



Triangles Ex 4.2 Q1

**Answer :**

(i) It is given that  $\triangle ABC$  and  $DE \parallel BC$

We have to find the  $AC$

Since

$$AD = 6\text{cm}$$

$$DB = 9\text{cm}$$

$$AE = 8\text{cm}$$

$$\Rightarrow AB = 15$$

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

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

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

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

$$= 12\text{cm}$$

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)

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

$$45 - 3x = 4x$$

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

$$7x = 45$$

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

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)

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

$$3x = 36 - 2x$$

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

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

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

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  $x$

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

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

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

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

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

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

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  $CE$ .

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

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

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

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

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

$$= 6 \text{ cm}$$

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  $AC$ .

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

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

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

$$= 9 \text{ cm}$$

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

$$DB = 6 - 2 = 4 \text{ cm}$$

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

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

