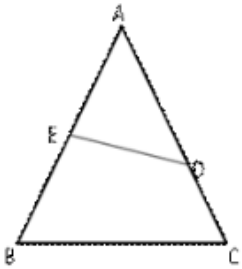
Exercise 4B

Question 4:



Given: $\angle ADE = \angle B$,

AD = 3.8 cm, AE = 3.6 cm, BE = 2.1 cm, BC = 4.2 cm

Proof:

In ΔADE and ΔABC,

$\angle A = \angle A$ (common)

$\angle ADE = \angle B$ (given)

Therefore, $\Delta ADE \sim \Delta ABC$ (AA Criterion)

$$\Rightarrow \frac{AD}{AB} = \frac{DE}{BC}$$

$$\Rightarrow \frac{3.8}{(3.6+2.1)} = \frac{x}{4.2} (DE = x)$$

$$\Rightarrow \frac{3.8}{5.7} = \frac{x}{4.2}$$

$$x = \frac{3.8 \times 4.2}{5.7} = 2.8 \text{ cm}$$

Hence, DE = 2.8 cm

Question 5:

Given: ΔABC [latex]\sim [/latex] ΔPQR in such a way that perimeter of respective ΔABC = 36 cm and ΔPQR = 24 cm and PQ= 10 cm.

Then, we have to find AB, Let AB = x

We know that the ratio of perimeters of two similar triangles is the same as the ratio of their corresponding sides.

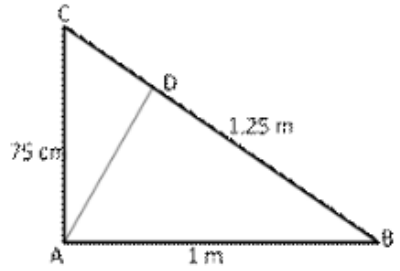
$$\therefore \frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} = \frac{AB}{PQ}$$

$$\Rightarrow \frac{36}{24} = \frac{x}{10} \Rightarrow x = \frac{36 \times 10}{24}$$

$$\therefore AB = 15 \text{ cm}$$

Hence the corresponding side of the second triangle is 15 cm.

Question 6:



Given: AB = 100 cm, BC = 125 cm, AC = 75 cm

Proof:

In ΔBAC and ΔBDA

$\angle BAC = \angle BDA = 90^0$

$\angle B = \angle B$ (common)

BAC $\sim$ ΔBDA (by AA similarities)

$\Rightarrow \frac{BA}{BC} = \frac{AD}{AC}$

$\Rightarrow \frac{100}{125} = \frac{AD}{75}$

$\Rightarrow AD = \frac{100 \times 75}{125} = 60$ cm

Therefore, AD = 60 cm

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