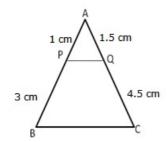


Exercise 4C

Question 9:



Given: AP = 1 cm, PB = 3 cm, AQ = 1.5 cm, QC = 4.5 cm AB = AP + PB = (1 + 3) cm = 4 cm

AC = AQ + QC = (1.5 + 4.5) cm = 6 cm

Now, we have:

$$\frac{AP}{AB} = \frac{1}{4}, \frac{AQ}{QC} = \frac{1.5}{6} = \frac{1}{4}$$

In $\triangle APQ$ and $\triangle ABC$, we have

$$\angle APQ = \angle ABC$$

(corresponding ∠s)

$$\angle AQP = \angle ACB$$

(corresponding ∠s)

[by AA similarity]

$$\Rightarrow \frac{\text{ar}(\Delta APQ)}{\text{ar}(\Delta ABC)} = \frac{AP^2}{AB^2}$$

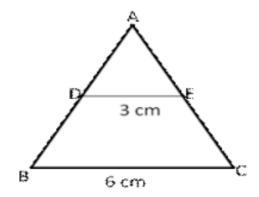
$$\Rightarrow \frac{\mathsf{ar}\left(\Delta\mathsf{APQ}\right)}{\mathsf{ar}\left(\Delta\mathsf{ABC}\right)} = \left(\frac{\mathsf{AP}}{\mathsf{AB}}\right)^2$$

$$\Rightarrow \frac{\mathsf{ar} \left(\Delta \mathsf{APQ} \right)}{\mathsf{ar} \left(\Delta \mathsf{ABC} \right)} = \left(\frac{1}{4} \right)^2 = \frac{1}{16}$$

$$\Rightarrow ar(\Delta APQ) = \frac{1}{16}ar(\Delta ABC)$$

Hence proved.

Question 10:



Given DE || BC

DE = 3 cm and BC = 6 cm

 $ar(\Delta ADE) = 15cm^2$

In \triangle ADE and \triangle ABC, we have

 $\angle ADE = \angle ABC$ (corres. $\angle s$)

 $\angle AED = \angle ACB$ (corres. $\angle s$)

∴ △ADE ~ △ABC (by AA similarity)

$$\Rightarrow \frac{\text{ar}\left(\Delta \text{ADE}\right)}{\text{ar}\left(\Delta \text{ABC}\right)} = \frac{\text{DE}^2}{\text{BC}^2} \Rightarrow \frac{15}{\text{ar}\left(\Delta \text{ABC}\right)} = \frac{3^2}{6^2} = \frac{9}{36}$$

$$\Rightarrow$$
 ar($\triangle ABC$) = $\frac{15 \times 36}{9}$ = 60 cm²

$$\therefore$$
 ar ($\triangle ABC$) = 60 cm²

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