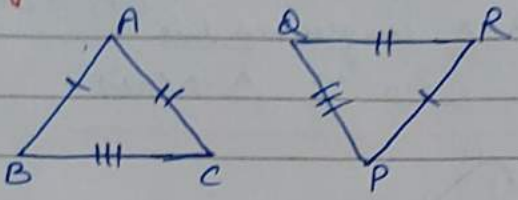
Exercise :- 7.2

① In the following pair of triangles examine whether the triangles are congruent or not. Write the rule of congruence if triangles are congruent.

(i)

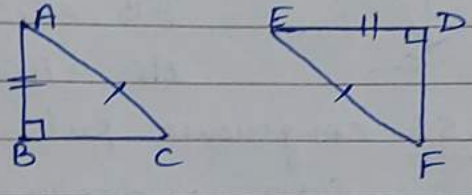


$$\begin{bmatrix} AB = RP \\ AC = RQ \\ BC = PQ \end{bmatrix}$$

By SSS congruence Rule

$\triangle ABC \cong \triangle RPQ$

(ii)

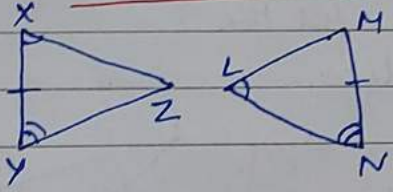


$$\begin{bmatrix} AB = ED \text{ (side)} \\ AC = EF \text{ (Hyp)} \\ \angle B = \angle D = 90^\circ \end{bmatrix}$$

∴ By RHS congruence Rule

$\triangle ABC \cong \triangle EDF$

(iii)

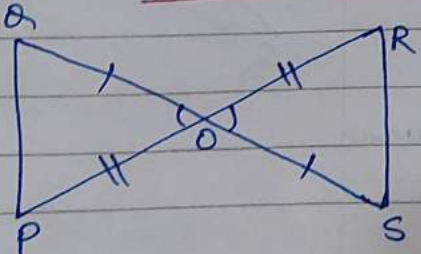


$$\begin{bmatrix} \angle X = \angle L \\ \angle Y = \angle N \\ XY = MN \end{bmatrix}$$

∴ By ASA congruence Rule

$\therefore \triangle ZXY \cong \triangle MLN$

(iv)

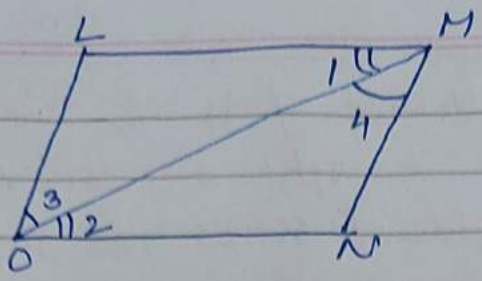


$$\begin{bmatrix} OQ = OS \\ OP = OR \\ \angle QOP = \angle ROS \end{bmatrix}$$

∴ By SAS congruence Rule

$\triangle OQP \cong \triangle OSR$

(v)



In $\triangle LMO$ and $\triangle NOM$

$\angle 1 = \angle 2$ (given)

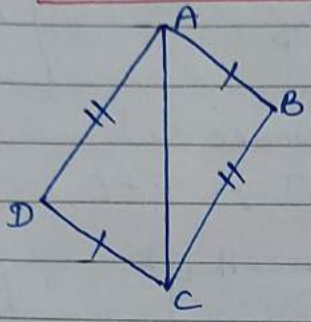
$\angle 3 = \angle 4$ (given)

$OM = OM$ (common)

$\therefore$ By ASA congruence Rule

$\triangle LMO \cong \triangle NOM$

(vi)



In triangles ABC and CDA

$BC = AD$ [given]

$AB = DC$ [given]

$AC = AC$ [common]

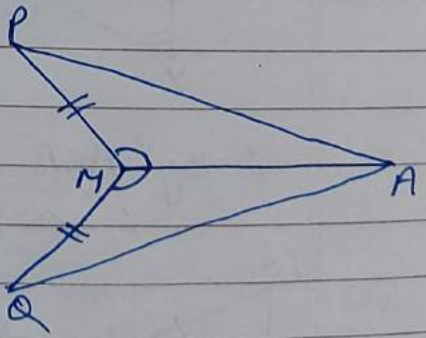
By SSS congruence Rule.

$\triangle ABC \cong \triangle CDA$

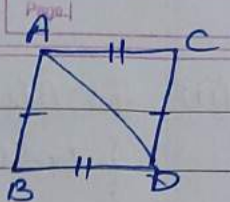
(2) $\triangle AMP \cong \triangle AMQ$ (given)

Give Reasons for the following steps.

Steps	Reasons
(i) $PM = QM$	Given
(ii) $\angle PMA = \angle QMA$	Given
(iii) $AM = AM$	Common
(iv) $\triangle AMP \cong \triangle AMQ$	SAS congruence Rule



In given fig.



(3)(i) In $\triangle ABD$ and $\triangle ACD$

(1) $AB = AC$ (given)

(ii) $BD = DC$ (given)

(iii) $AD = AD$ (common)

$\therefore$ By SSS congruence Rule.

$\triangle ABD \cong \triangle ACD$

(ii)

corresponding parts of congruent triangles are equal.

$\triangle ABD \cong \triangle ACD$

$\therefore \angle B = \angle C$ [By C.P.C.T]

(4) In the given fig.

In $\triangle ACB$ and $\triangle ECD$

(i) $AC = EC$ (given)

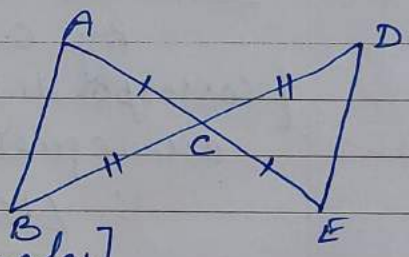
(ii) $BC = DC$ (given)

(iii) $\angle ACB = \angle ECD$

[vertically opp. angles]

$\therefore$ By SAS congruence Rule.

$\triangle ACB \cong \triangle ECD$



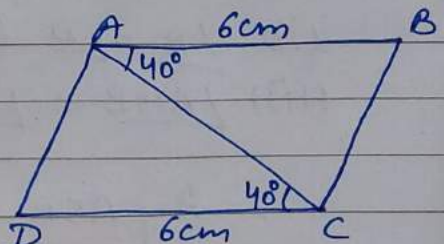
(5)

(i) Three pairs of equal parts in $\triangle ADC$, $\triangle CBA$

(i) $AC = AC$ (common)

(ii) $DC = AB = 6\,cm$

(iii) $\angle DCA = \angle BAC = 40°$



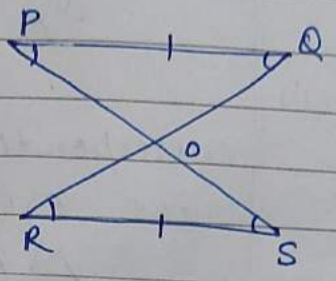
(ii) Is $\triangle ADC \cong \triangle CBA$? Yes, By SAS congruence Rule.

(iii) Is AD = CB ? Yes By C.P.C.T.
[corresponding parts of congruent triangles]

(6) In the given figure PQ || RS, PQ = RS

(i) To Prove : $\triangle POQ \cong \triangle SOR$

Sol. In $\triangle$s POQ & $\triangle$ SOR

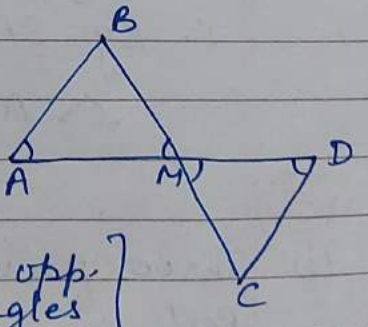


(i) PQ = RS (given)
(ii) $\angle Q = \angle R$ (Alt. Angles)
(iii) $\angle P = \angle S$ (Alt. angles)

$\therefore$ By ASA congruence rule.
$\triangle POQ \cong \triangle SOR$

(ii) To Prove : $\angle POQ = \angle SOR$
By C.P.C.T.
[corresponding parts of congruent triangles are equal]
$\therefore \angle POQ = \angle SOR$

(7) given :- (i) M is Mid-point of AD.
$\therefore$ AM = MD



(ii) $\angle A = \angle D$ (given)
(iii) $\angle AMB = \angle DMC$ [vert. opp. angles]

$\therefore$ By ASA congruence rule
$\triangle AMB \cong \triangle DMC$

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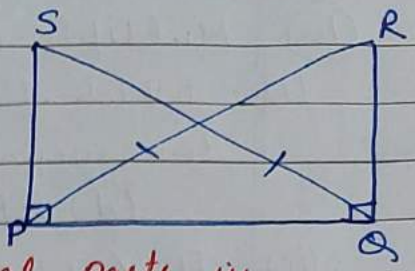
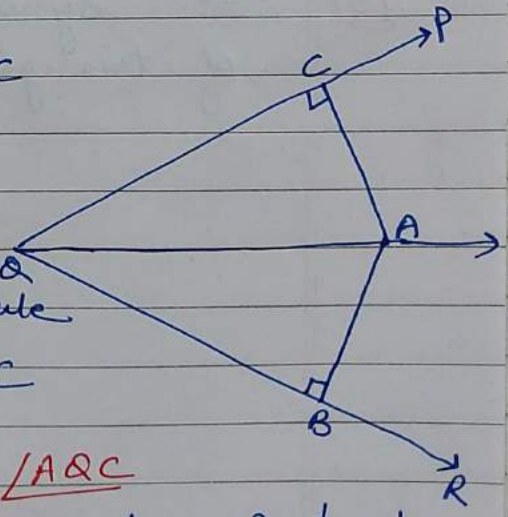
(8) Given: (i) $SP \perp PQ$
(ii) $RQ \perp PQ$
(iii) $PR = QS$



(i) Write three parts of equal parts in $\triangle PQR$ and $\triangle SPQ$
(i) $PQ = QP$
(ii) $QR = SP$
(iii) $\angle PQR = \angle QPS$

(ii) To Prove: $\triangle PQR \cong \triangle QPS$
In $\triangle PQR$ and $\triangle QPS$
(i) $\angle P = \angle Q = 90^\circ$
(ii) $PR = QS$ (given) = (Hyp.)
(iii) $PQ = PQ$ (common) = (side)
$\therefore$ By R.H.S congruence Rule
$\triangle PQR \cong \triangle QPS$

(9) In the given fig.
(i) In $\triangle QAB$ and $\triangle QAC$
(i) $\angle B = \angle C = 90^\circ$
(ii) $QC = QB$ (given)
(iii) $QA = QA$ (common)
$\therefore$ By RHS congruence Rule
$\triangle QAB \cong \triangle QAC$



(ii) To Prove: $\angle AQB = \angle AQC$
We know that corresponding parts of congruent triangles are equal
$\therefore \angle AQB = \angle AQC$

(10) Multiple choice questions :

(i) Which of the following is not a congruence rule.

(d) AAA

(ii) If $\triangle ABC \cong \triangle PQR$, then the correct statement is

(c) $\angle A = \angle P$

(iii) If $\angle A = \angle D$, $\angle B = \angle E$ and $AB = DE$ then $\triangle ABC \cong \triangle DEF$, by the congruence rule of (b) ASA

(11) ASA congruence criterion is same as SAS congruence criterion.

False.

(12) Two right angled triangles are always congruent.

False.

(13) '=' symbol used for congruence of triangles.

False.

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