



#### Exercise 4A

Question 4:

(i)  $AB = 6.4$  cm,  $AC = 8$  cm,  $BD = 5.6$  cm

Let  $BC = x$

Now,  $DC = (BC - BD)$

$= (x - 5.6)$  cm

In  $\triangle ABC$ ,  $AD$  is the base for of  $\angle A$

So, by the angle bisector theorem, We have

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

$$\Rightarrow \frac{5.6}{x - 5.6} = \frac{6.4}{8}$$

$$\Rightarrow 6.4x - 35.84 = 44.8$$

$$\Rightarrow 6.4x = 80.64$$

$$\Rightarrow x = \frac{80.64}{6.4} = 12.6$$

Hence,  $BC = 12.6$  cm and  $DC = (12.6 - 5.6)$  cm = 7 cm

(ii)  $AB = 10$  cm,  $AC = 14$  cm,  $BC = 6$  cm

Let  $BD = x$ ,

$DC = (BC - BD) = (6 - x)$  cm

In  $\triangle ABC$ ,  $AD$  is the bisector of  $\angle A$

So, By angle bisector theorem,

**We have**

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

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

$$\Rightarrow 14x = 60 - 10x$$

$$\Rightarrow 24x = 60$$

$$\Rightarrow x = \frac{60}{24} = \frac{5}{2} = 2.5$$

Hence,  $BD = 2.5$  cm and  $DC = (6 - 2.5)$  cm = 3.5 cm

(iii)  $AB = 5.6$  cm,  $BD = 3.2$  cm and  $BC = 6$  cm

$DC = BC - BD = (6 - 3.2)$  cm = 2.8 cm

Let  $AC = x$ ,

In  $\triangle ABC$ ,  $AD$  is the base for of  $\angle A$

So, by the angle bisector theorem we have

$$\begin{aligned}\therefore \frac{BD}{DC} &= \frac{AB}{AC} \\ \Rightarrow \frac{3.2}{2.8} &= \frac{5.6}{x} \\ \Rightarrow x &= \frac{5.6 \times 2.8}{3.2} = 4.9 \text{ cm}\end{aligned}$$

Hence, AC = 4.9 cm

(iv) AB = 5.6 cm, AC = 4 cm, DC = 3 cm

Let BD = x,

In  $\triangle ABC$ , AD is the bisector of  $\angle A$

So, by the angle bisector theorem we have

$$\begin{aligned}\therefore \frac{BD}{DC} &= \frac{AB}{AC} \\ \Rightarrow \frac{x}{3} &= \frac{5.6}{4} \\ \Rightarrow x &= \frac{5.6 \times 3}{4} \\ \Rightarrow x &= 4.2 \text{ cm}\end{aligned}$$

Hence, BD = 4.2 cm

So BC = BD + DC = (4.2 + 3) cm

BC = 7.2 cm

\*\*\*\*\* END \*\*\*\*\*