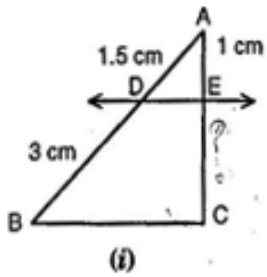
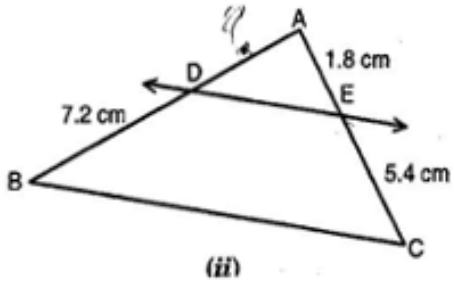
NCERT Solutions For Class 10 Chapter 6 Triangles Exercise 6.2

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



(i)



(ii)

Ans. (i) Since DE ||BC,

$$\therefore \frac{AD}{DB}=\frac{AE}{EC}$$

$$\Rightarrow \frac{1.5}{3}=\frac{1}{EC}$$

$$\Rightarrow EC=\frac{3}{1.5}$$

$$\Rightarrow EC=2 \text{ cm}$$

(ii) Since DE || BC,

$$\therefore \frac{AD}{DB}=\frac{AE}{EC}$$

$$\Rightarrow \frac{AD}{7.2}=\frac{1.8}{5.4}$$

$$\Rightarrow AD=\frac{1.8\times 7.2}{5.4}$$

$$\Rightarrow EC=2.4 \text{ cm}$$

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

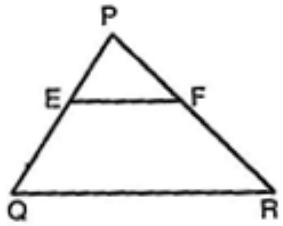
(i) PE = 3.9 cm, EQ = 4 cm, PF = 3.6 cm and FR = 2.4 cm

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

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

Ans. (i) Given: PE = 3.9 cm, EQ = 4 cm, PF = 3.6 cm and FR = 2.4 cm

Now, $\frac{PE}{EQ}=\frac{3.9}{4}=0.97$ cm



And $\frac{PF}{FR} = \frac{3.6}{2.4} = 1.2$ cm

$\because \frac{PE}{EQ} \neq \frac{PF}{FR}$

Therefore, EF does not divide the sides PQ and PR of ΔPQR in the same ratio.

$\therefore$ EF is not parallel to QR.

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

Now, $\frac{PE}{EQ} = \frac{4}{4.5} = \frac{8}{9}$ cm

And $\frac{PF}{FR} = \frac{8}{9}$ cm

$\because \frac{PE}{EQ} = \frac{PF}{FR}$

Therefore, EF divides the sides PQ and PR of ΔPQR in the same ratio.

$\therefore$ EF is parallel to QR.

(iii) Given: PQ = 1.28 cm, PR = 2.56 cm, PE = 0.18 cm and PF = 0.36 cm

$\Rightarrow$ EQ = PQ – PE = 1.28 – 0.18 = 1.10 cm

And ER = PR – PF = 2.56 – 0.36 = 2.20 cm

Now, $\frac{PE}{EQ} = \frac{0.18}{1.10} = \frac{18}{110} = \frac{9}{55}$ cm

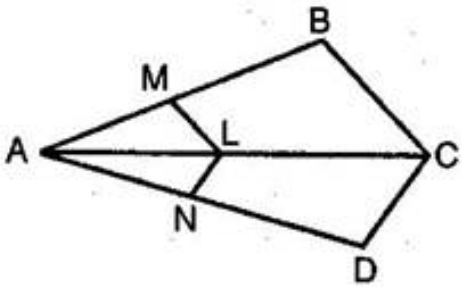
And $\frac{PF}{FR} = \frac{0.36}{2.20} = \frac{36}{220} = \frac{9}{55}$ cm

$\because \frac{PE}{EQ} = \frac{PF}{FR}$

Therefore, EF divides the sides PQ and PR of ΔPQR in the same ratio.

$\therefore$ EF is parallel to QR.

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



Ans. In ΔABC, LM $\parallel$ CB

$\therefore \frac{AM}{AB}=\frac{AL}{AC}$ [Basic Proportionality theorem] .....(i)

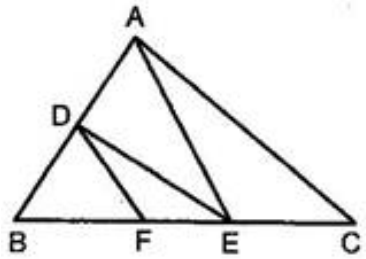
And in ΔACD, LN $\parallel$ CD

$\therefore \frac{AL}{AC}=\frac{AN}{AD}$ [Basic Proportionality theorem] ..... (ii)

From eq. (i) and (ii), we have

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

4. In figure, DE || AC and DF || AE. Prove that $\frac{BF}{FE}=\frac{BE}{EC}$.



Ans. In ΔBCA, DE || AC

$\therefore \frac{BE}{EC}=\frac{BD}{DA}$ [Basic Proportionality theorem] ..... (i)

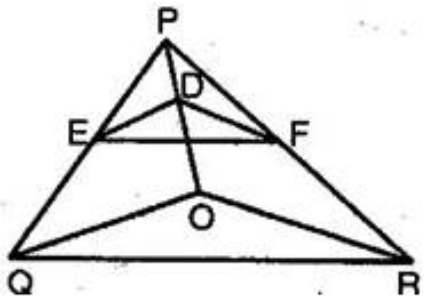
And in ΔBEA, DF || AE

$\therefore \frac{BE}{FE}=\frac{BD}{DA}$ [Basic Proportionality theorem] ..... (ii)

From eq. (i) and (ii), we have

$\frac{BF}{FE}=\frac{BE}{EC}$

5. In figure, DE || OQ and DF || OR. Show that EF || QR.



Ans. In ΔPQO, DE || OQ

$\therefore \frac{PE}{EQ} = \frac{PD}{DO}$ [Basic Proportionality theorem] ..... (i)

And in ΔPOR, DF || OR

$\therefore \frac{PD}{DO} = \frac{PF}{FR}$ [Basic Proportionality theorem] ..... (ii)

From eq. (i) and (ii), we have

$\frac{PE}{EQ} = \frac{PF}{FR}$

$\therefore$ EF || QR [By the converse of BPT]

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