

Congruence of Triangles

① Congruent figures: Same shape and same size.

ex:- (i) Pens of same company.

(ii) Biscuits in the same packet.

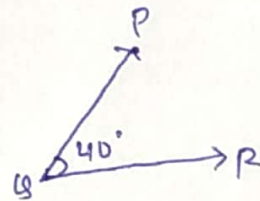
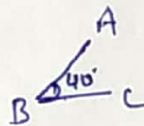
② Congruence among Line segments:

A $\xrightarrow{2\text{cm}}$ B

P $\xrightarrow{2\text{cm}}$ Q

If two line segments have the same length, they are congruent. Also, if two line segments are congruent, they have the same length.

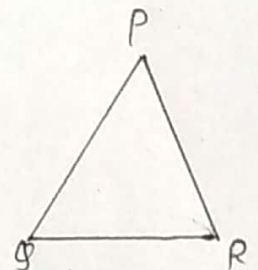
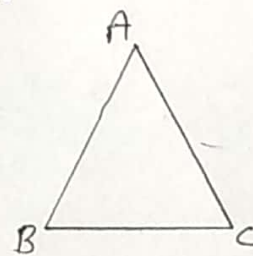
③ Congruence of Angles:



If two angles have the same measure, they are congruent. Also, if two angles are congruent, their measures are same.

④ Congruence of Triangles:

Side = 3
Angle = 3 } 6



$$\triangle ABC \cong \triangle PQR$$

Here

$$\begin{array}{l|l} \angle A = \angle P & AB = PQ \\ \angle B = \angle Q & BC = QR \\ \angle C = \angle R & AC = PR \end{array}$$

$\cong \rightarrow$ Congruent

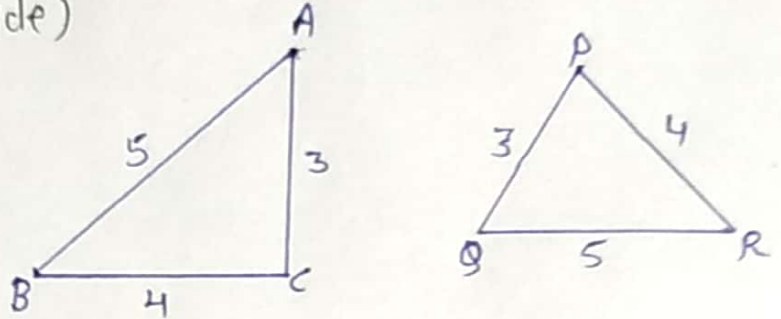
ABC \leftrightarrow PQR
↓
Corresponding

i.e.

Two triangles are congruent, then their corresponding parts (i.e. angles and sides) are equal.

(5) Criteria for Congruence of Triangles:

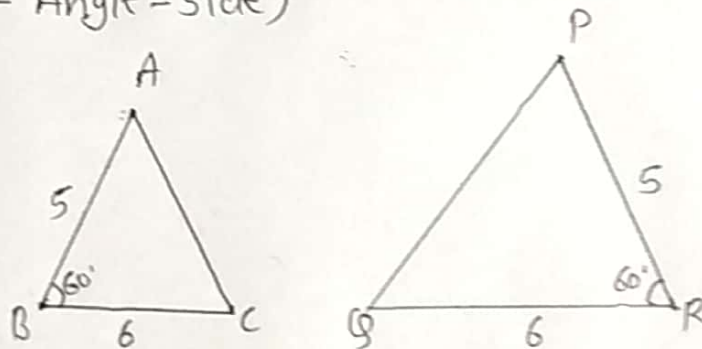
(i) SSS (side-side-side)



$$\triangle ABC \cong \triangle QRP$$

$$\begin{aligned} AB &= QR \\ BC &= RP \\ AC &= QP \end{aligned} \quad \checkmark \quad \{SSS\}$$

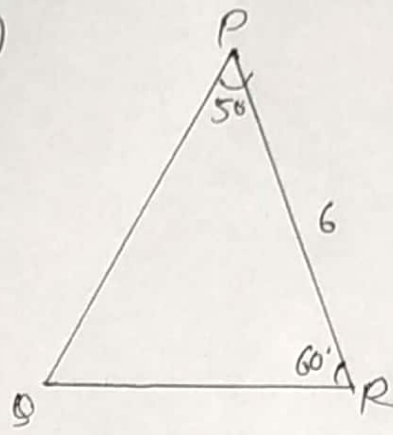
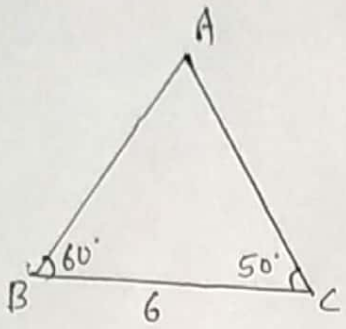
(ii) SAS (Side-Angle-Side)



$$\triangle ABC \cong \triangle PRQ$$

$$\begin{aligned} AB &= PR \\ \angle B &= \angle R \\ BC &= RQ \end{aligned} \quad \checkmark \quad \{SAS\}$$

(iii) ASA (Angle - side - Angle)



$$\Delta ABC \cong \Delta QRP$$

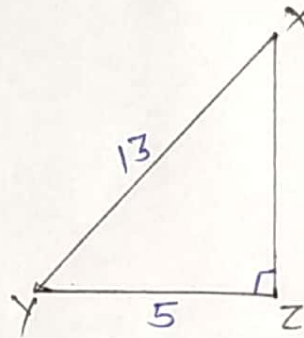
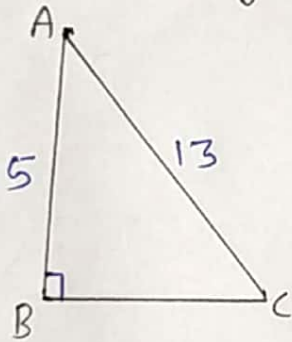
$$\angle B = \angle R$$

$$BC = RP$$

$$\angle C = \angle P$$

✓ {ASA}

(iv) R.H.S. (Right angle - Hypotenuse - side)



$$\Delta ABC \cong \Delta YZX$$

$$AB = YZ$$

$$\angle B = \angle Z$$

$$hy(AC) = hy(XY)$$

{by RHS rule}