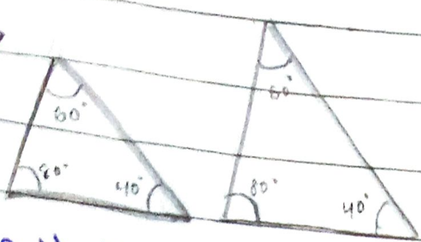
Exercise - 6.3

1) i)



Ans. i) $\angle A = \angle P = 60^\circ$

$\angle B = \angle Q = 80^\circ$

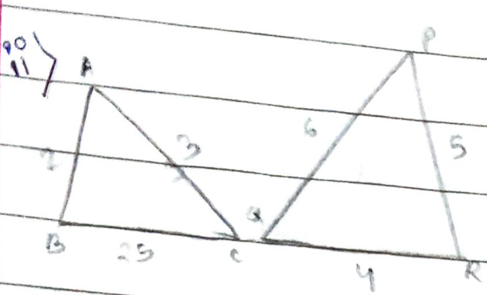
$\angle C = \angle R = 40^\circ$

$\therefore$ ~~It is~~ So, $\Delta ABC \sim \Delta PQR$

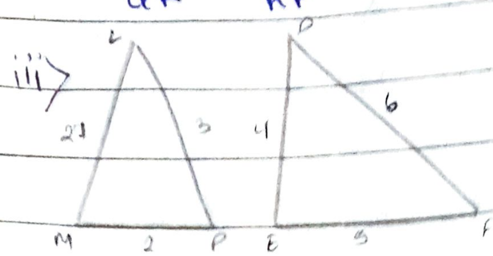
[by AAA criterion]

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

ii)



iii)



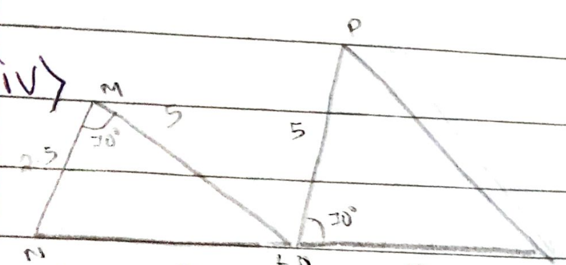
Ans. $\frac{AB}{QR} = \frac{BC}{RP} = \frac{CA}{PQ}$

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

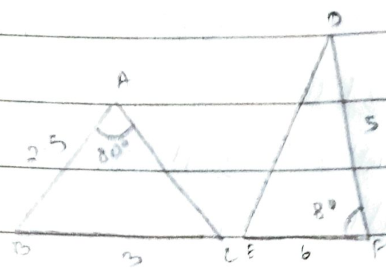
[By SSS criterion]

Ans. The given triangles are not similar as they corresp. sides are not proportional

iv)



v)



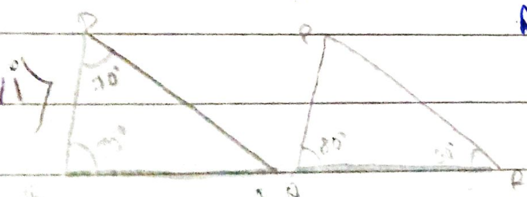
Ans. In Δ MNL and Δ QPR, we observe that

MNQP = MLQR = 12 $\angle M = \angle Q = 70^\circ$

$\therefore \Delta MNL \sim \Delta QPR$ By SAS Similarity

Ans. The given triangle are not similar as the corresponding sides are not proportional

vi)



Ans. In ΔDEF,

$\angle D + \angle E + \angle F = 180^\circ$, $\angle E = 30^\circ$

Similarly in ΔPQR,

$\angle P + \angle Q + \angle R = 180^\circ$ (sum of the measure of the angles of a Δ is

$\Rightarrow P + 80^\circ + 30^\circ = 180^\circ$ $\Rightarrow \angle P + 110^\circ = 180^\circ$

$\angle P = 70$

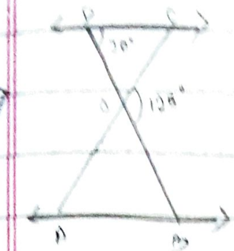
In ΔDEF & ΔPQR,

$\angle D = \angle P$ (Each $70°$)

$\angle E = \angle Q$ (Each $80°$)

$\angle F = \angle R$ (Each $30°$)

$\therefore \Delta DEF \sim \Delta PQR$ [By AAA similarity criterion]

2) 

Ans. DOB is a straight line

$\therefore \angle DOC + \angle COB = 180°$

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

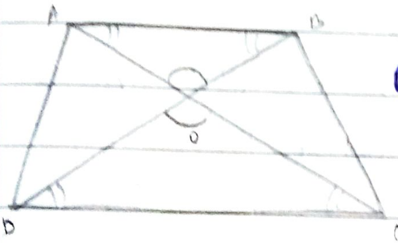
In ΔDOC

$\Rightarrow \angle DOC + \angle CDO + \angle DOC = 180°$ (sum of measures of the angle of a Δ is $180°$)

$\Rightarrow \angle DCO + 70° + 55° = 180° \Rightarrow \angle DCO = 55°$

It is given that $\Delta ODC \sim \Delta OBA$.

$\therefore \angle OAB = \angle OCD$ [corresponding angles are equal in similar Δ]

3) 

Ans. In ΔDOC & ΔBOA

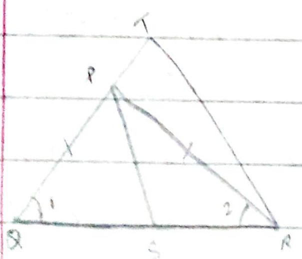
$\Rightarrow \angle CDO = \angle ABO$ (Alternate interior as $AB \parallel CD$)

$\Rightarrow \angle DCO = \angle BAO$ [Alternate interior angles $AB \parallel CD$]

$\Rightarrow \angle DOC = \angle BOA$ [vertically opposite angle]

$\therefore \Delta DOC \sim \Delta BOA$ [AAA similarity criterion]

$\therefore \frac{DO}{BO} = \frac{OC}{OA} \Rightarrow \frac{OA}{OC} = \frac{OB}{OD}$ [corresponding sides are ~~propor~~ proportional]

4) 

Ans. In ΔPQR, $\angle PQR = \angle PRQ$ $\therefore PQ = PR$ (i)

Given

$\Rightarrow \frac{QR}{QS} = \frac{QT}{PR}$ using eq(i) we obtain

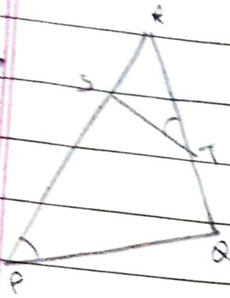
$\Rightarrow \frac{QR}{QS} = \frac{QT}{QR}$ (ii)

In ΔPQS & ΔTQR

$\frac{QR}{QS} = \frac{QT}{QR}$ [using (ii)] $\angle Q = \angle Q$

$\therefore \Delta PQS \sim \Delta TQR$ [SAS similarity criteri...

5)



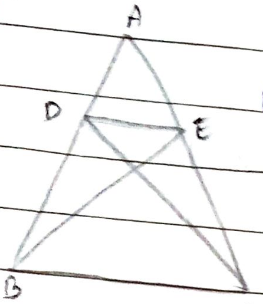
Ans. In ΔRPQ & ΔRST

$\angle RTS = \angle QPS$ (Given)

$\angle R = \angle R$ (common angle)

$\therefore \Delta RPQ \sim \Delta RTS$ (By AA similar crite...

6)



Ans It is given that $\Delta ABE = \Delta ACD$

$\therefore AB = AC$ (By CPCT) (i) & $AD = AE$ (By CPCT)

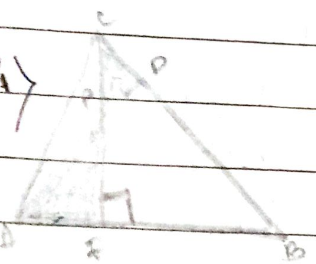
In ΔADE & ΔABC,

$\frac{AD}{AB} = \frac{AE}{AC}$ (Dividing equation 2 & 1)

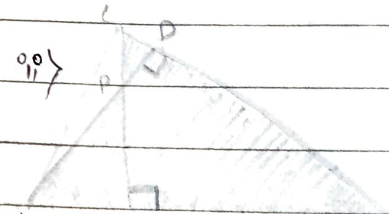
$\therefore \angle A = \angle A$ (Common angle)

$\therefore \Delta ADE \sim \Delta ABC$ (By SAS similarity criterion)

7) i)



ii)



Ans In ΔAEP & ΔCDP,

$\angle AEP = \angle CDP$ (Each 90°)

$\angle APE = \angle CPD$ (vertically opposite)

Hence, by using AA similarity criterion

$\Delta AEP \sim \Delta CDP$

Ans In ΔABD & ΔCBE,

$\angle ADB = \angle CEB$ (Each 90°)

$\angle ABD = \angle CBE$ (common)

Hence by using AA similarity criterion

$\Delta ABD \sim \Delta CBE$

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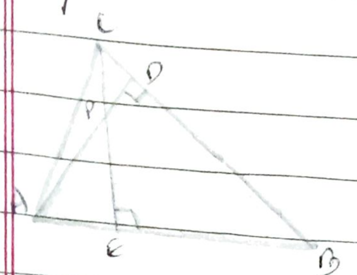
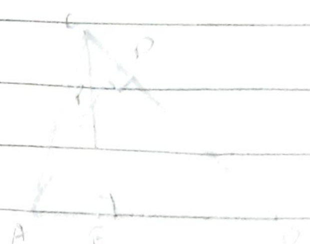
iii) $\Delta AEP \sim \Delta ADB$



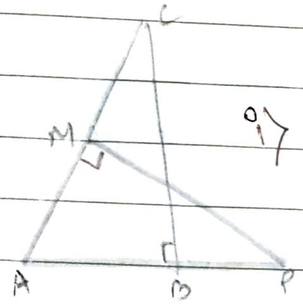
Ans. In ΔAEP & ΔADB,
$\angle AEP = \angle ADB$ (Each $90°$)
$\angle PAE = \angle DAB$
Hence, by using AA similarity criterion,
$\Delta AEP \sim \Delta ADB$

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



Ans. In ΔPDC & ΔBEC
$\angle PDC = \angle BEC$ (Each $90°$)
$\angle PCD = \angle BCE$ (common angle)
Hence, by using AA similarity criterion,
$\Delta PDC \sim \Delta BEC$

8) In ΔABE & ΔCFB
$\angle A = \angle C$ (opposite angles of a parallelogram)
$\angle AEB = \angle CBF$ (Alternate interior angles as $AE \parallel BC$)
$\therefore \Delta ABE \sim \Delta CFB$ (By AA similarity criterion)

9) 

i) $\Delta ABC \sim \Delta AMP$

Ans. In ΔABC & ΔAMP
$\angle ABC = \angle AMP$ (Each $90°$)
$\angle A = \angle A$ (common)
$\therefore \Delta ABC \sim \Delta AMP$ (By AA similarities criterion

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

Ans corresponding sides of similar triangles are proportional (CPCT)