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(Affiliated to CBSE Up to +2 Level)

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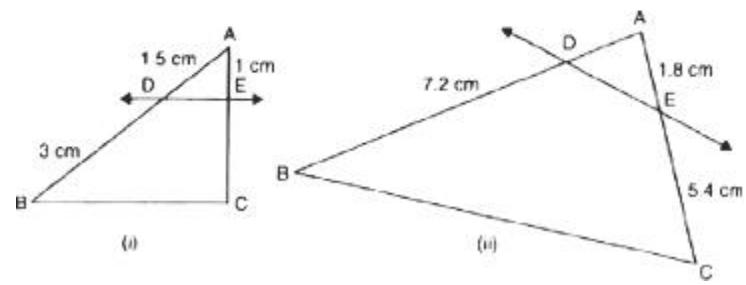
In figure (i) and (ii), DE || BC. Find EC in (i) and AD in (ii).



Sol. (i) Since DE || BC

∴ using the Basic proportionality Theorem,

We have: $\frac{AD}{DB} = \frac{AE}{EC}$

Since, AD = 1.5 cm, DB = 3 cm and AE = 1 cm,

$\therefore \frac{1.5\text{ cm}}{3\text{ cm}} = \frac{1\text{ cm}}{EC}$

By cross-multiplication, we have:

$EC \times 1.5 = 1 \times 3$

$\Rightarrow EC = \frac{1 \times 3}{1.5} = \frac{1 \times 3 \times 10}{15}$

$\therefore$ EC = 2 cm.

2. E and F are points on the sides PQ and PR respectively of a A PQR. For each of the following cases, state whether EF || QR:

(i) PE = 3.9 cm,EQ = 3 cm, PF = 3.6 cm and FR = 2.4 cm

(ii) PE = 4 cm, QE = 4.5 cm, PF = 8 cm and RF = 9 cm

(iii) PQ = 1.28 cm, JR = 2.56 cm, PE = 0.18 cm and PF = 0.36 cm

3. In figure, if LM || CB LN || CD, prove that $\frac{AM}{AB} = \frac{AN}{AD}$.

Sol. In ΔABC,

∵LM || CB [Given]

∴Using the Basic Proportionality Theorem, we have:

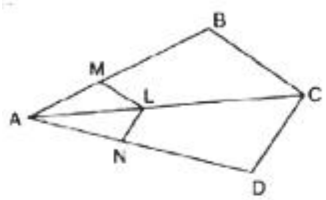
$$\frac{AM}{AB}=\frac{AL}{AC} \quad ...(1)$$

Again in ΔACD,

$\Rightarrow$ LN || CD

∴ Using the Basic Proportinality Theorem, we have: [Given]

$$\frac{AL}{AC}=\frac{AN}{AD} \quad ...(2)$$



From (1) and (2),

$$\frac{AM}{AB}=\frac{AL}{AC}=\frac{AN}{AD}$$

$$\Rightarrow \frac{AM}{AB}=\frac{AN}{AD}$$

9. ABCD is a trapezium in which AB || DC and its diagonals irsect each other at the point O. Show $\frac{AO}{BO}=\frac{CO}{DO}$.

Sol. We have, a trapezium ABCD such that AB || DC. The diago as AC and BD intersect each other at O.

Let us draw OE parallel toTeither AB or DC.

In ΔADC,

∵OE || DC [By construction]

∴ Using the Basic -Proportionality theorem, we get

$$\frac{AE}{ED}=\frac{AO}{CO} \quad ...(1)$$

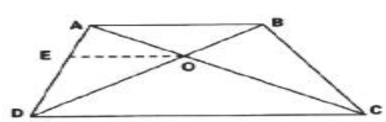
In ΔABD,

∵ OE || AB [By construction]

∴ Using the Basic Proportionality Theorem, we get

$$\frac{ED}{AE}=\frac{DO}{BO}$$

$$\Rightarrow \frac{AE}{ED}=\frac{BO}{DO} \quad ...(2)$$



From (1) and (2),

$$\frac{AE}{ED}=\frac{BO}{DO}=\frac{AO}{CO}$$

$$\Rightarrow \frac{BO}{DO}=\frac{AO}{CO} \Rightarrow \frac{AO}{BO}=\frac{CO}{DO}$$