\text{cm}$.

In $\triangle ABC$, AD is the bisector of $\angle A$, meeting side BC at D .

We have to find BD and DC .

Since AD is $\angle A$ bisector

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

Let $BD = x\text{ cm}$

Then

$$\frac{6}{10} = \frac{12 - x}{x}$$

$$\Rightarrow 6x = 120 - 10x$$

$$\Rightarrow 16x = 120$$

$$\Rightarrow x = \frac{120}{16}$$

$$\Rightarrow x = 7.5$$

Now

$$DC = 12 - BD$$

$$= 12 - 7.5$$

$$= 4.5$$

Hence $BD = 7.5\text{cm}$ and $DC = 4.5\text{cm}$

*****END*****