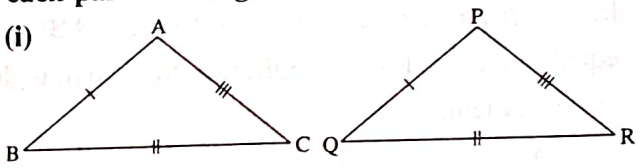
PRACTICE SET 3.2 (Textbook pages 31 to 33)

1. In each of the examples given below, a pair of triangles is shown. Equal parts of triangles in each pair are marked with the same signs. Observe the figures and state the test by which the triangles in each pair are congruent.

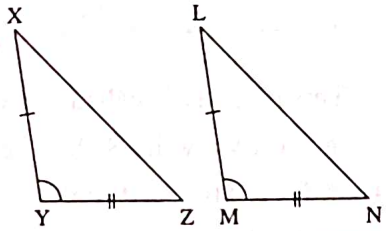
(i)



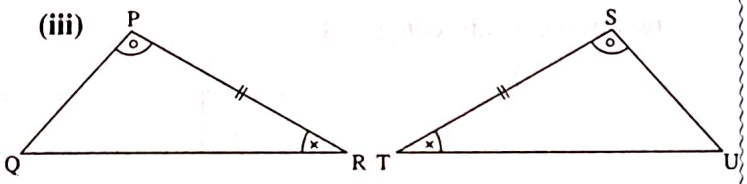
By **SSS** test of congruence, $\triangle ABC \cong \triangle PQR$.

(ii)

By **SAS** test of congruence, $\triangle XYZ \cong \triangle LMN$.



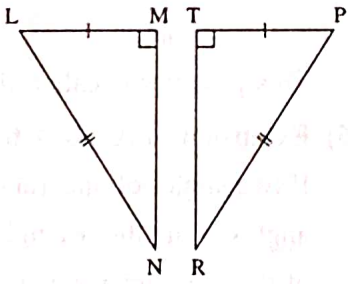
(iii)



By **ASA** test of congruence, $\triangle PRQ \cong \triangle STU$.

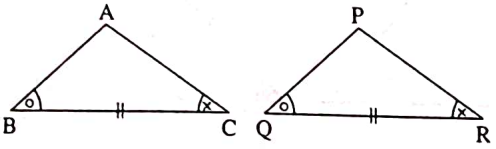
(iv)

By **hypotenuse side** test of congruence, $\triangle LMN \cong \triangle PTR$.



2. Observe the information shown in pairs of triangles given below. State the test by which the two triangles are congruent. Write the remaining congruent parts of the triangles.

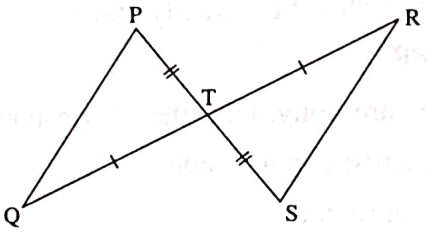
(i)



From the information shown in the figure,
in $\triangle ABC$ and $\triangle PQR$
$\angle ABC \cong \angle PQR$
seg BC $\cong$ seg QR
$\angle ACB \cong \angle PRQ$
$\therefore \triangle ABC \cong \triangle PRQ$ ... [ ] test
$\therefore \angle BAC \cong$ [ ]
... (Corresponding angles of congruent triangles)
$\therefore$ seg AB $\cong$ [ ] and [ ] $\cong$ seg PR } ... (Corresponding sides of congruent triangles)

Solution : From the information shown in the figure, in $\triangle ABC$ and $\triangle PQR$,
$\angle ABC \cong \angle PQR$
seg BC $\cong$ seg QR
$\angle ACB \cong \angle PRQ$
$\therefore \triangle ABC \cong \triangle PRQ$ ... (**ASA** test of congruence)
$\therefore \angle BAC \cong$ **$\angle$QPR** ... (c.a.c.t)
$\therefore$ seg AB $\cong$ **seg PQ** and **seg AC** $\cong$ seg PR } ... (c.s.c.t.)

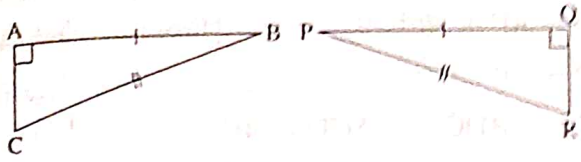
(ii)



From the information shown in the figure,
in $\triangle PTQ$ and $\triangle STR$,
seg PT $\cong$ seg ST
$\angle PTQ \cong \angle STR$ ... (Vertically opposite angles)
seg TQ $\cong$ seg TR
$\therefore \triangle PTQ \cong \triangle STR$ ... ([ ] test)
$\therefore \angle TPQ \cong$ [ ] and [ ] $\cong \angle TRS$ } ... (Corresponding angles of congruent triangles)
seg PQ $\cong$ [ ] ... (Corresponding sides of congruent triangles)

Solution : From the information shown in the figure, in $\triangle PTQ$ and $\triangle STR$,
seg PT $\cong$ seg ST
$\angle PTQ \cong \angle STR$ ... (Vertically opposite angles)
seg TQ $\cong$ seg TR
$\therefore \triangle PTQ \cong \triangle STR$ ... (**SAS** test of congruence)
$\therefore \angle TPQ \cong$ **$\angle$TSR** and **$\angle$TQP** $\cong \angle TRS$ } ... (c.a.c.t.)
seg PQ $\cong$ **seg SR** ... (c.s.c.t.)

3. From the information shown in the figure, state the test assuring the congruence of $\triangle ABC$ and $\triangle PQR$. Write the remaining congruent parts of the triangles.



Solution : $\triangle BAC \cong \triangle PQR$

... (Hypotenuse side test of congruence)

side AC $\cong$ side QR ... (c.s.c.t.)

$\angle ABC \cong \angle QPR$ ... (c.a.c.t.)

$\angle ACB \cong \angle QRP$ ... (c.a.c.t.)

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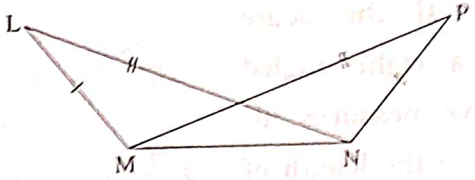
4. As shown in the following figure, in $\triangle LMN$ and $\triangle PNM$, $LM = PN$, $LN = PM$. Write the test which assures the congruence of the two triangles. Write their remaining congruent parts.



Solution : $\triangle LMN \cong \triangle PNM$

... (SSS test of congruence)

$\angle MLN \cong \angle NPM$ ... (c.a.c.t.)

$\angle LMN \cong \angle PNM$ ... (c.a.c.t.)

$\angle LNM \cong \angle PMN$ ... (c.a.c.t.)

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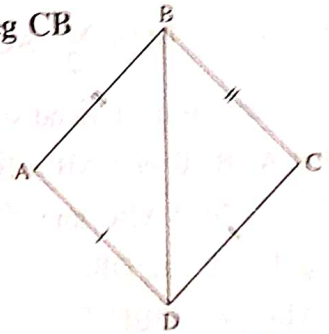
5. In the figure, seg AB $\cong$ seg CB and seg AD $\cong$ seg CD.
Prove that
$\triangle ABD \cong \triangle CBD$



Proof :

In $\triangle ABD$ and $\triangle CBD$

seg BA $\cong$ seg BC
seg AD $\cong$ seg CD } ... (Given)

seg BD $\cong$ seg BD ... (Common side)

$\therefore \triangle ABD \cong \triangle CBD$ ... (SSS test of congruence)

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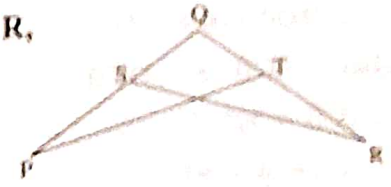
6. In the figure, $\angle P \cong \angle R$,
seg PQ $\cong$ seg RQ
Prove that,
$\triangle PQT \cong \triangle RQS$



Proof : In $\triangle PQT$ and $\triangle RQS$,

$\angle PQT \cong \angle RQS$ ... (Common angle)