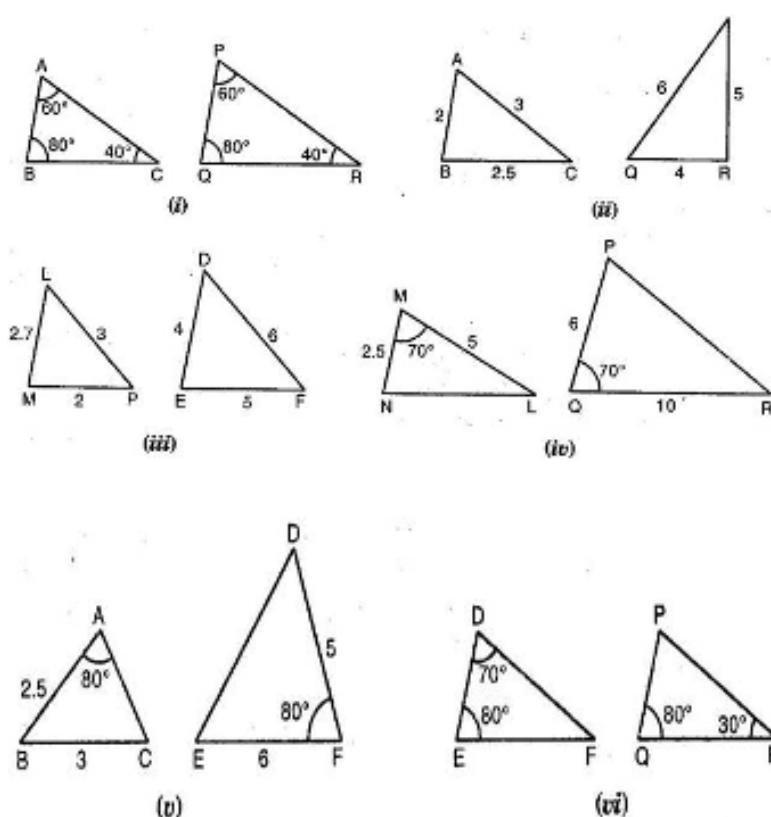




NCERT Solutions For Class 10 Chapter 6 Triangles Exercise 6.3

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



**Ans. (i)** In  $\Delta$ s ABC and PQR, we observe that,  
 $\angle A = \angle P = 60^\circ$ ,  $\angle B = \angle Q = 80^\circ$  and  $\angle C = \angle R = 40^\circ$   
 $\therefore$  By AAA criterion of similarity,  
 $\Delta ABC \sim \Delta PQR$

**(ii)** In  $\Delta$ s ABC and PQR, we observe that,

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

$\therefore$  By SSS criterion of similarity,  $\Delta ABC \sim \Delta PQR$

**(iii)** In  $\Delta$ s LMP and DEF, we observe that, the ratio of the sides of these triangles is not equal.

Therefore, these two triangles are not similar.

**(iv)** In  $\Delta$ s MNL and QPR, we observe that,  
 $\angle M = \angle Q = 70^\circ$

$$\text{But, } \frac{MN}{PQ} \neq \frac{ML}{QR}$$

$\therefore$  These two triangles are not similar as they do not satisfy SAS criterion of similarity.

**(v)** In  $\Delta$ s ABC and FDE, we have,  
 $\angle A = \angle F = 80^\circ$

$$\text{But, } \frac{AB}{DE} \neq \frac{AC}{DF} [\because AC \text{ is not given}]$$

$\therefore$  These two triangles are not similar as they do not satisfy SAS criterion of similarity.

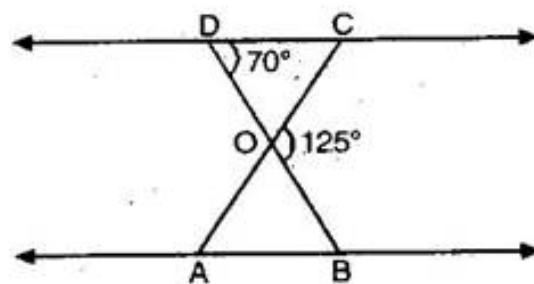
**(vi)** In  $\Delta$ s DEF and PQR, we have,  
 $\angle D = \angle P = 70^\circ$

$$[\because \angle P = 180^\circ - 80^\circ - 30^\circ = 70^\circ]$$

$$\text{And } \angle E = \angle Q = 80^\circ$$

$\therefore$  By AAA criterion of similarity,  
 $\Delta DEF \sim \Delta PQR$

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



**Ans.** Since BD is a line and OC is a ray on it.

$$\therefore \angle DOC + \angle BOC = 180^\circ$$

$$\Rightarrow \angle DOC + 125^\circ = 180^\circ$$

$$\Rightarrow \angle DOC = 55^\circ$$

In  $\triangle CDO$ , we have

$$\angle CDO + \angle DOC + \angle DCO = 180^\circ$$

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

$$\Rightarrow \angle DCO = 55^\circ$$

It is given that  $\triangle ODC \sim \triangle OBA$

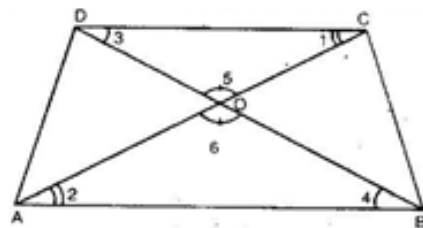
$$\therefore \angle OBA = \angle ODC, \angle OAB = \angle OCD$$

$$\Rightarrow \angle OBA = 70^\circ, \angle OAB = 55^\circ$$

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

**3.** Diagonals AC and BD of a trapezium ABCD with  $AB \parallel CD$  intersect each other at the point O. Using a similarity criterion for two triangles, show that  $\frac{OA}{OC} = \frac{OB}{OD}$ .

**Ans. Given:** ABCD is a trapezium in which  $AB \parallel DC$ .



$$\text{To Prove: } \frac{OA}{OC} = \frac{OB}{OD}$$

**Proof:** In  $\triangle OAB$  and  $\triangle OCD$ , we have,

$$\angle 5 = \angle 6 \text{ [Vertically opposite angles]}$$

$$\angle 1 = \angle 2 \text{ [Alternate angles]}$$

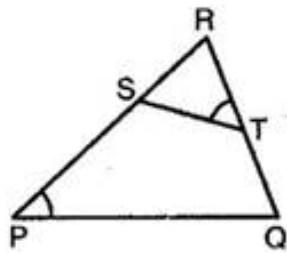
$$\text{And } \angle 3 = \angle 4 \text{ [Alternate angles]}$$

$\therefore$  By AAA criterion of similarity,  $\triangle OAB \sim \triangle OCD$

$$\text{Hence, } \frac{OA}{OC} = \frac{OB}{OD}$$

5. S and T are points on sides PR and QR of a  $\triangle PQR$  such that  $\angle P = \angle RTS$ . Show that  $\triangle RPQ \sim \triangle RTS$ .

**Ans.** In  $\triangle RPQ$  and  $\triangle RTS$ , we have



$$\angle RPQ = \angle RTS \text{ [Given]}$$

$$\angle PRQ = \angle TRS \text{ [Common]}$$

$\therefore$  By AA-criterion of similarity,

$$\triangle RPQ \sim \triangle RTS$$

\*\*\*\*\* END \*\*\*\*\*