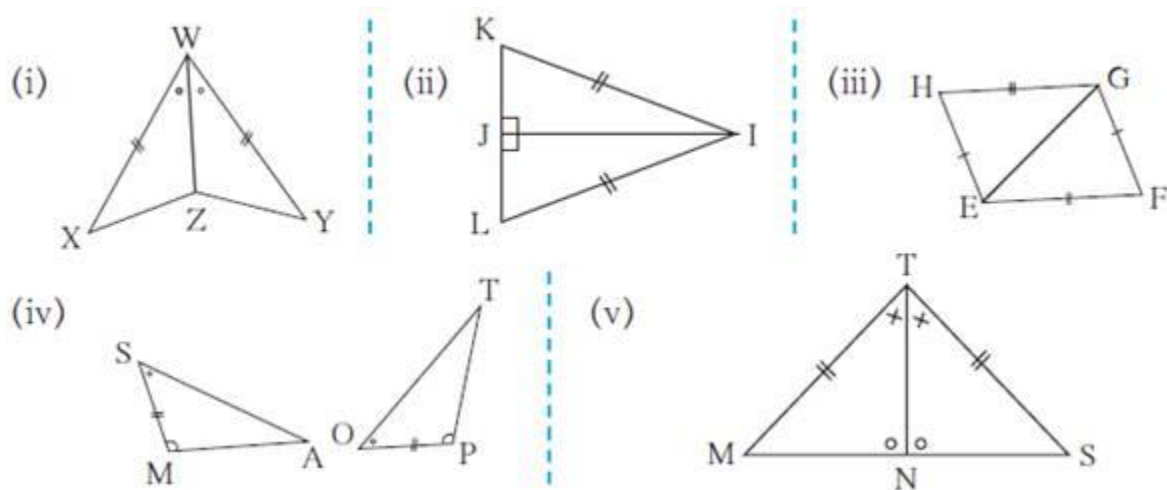


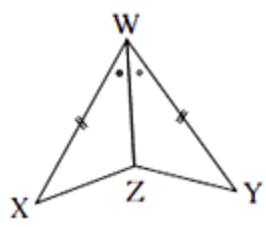
Congruence Of Triangles

Practice set 13.1

Q. 1. In each pair of triangles in the following figures, parts bearing identical marks are congruent. State the test and correspondence of vertices by which triangles in each pairs are congruent.



Answer : (i) In the triangles of $\triangle XWZ$ & $\triangle YWZ$,



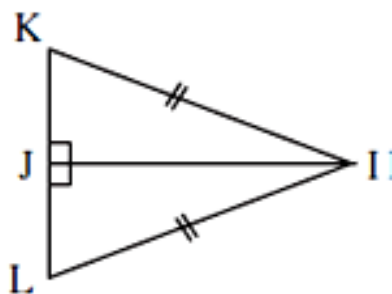
\therefore Side $XW =$ Side YW (Given)

$\therefore \angle XWZ = \angle YWZ$ (Given)

\therefore Side WZ is common between two Δ s. (Given)

\therefore By the property of **SAS**, it is proved that $\triangle XWZ \cong \triangle YWZ$

(ii) In the triangles of $\triangle KJI$ & $\triangle LJI$,

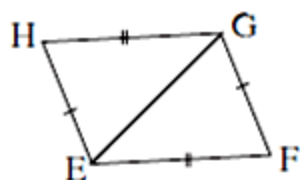


∴ Side KI = Side LI (Given Hypotenuse)

∴ Side IJ is same in both the triangles.

∴ By the property of **Hypotenuse Side Test**, it is proved that $\Delta KJI \cong \Delta LJI$.

(iii) In the triangles of ΔHEG & ΔFGE ,



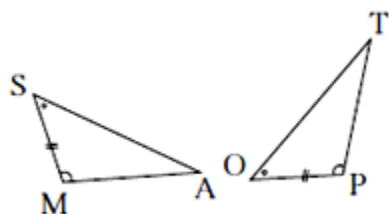
∴ Side HG = Side FE (Given)

∴ Side HE = Side FG (Given)

∴ Side EG is common between two Δ s. (Given)

∴ By the property of **SSS**, it is proved that $\Delta HEG \cong \Delta FGE$.

(iv) In the triangles of ΔSMA & ΔOPT ,



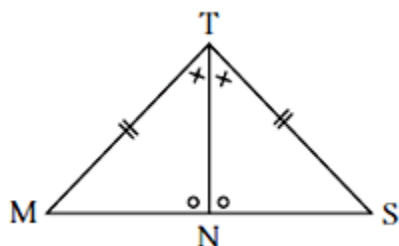
∴ $\angle MSA = \angle POT$ (Given)

∴ Side SM = Side OP (Given)

$\therefore \angle AMS = \angle TPO$ (Given)

\therefore By the property of **ASA**, it is proved that $\triangle SMA \cong \triangle OPT$.

(v) In the triangles of $\triangle MTN$ & $\triangle STN$,



$\therefore \angle MNT = \angle SNT$ (Given)

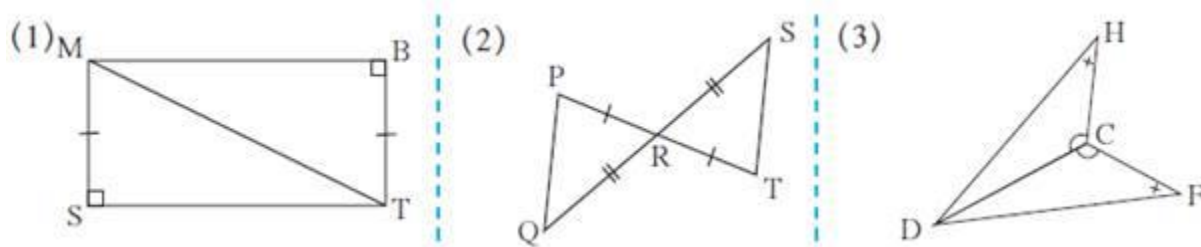
\therefore Side TN is common between two \triangle s. (Given)

$\therefore \angle MTN = \angle STN$ (Given)

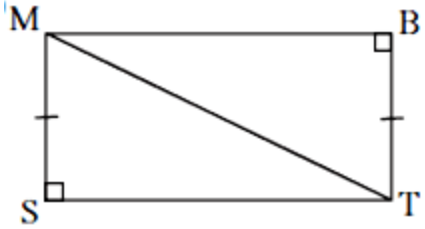
\therefore By the property of **ASA**, it is proved that $\triangle MTN \cong \triangle STN$.

Practice set 13.2

Q. 1. In each pair of triangles given below, parts shown by identical marks are congruent. State the test and the one to one correspondence of vertices by which triangles in each pair are congruent and remaining congruent parts.



Answer : (i) In the triangles of $\triangle MST$ & $\triangle TBM$,



∴ Side MT = Side TM (Given Hypotenuse is common between two Δ s)

∴ Side MS = Side TM

∴ By the property of **Hypotenuse Side Test**, it is proved that $\Delta MST \cong \Delta TBM$.

∴ The observations are as

Side ST = Side BM

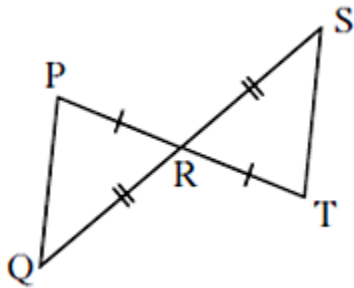
$\angle MST = \angle TBM$

MST TBM

$\angle SMT = \angle BTM$

$\angle STM = \angle BMT$.

(ii) In the triangles of ΔPRQ & ΔTRS ,



∴ Side PR = Side TR (Given)

∴ $\angle PRQ = \angle TRS$ (Given vertically opposite angles)

∴ Side SR = Side TR (Given)

∴ By the property of **SAS**, it is proved that $\Delta PRQ \cong \Delta TRS$.

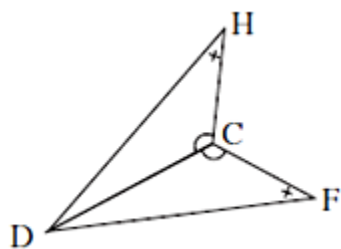
∴ The observations are as

Side PQ = Side TS

$\angle QPR = \angle RTS$

$\angle RQP = \angle RST$

(iii) In the triangles of $\triangle DCH$ & $\triangle DCF$,



$\therefore \angle DCH = \angle DCF$ (Given)

$\therefore \angle DHC = \angle DFC$ (Given)

\therefore Side DC is common between two \triangle s. (Given)

\therefore By the property of **AAS**, it is proved that $\triangle DCH \cong \triangle DCF$.

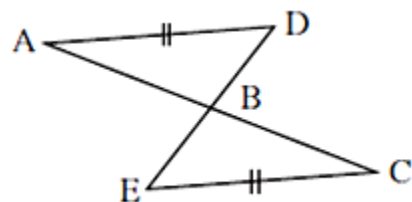
\therefore The observations are as

Side HC = Side FC

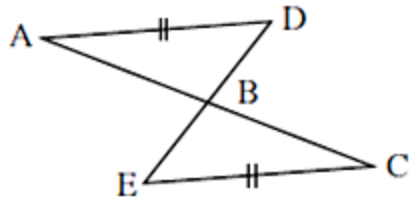
Side DH = Side DF

$\angle CDH = \angle CDF$.

Q. 2. In the adjacent figure, segment AD = Segment EC. Which additional information is needed to show that $\triangle ABD$ and $\triangle EBC$ will be congruent by A-A-S test?



Answer : In the triangles of $\triangle ABD$ & $\triangle EBC$,



$\angle ABD = \angle EBC$ [Vertically opposite angles]

\therefore Side AD = Side EC (Given)

\therefore In order to show the congruence between two Δ s ΔABD & ΔEBC by the property of **AAS**, some information has to be required:-

Either $AD \parallel EC$ or $\angle BAD = \angle BEC$ or $\angle BDA = \angle BCE$

Hence proved.