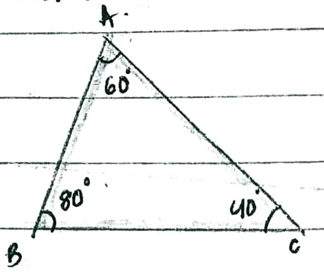
Q1 (i) In ΔABC and ΔPQR.

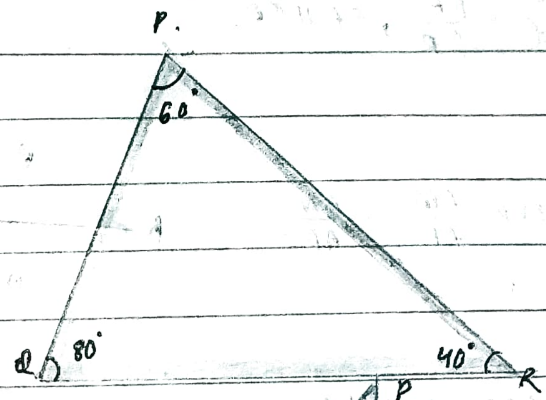
$\angle A = \angle P$.

$\angle B = \angle Q$.

$\angle C = \angle R$.

$\therefore \Delta ABC \sim \Delta PQR$.



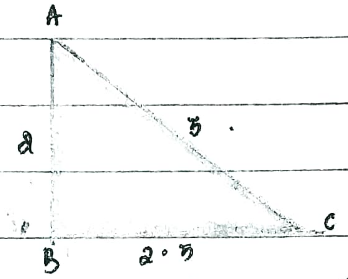


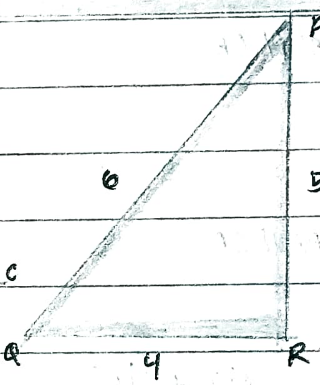
(ii) In ΔABC & ΔPQR.

$\frac{BC}{PR} = \frac{2.5}{5} = \frac{1}{2}$.

$\frac{AB}{QR} = \frac{2}{4} = \frac{1}{2}$.

$\frac{AC}{PQ} = \frac{3}{6} = \frac{1}{2}$.





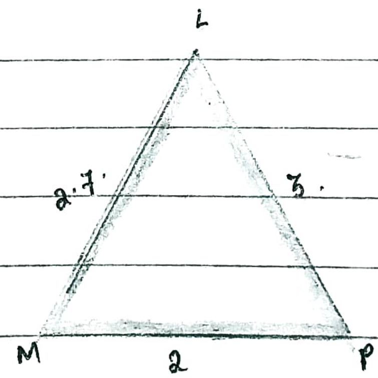
$\therefore \Delta ABC \sim \Delta QRP$.

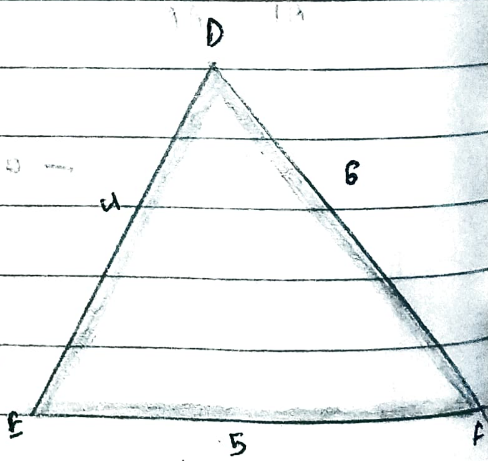
(iii) In ΔLMP & ΔEFD.

$\frac{LM}{EF} = \frac{2.7}{5}$

$\frac{LP}{DF} = \frac{3}{6} = \frac{1}{2}$.

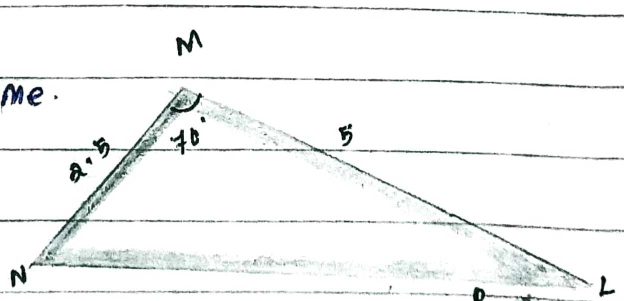
$\frac{MP}{DE} = \frac{2}{4} = \frac{1}{2}$.





$\therefore \Delta LMP$ is not similar to ΔEFD.

Since the 3 ratios are not same.

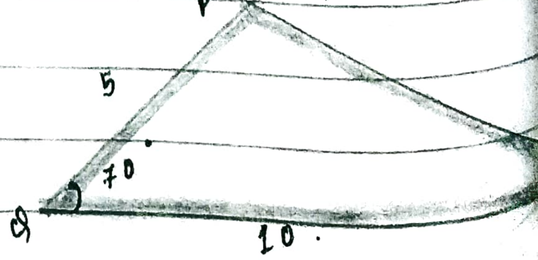


(iv) In ΔMNL and ΔPQR.

$\frac{MN}{PQ} = \frac{2.5}{5} = \frac{1}{2}$.

$\frac{ML}{QR} = \frac{5}{10} = \frac{1}{2}$. $\angle M = \angle Q = 70°$

$\Delta NML \sim \Delta PQR$.



Q2. $\angle DOC + 125^\circ = 180^\circ$.

$\rightarrow \angle DOC = 180^\circ - 125^\circ = 55^\circ$

Now in ΔDOC,

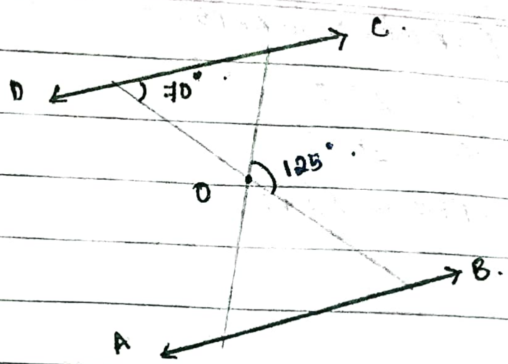
$\angle DCO + \angle ODC + \angle DOC = 180^\circ$.

$\rightarrow \angle DCO + 70^\circ + 55^\circ = 180^\circ$

$\rightarrow \angle DCO = 180^\circ - 125^\circ = 55^\circ$.

now, $\Delta ODC \sim \Delta OBA$.

hence, $\angle DOC = 55^\circ$, $\angle DCO = 55^\circ$ and $\angle OAB = 55^\circ$.



Q3. $\frac{OA}{OC} = \frac{OB}{OD}$.

diagonals AC and BD intersect at O.

AB ∥ DC.

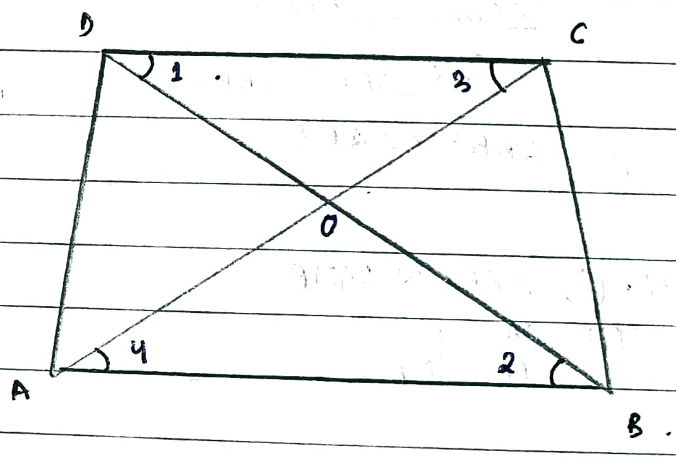
to prove: $\frac{OA}{OC} = \frac{OB}{OD}$.

In ΔAOB & ΔCOD.

$\angle 1 = \angle 2$ $\angle 3 = \angle 4$.

$\therefore$ $\Delta AOB \sim \Delta COD$.

$\rightarrow \frac{OA}{OC} = \frac{OB}{OD}$.



Q4. from the fig.

$\angle 1 = \angle 2$.

$\therefore$ PQ = PR.

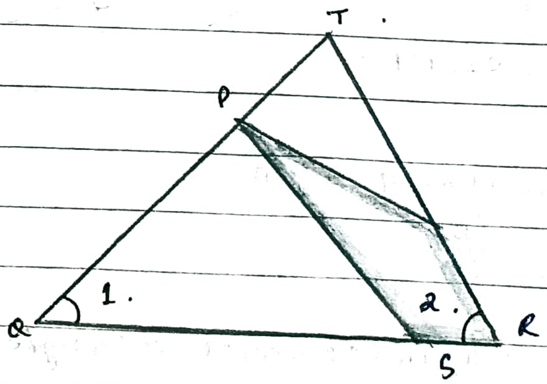
In ΔPQS and ΔTQR.

$\rightarrow \frac{QR}{QS} = \frac{QT}{PR}$.

$\rightarrow \frac{QR}{QS} = \frac{QT}{PR}$.

R. $\angle PQS = \angle TQR = \angle 1$.

$\therefore$ $\Delta PQS \sim \Delta TQR$.

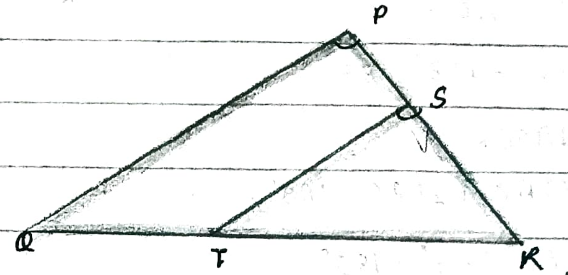


Q5. In ΔRPQ and ΔRTS,

$\angle P = \angle RTS$.

$\angle R = \angle R$.

$\therefore$ $\Delta RPQ \sim \Delta RTS$.



Q6. In a parallelogram ABCD, in which E is a point on AD produced and BE intersects CD at F.

In parallelogram ABCD,

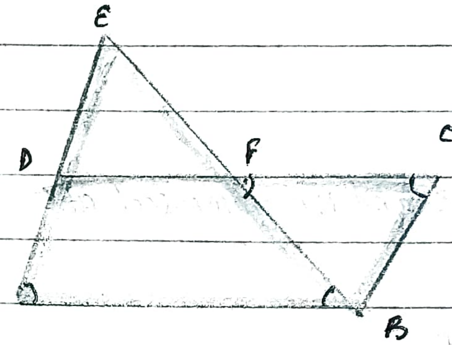
$\angle A = \angle C$. ----(i).

In ΔABE and ΔCFB,

$\angle EAB = \angle BCF$.

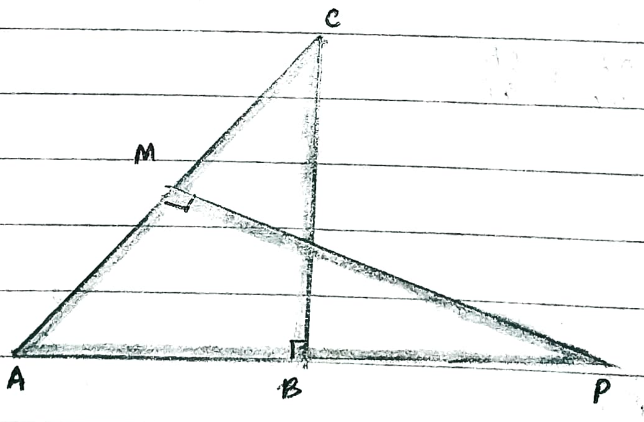
and $\angle ABE = \angle BFC$.

$\therefore$ $\Delta ABE \sim \Delta CFB$.



Q7. (i) $\Delta ABC \sim \Delta AMP$.

(ii) $\frac{CA}{PA} = \frac{BC}{MP}$.



(i) In ΔABC & ΔAMP.

$\angle B = \angle AMP$.

$\angle A = \angle A$.

$\Rightarrow$ $\Delta ABC \sim \Delta AMP$.

(ii) $\Delta ABC \sim \Delta AMP$.

$\Rightarrow$ $\frac{CA}{PA} = \frac{CB}{PM}$

Q8. ΔABC is an isosceles triangle

So, $AB = AC$.

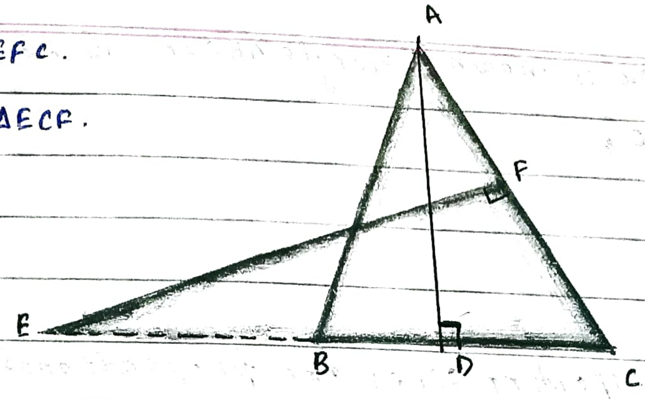
$\therefore$ $\angle ABC = \angle ACB$. ----(i).

In ΔABD & ΔECF,

$\angle ABD = \angle ECF$.

Q8. $\angle ADB = \angle EFC$.

$\Delta ABD \sim \Delta ECF$.



Q9. Side AB & AC & median AD of a triangle ABC are respectively proportional to sides PQ & PR & median PM of another triangle PQR. Show that $\Delta PBC \sim \Delta PQR$.

Ans → Construction: Draw DE ∥ AC & MS ∥ PR.

Proof: In ΔABC, D is mid point of BC.

∴ E is mid-point of AB.

⇒ $DE = \frac{1}{2} AC$.

Similarly, $SM = \frac{1}{2} PR$.

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

⇒ $\frac{2AE}{2PS} = \frac{2DE}{2SM} = \frac{AD}{PM}$ ⇒ $\frac{AE}{PS} = \frac{DE}{SM} = \frac{AD}{PM}$.

∴ $\Delta ADE \sim \Delta PMS$.

⇒ $\angle 1 = \angle 3$.

Similarly $\angle 2 = \angle 4$.

$\angle 1 + \angle 2 = \angle 3 + \angle 4$ ⇒ $\angle A = \angle P$.

Now, in ΔABC & PQR.

$\frac{AB}{PQ} = \frac{AC}{PR}$.

$\angle A = \angle P$.

∴ $\Delta ABC \sim \Delta PQR$.

Q 10. In the fig given below is shown a triangle ABC in which $\angle ADC = \angle BAC$.

In ΔABC and ΔDAC,

$\angle C = \angle C$.

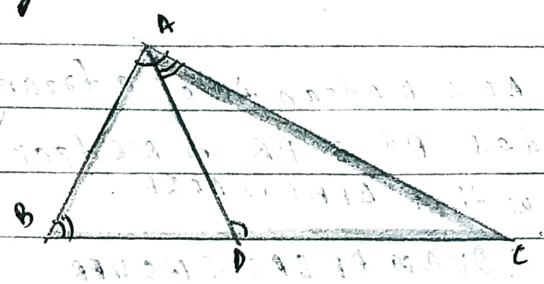
$\angle BAC = \angle ADC$.

$\therefore$ $\Delta ABC \sim \Delta DAC$.

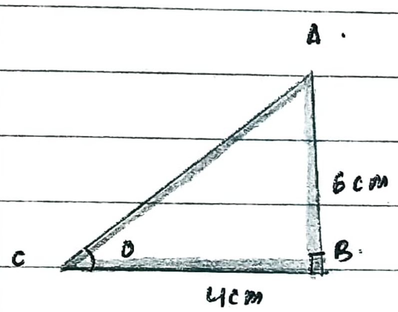
Thus, their corresponding sides are proportional.

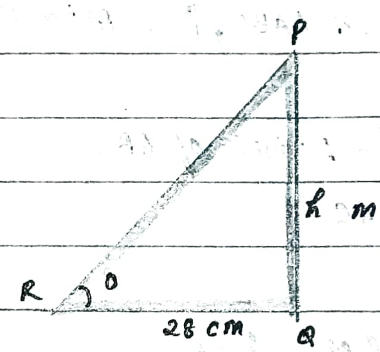
$\therefore$ $\frac{CA}{CD} = \frac{CB}{CA}$.

$\Rightarrow$ $CA^2 = CB \times CD$.



Q 11.





Let in ΔABC, AB be the pole and BC its shadow. Also let in ΔPQR, PQ be the tower of height h m & QR be its shadow.

Then when θ is the altitude of the sun.

$\Delta ABC \sim \Delta PQR$.

$\Rightarrow$ $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$.

$\Rightarrow$ $\frac{BC}{QR} = \frac{AC}{PR}$.

$\Rightarrow$ $\frac{4}{28} = \frac{6}{4}$

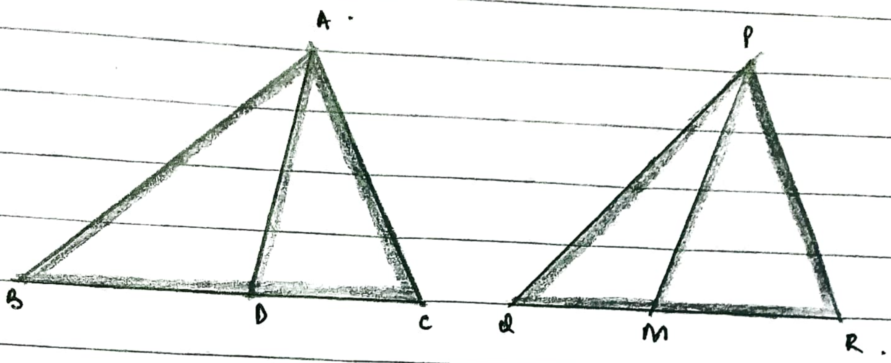
$\Rightarrow$ $h = \frac{6 \times 28}{4} = 42m$.

$\therefore$ the height of the tower is 42m.

Q12. when, $\Delta ABC \sim \Delta PQR$.

$\Rightarrow \angle ABC = \angle PQR$.

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



$\frac{AB}{PQ} = \frac{\frac{1}{2}BC}{\frac{1}{2}QR}$.

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

In ΔABD & ΔPQM;

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

$\therefore \angle B = \angle Q$.

$\therefore \Delta ABD \sim \Delta PQM$.

$\frac{AB}{PQ} = \frac{AD}{PM}$.

Q13. In ΔABC & ΔPQR,

$\Rightarrow \frac{AB}{PQ} = \frac{BC}{QR} = \frac{AD}{PM}$.

$\Rightarrow \frac{AB}{PQ} = \frac{BA}{QM} = \frac{AD}{PM}$ $\Rightarrow \Delta ABD \sim \Delta PQM$.

$\therefore \angle B = \angle Q$.

In ΔABC & ΔPQR,

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

$\angle B = \angle Q$.

$\therefore \Delta ABC \sim \Delta PQR$.