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 ΔABC, AD is the base for of ∠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 = 6cm
Let BD = x,
DC = (BC - BD) = (6 - x) cm
In ΔABC, AD is the bisector of ∠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 ΔABC, AD is the base for of ∠A
So, by the angle bisector theorem we have

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

$$\Rightarrow \frac{3.2}{2.8} = \frac{5.6}{x}$$

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

Hence, AC = 4.9 cm

(iv) AB = 5.6 cm, AC = 4 cm, DC = 3 cm
Let BD = x,
In ΔABC, AD is the base for of ∠A
So, by the angle bisector theorem we have

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

$$\Rightarrow \frac{x}{3} = \frac{5.6}{4}$$

$$\Rightarrow x = \frac{5.6 \times 3}{4}$$

$$\Rightarrow \quad x = 4.2 \text{ cm}$$

Hence, BD = 4.2 cm
So BC = BD + AC = (4.2 + 3) cm
BC = 7.2 cm

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