Ex-6.3

1. (i) Yes, the triangles are similar.
   $\Rightarrow \triangle ABC \sim \triangle PQR$ [AAA similarity]

(ii) Yes they are similar.
   $\Rightarrow \triangle ABC \sim \triangle QRP$ [SSS similarity]

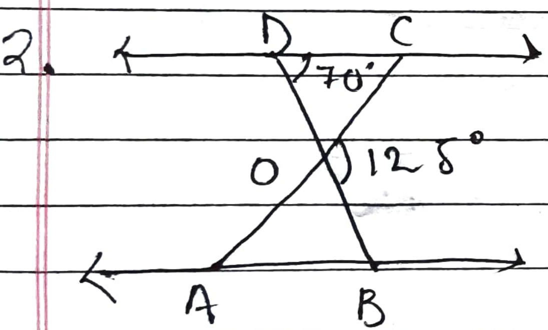
(iii) No they are not similar.

(iv) Yes, they are similar.
   $\Rightarrow \triangle MNL \sim \triangle QPR$ [SAS similarity]

(v) ~~Yes~~ No they are not similar.

(vi) Yes, they are similar.

2.



Given $\rightarrow \angle BOC = 125°$
$\angle CDO = 70°$
$\triangle ODC \sim \triangle OBA$

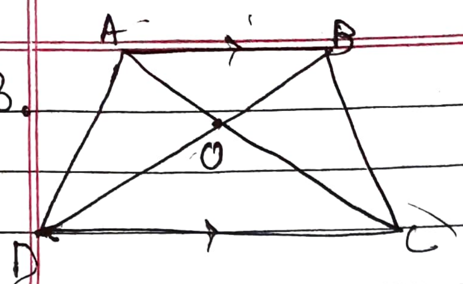
$\Rightarrow \angle DOC = 180 - 125° = 55°$

$\Rightarrow$ ~~∠DCO=~~

In $\triangle DOC$, $\angle ODC + \angle DCO + \angle DOC = 180°$
$\Rightarrow 70 + 55 + \angle DCO = 180°$
$\Rightarrow \angle DCO = 180 - 125 = 55°$

~~∠OAB=~~

~~As~~ $\triangle ODC \sim \triangle OBA$
$\angle DCO = \angle OAB = 55°$

3. 

In Δ AOB & Δ DOC,

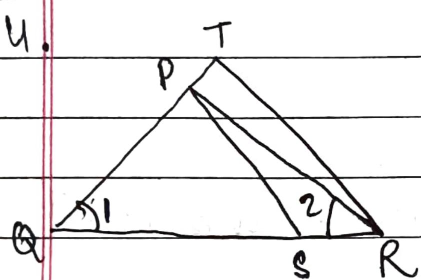
A | $\angle AOB = \angle DOC$ [V.O.A]

A | $\angle BAO = \angle DCO$ [alt interior angle]

A | $\angle ABO = \angle CDO$ [alt interior angle]

$\therefore \Delta AOB \sim \Delta DOC$ [AAA similarity]

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

4. 

Given - $\frac{QR}{QS} = \frac{QT}{PR}$

$\angle 1 = \angle 2$

To proove - $\Delta PQS \sim \Delta TQR$

Proof - In ΔPQR ~~& ΔTQR~~,

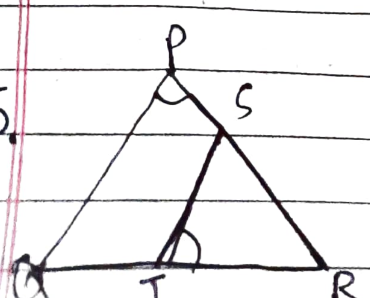
$\angle 1 = \angle 2$ $\Rightarrow PQ = PR$ [sides opp. to equal angles are equal]

In ΔPQS & ΔTQR,

$\Rightarrow \frac{QR}{QS} = \frac{QT}{QP}$ $\Rightarrow \frac{QR}{QS} = \frac{QT}{PR}$

$\Rightarrow \angle 1 = \angle 1$ [common]

$\therefore \Delta PQS \sim \Delta TQR$ [SAS similarity]

5. 

Given - $\angle P = \angle RTS$

To proove - $\Delta RPQ \sim \Delta RTS$

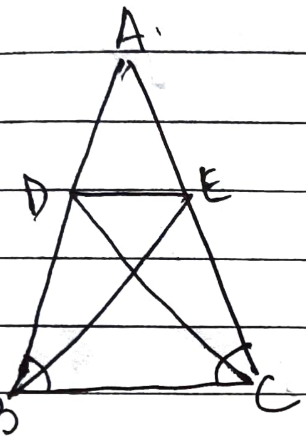
Proof - In ΔRPQ & ΔRTS

$\angle QPR = \angle STR$ [Given
$\angle R = \angle R$ [common]

$\therefore \Delta RPQ \sim \Delta RTS$ [AA similarity]

Hence proved.

6.



Given - $\Delta ABE \cong \Delta ACD$

To proove $\Delta ADE \sim \Delta ABC$

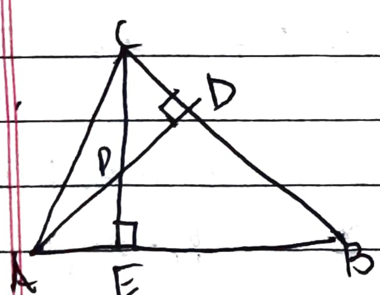
Proof - In ΔADE & ΔABC

$\angle A = \angle A$ [common]

$\frac{AB}{AD} = \frac{AC}{AE}$ [As, $ABE \cong \Delta ACD$ & $AB = AC \Rightarrow AD = AE$]

$\therefore \Delta ADE \sim \Delta ABC$ [SAS similarity

7.



(i) $\Delta AEP \sim \Delta CDP$

In ΔAEP & ΔCDP

$\Rightarrow \angle AEP = \angle CDP$ [$90°$]

$\Rightarrow \angle APE = \angle CPD$ [V.O.A]

$\therefore \Delta AEP \sim \Delta CDP$ [AA similarity

(ii) $\Delta ABD \sim \Delta CBE$

In ΔABD & ΔCBE,

$\angle ADB = \angle CEB$ [Given]

$\angle B = \angle B$ [common]

$\therefore \Delta ABD \sim \Delta CBE$ [AA similarity]

(iii) $\Delta AEP \sim \Delta ADB$

In ΔAEP & ΔADB

$\angle AEP = \angle ADB$ [Given]

$\angle A = \angle A$ [common]

$\therefore \Delta AEP \sim \Delta ADB$ [AA similarity]

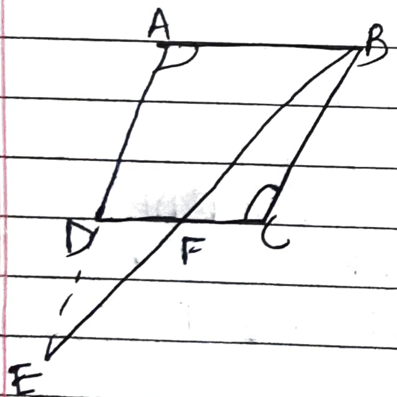
(iv) $\Delta PDC \sim \Delta BEC$

In ΔPDC & ΔBEC,

$\angle C = \angle C$ [Common]

$\angle CDP = \angle CEB$ [Given]

$\therefore PDC \sim \Delta BEC$ [AA similarity]

8. 

To proove - $\Delta ABE \sim \Delta CFB$

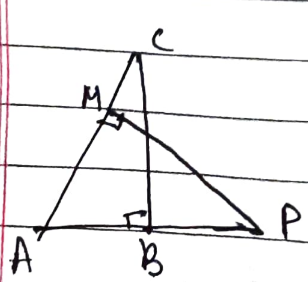
Proof - In ΔABE & ΔCFB

$\angle A = \angle C$ [opp. angles of ||gm]

~~$\frac{AD}{DE} =$~~

$\angle ABF = \angle BFC$ [alt int angle]

$\therefore \Delta ABE \sim \Delta CFB$ [AA similarity]

9. 

Given - $\angle B = \angle M = 90°$

To proove (i) $\Delta ABC \sim \Delta AMP$

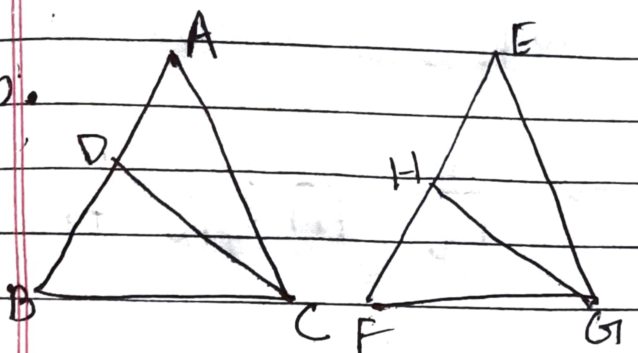
In ΔABC & ΔAMP

$\angle B = \angle M$ [Given]

$\angle A = \angle A$ [Common]

$\therefore \Delta ABC \sim \Delta AMP$ [AA similarity]

(ii) $\Rightarrow \frac{CA}{PA} = \frac{BC}{MP}$ [Ratio of corresponding ~~parts~~ sides of similar triangles are equal]

10. 

Given $\Delta ABC \sim \Delta FEG$

To proove - (i) $\frac{CD}{GH} = \frac{AC}{FG}$

Proof - In ΔADC & ΔFGH

$\angle A = \angle F$

$\angle ACD = \angle HGF$

$\therefore \Delta ADC \sim \Delta FGH$ [AA]

$\Rightarrow \frac{CD}{GH} = \frac{AC}{FG}$ [Ratio of corresponding sides is equal]

(ii) $\Delta DCB \sim \Delta HGE$

$\angle DCB = \angle HGE$

$\angle B = \angle E$

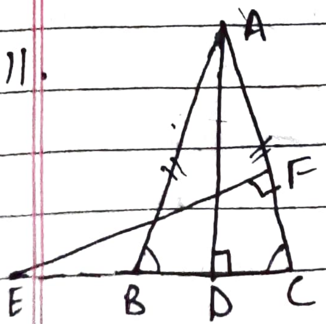
$\therefore \Delta DCB \sim \Delta HGE$ [AA similarity]

(iii) $\Delta DCA \sim \Delta HGF$

$\angle A = \angle F$

$\angle ACD = \angle HGF$

$\therefore \Delta DCA \sim \Delta HGF$ [AA similarity]

11. 

Given - $AB = AC$, $AD \perp BC$, $EF \perp AC$

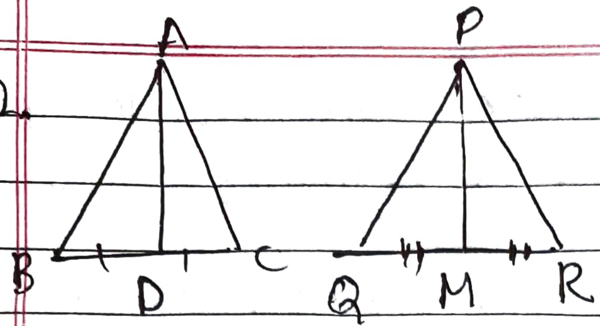
To proove - $\Delta ABD \sim \Delta ECF$

Proof - In ΔABD & ΔECF,

$\angle ADB = \angle EFC$

$\angle B = \angle C$

$\therefore \Delta ABD \sim \Delta ECF$ [AA similarity]

12. 

Given - $BD = DC$, $QM = MR$

$\frac{AB}{PQ} = \frac{AD}{PM} = \frac{AC}{PR}$

To proove - $\triangle ABC \sim \triangle PQR$

Proof $\frac{AB}{PQ} = \cancel{\frac{AD}{PM}}\ \frac{BC}{QR} = \frac{AD}{PM}$

$\Rightarrow \frac{AB}{PQ} = \cancel{AD}\ \frac{BD}{QM} = \frac{AD}{PM}$

$\Rightarrow \triangle ABD \sim \triangle PQM$ [SSS similarity]

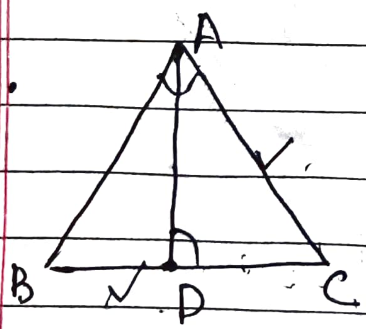
$\Rightarrow \angle B = \angle Q$

$\therefore$ In $\triangle ABC$ & $\triangle PQR$,

$\angle B = \angle Q$

$\frac{AB}{PQ} = \frac{BC}{QR}$

$\therefore \triangle ABC \sim \triangle PQR$ [SAS similarlity]

13. 

Given - $\angle ADC = \angle BAC$

Toproove - $CA^2 = CB \cdot CD$

Proof - In $\triangle ABC$ & $\triangle ADC$,

$\angle C = \angle C$ [common]

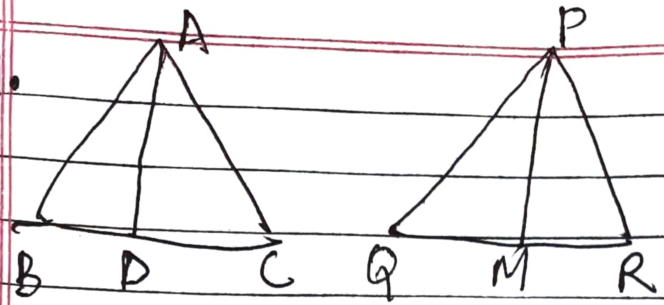
$\angle ADC = \angle A$ [Given]

$\therefore \triangle \cancel{ABC}\ BAC \sim \triangle ADC$ [AA similarity]

$\Rightarrow \frac{AC}{BC} = \cancel{\frac{AC}{DC}}\ \frac{CD}{AC}$

$\Rightarrow AC^2 = BC \cdot CD$

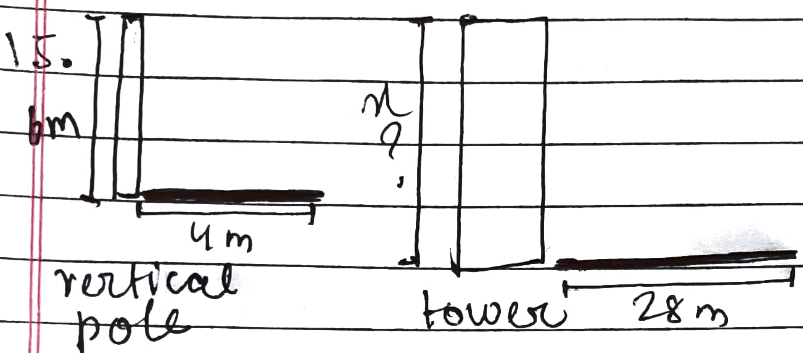
Hence Proved.

14. 

In $\triangle ABC$ & In PQR,

$$\frac{AB}{PQ} = \frac{AD}{PM} = \frac{AC}{PR}$$

$\therefore \triangle ABC \sim \triangle PQR$ [SSS]

15. 

$$\Rightarrow \frac{\cancel{6}^{3}}{\cancel{4}_{2}} = \frac{x}{28}$$

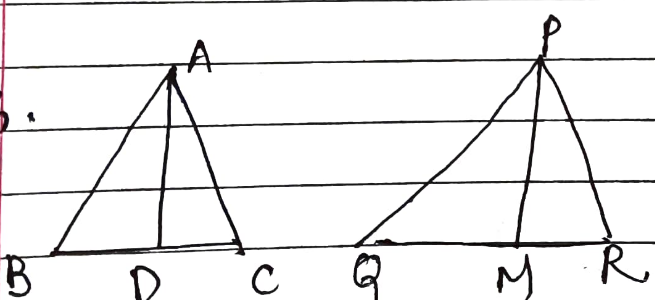
$\Rightarrow \cancel{2x = 28(3)}$

$\Rightarrow \cancel{x = \frac{78}{2}}$

$\Rightarrow 2x = 28(3)$ 14

$\Rightarrow x = \frac{\cancel{28} \times 3}{\cancel{2}}$

$= 42$ m

16. 

Given - $\triangle ABC \sim \triangle PQR$

To prove - $\frac{AB}{PQ} = \frac{AD}{PM}$

Proof - In $\triangle ABD$ & $\triangle PQM$

$\angle B = \angle Q$ [As $\triangle ABC \sim \triangle PQR$]

$\frac{AB}{PQ} = \frac{BD}{QM}$

$\therefore \triangle ABD \sim \triangle PQM$ [SAS similarity]

$\Rightarrow \frac{AB}{PQ} = \frac{AD}{PM}$ [corresponding sides of similar triangles]