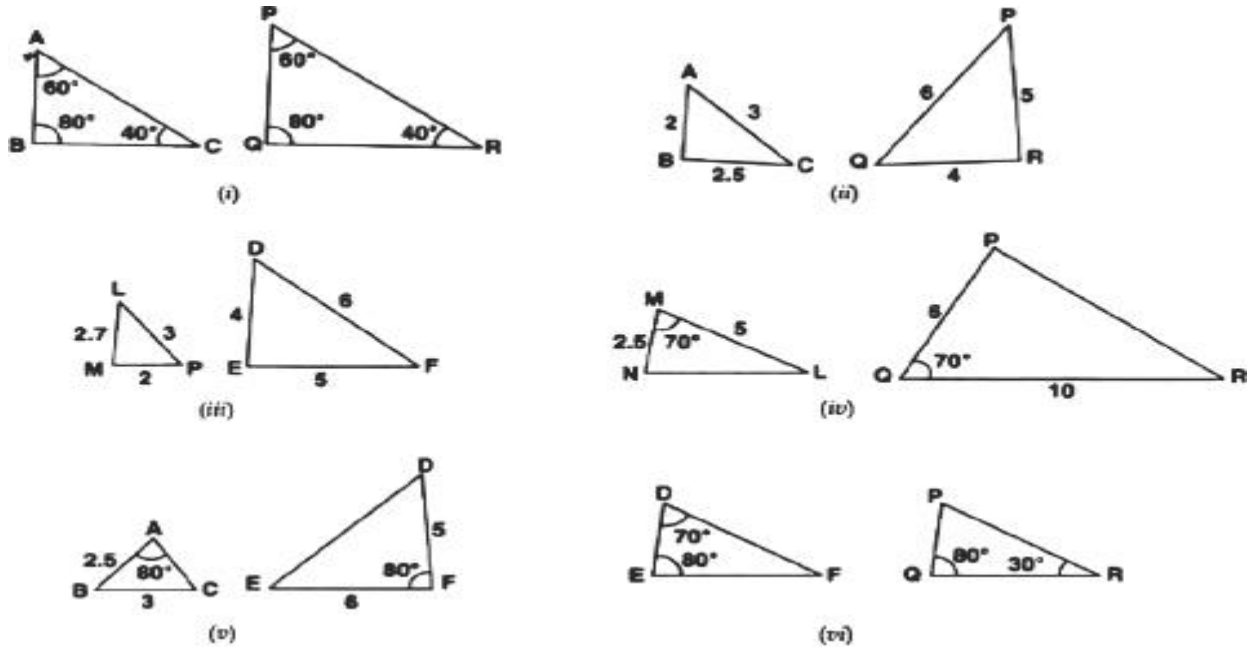
## EXERCISE 6.3

**1.** State which pairs of triangles in the figures, are similar. Write the similarity criteria used by you for answering the question and also write the pairs of similaltfriangles in the symbolic form:




Sol. (i) In ΔABC and ΔPQR

We have:

$\angle A = \angle P = 60°$

$\angle B = \angle Q = 80°$

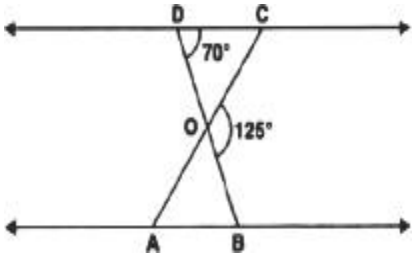
$\angle C = \angle R = 40°$

∴ The corresponding angles are equal,

∴ Using the AAA similarity rule,

$\Delta ABC \sim \Delta PQR$

**2.** In the figure, $\Delta ODC \sim \Delta OBA$, $\angle BOC = 125°$ and $\angle CDO = 70°$. Find $\angle DOC$, $\angle DCO$ and $\angle OAB$.




Sol. We have:

$\angle BOC = 125°$ and $\angle CDO = 70°$

since, $\angle DOC + \angle BOC = 180°$ [Linear Pair]

$\Rightarrow \angle DOC\ 180° - 125° = 55°$ ...(1)

In ΔDOC

Using the angle sum property, we get

$\angle DOC + \angle ODC + \angle DCO = 180°$

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

$\Rightarrow \angle DCO = 180° - 55° - 70° = 55°$ ...(2)

Again,

$\Delta ODC \sim \Delta OBA$ [Given]

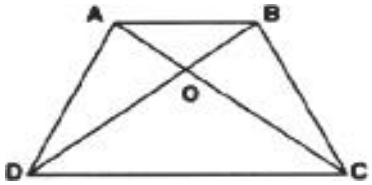
$\therefore$ Their corresponding angles are equal

And $\angle OCD = \angle OAB = 55°$ ...(3)

Thus, from (1), (2) and (3)

$\angle DOC = 55°$, $\angle DCO = 55°$ and $\angle OAB = 55°$.

3. Diagonals AC and BD of a trapezium ABCD with AB || DC intersect each other at the point O. Using a similarity criterion for two triangles, show that $\frac{AO}{BO} = \frac{CO}{DO}$.




Sol. We have a trapezium ABCD in which AB || DC. The diagonals AC and BD intersect at O.

In $\Delta OAB$ and $\Delta OCD$

AB || DC [Given]

and BD intersects them

$\therefore \angle OBA = \angle ODC$ ...(1) [Alternate angles]

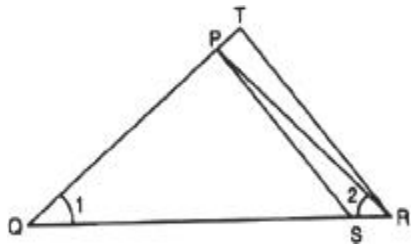
similarly,

$\angle OAB = \angle OCD$ ...(2)

$\therefore$Using AA similarity rule,

$\Delta OAB \sim \Delta OCD$

**4.** In the figure, $\frac{QR}{QS} = \frac{QT}{PR}$ and $\angle 1 = \angle 2$. Show that $\Delta PQS \sim \Delta TQR$.




Sol. In $\Delta PQR$

$\because \angle 1 = \angle 2$ [Given]

$\therefore$ PR = QP_____..(1)

[$\because$In a $\Delta$, sides opposite to equal angles are equal]

$\because \frac{QR}{QS} = \frac{QT}{PR}$ [Given] ...(2)

From (1) and (2),

$\frac{QR}{QS} = \frac{QT}{QP} \Rightarrow \frac{QS}{QR} = \frac{QP}{QT}$ ...(3)

Now, in $\Delta PQS$ and $\Delta TQR$

$\frac{QS}{QR} = \frac{QP}{QT}$ [From (3)]

$\angle SQP = \angle RQT = \angle 1$

Now, using SAS similarity rule.

$\Delta PQS \sim \Delta TQR$