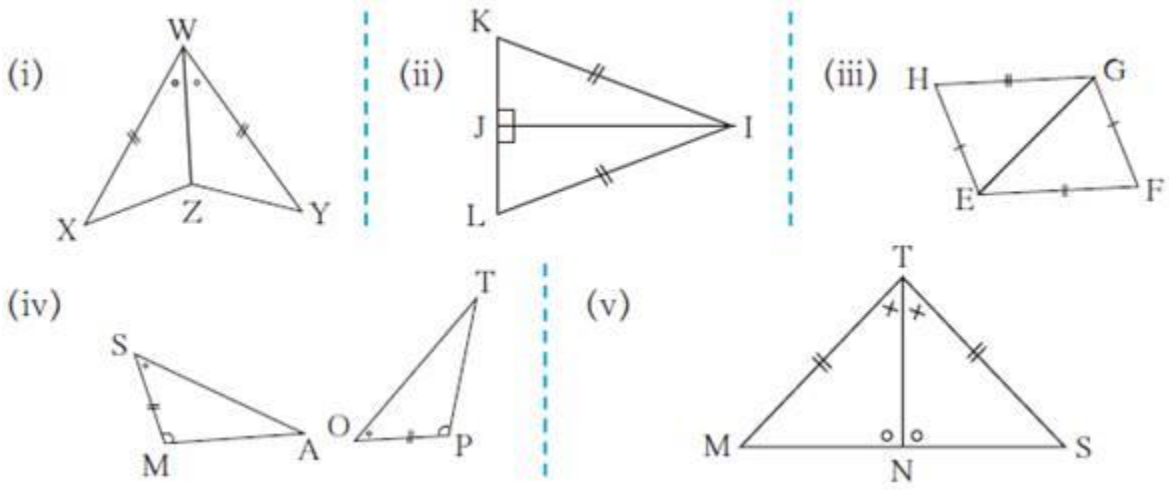
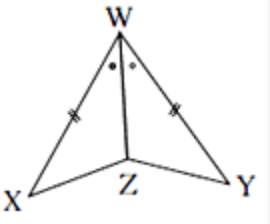
Congruence Of Triangles

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 ΔXWZ & ΔYWZ,



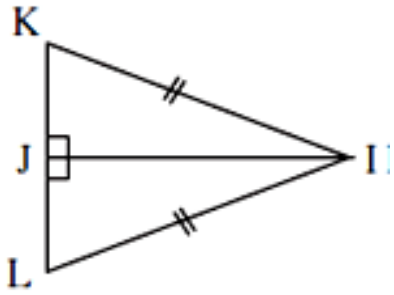
∵ Side XW = Side YW (Given)

∵ ∠XWZ =∠YWZ (Given)

∵ Side WZ is common between two Δs. (Given)

∴ By the property of **SAS**, it is proved that ΔXWZ≅ΔYWZ

(ii) In the triangles of ΔKJI & ΔLJI,

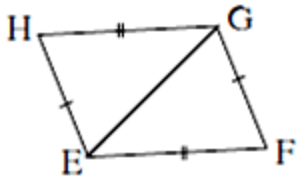


∵ Side KI = Side LI (Given Hypotenuse)

∵ Side IJ is same in both the triangles.

∴ By the property of **Hypotenuse Side Test**, it is proved that ΔKJI≅ΔLJI.

(iii) In the triangles of ΔHEG & ΔFGE,



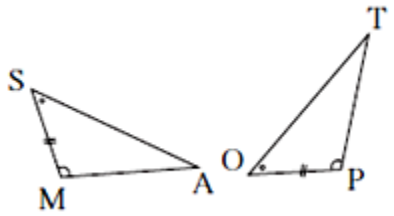
∵ Side HG = Side FE (Given)

∵ Side HE = Side FG (Given)

∵ Side EG is common between two Δs. (Given)

∴ By the property of **SSS**, it is proved that ΔHEG≅ΔFGE.

(iv) In the triangles of ΔSMA & ΔOPT,



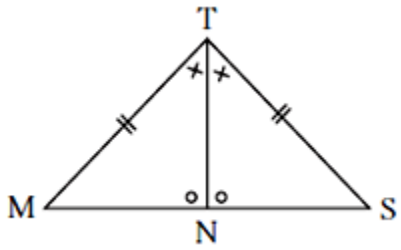
∵ ∠MSA=∠POT (Given)

∵ Side SM = Side OP (Given)

∵ ∠AMS=∠TPO (Given)

∴ By the property of **ASA**, it is proved that ΔSMA≅ΔOPT.

(v) In the triangles of ΔMTN & ΔSTN,



∵ ∠MNT=∠SNT (Given)

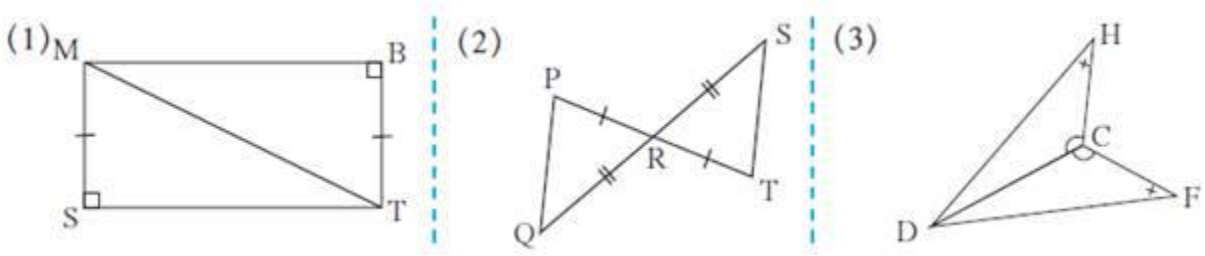
∵ Side TN is common between two Δs. (Given)

∵ ∠MTN=∠STN (Given)

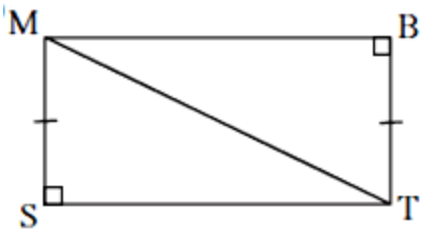
∴ By the property of **ASA**, it is proved that ΔMTN≅ΔSTN.

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 ΔMST & ΔTBM,



∵ Side MT = Side TM (Given Hypotenuse is common between two Δs)

∵ Side MS = Side TM

∴ By the property of **Hypotenuse Side Test**, it is proved that ΔMST≅ΔTBM.

∴ The observations are as

Side ST = Side BM

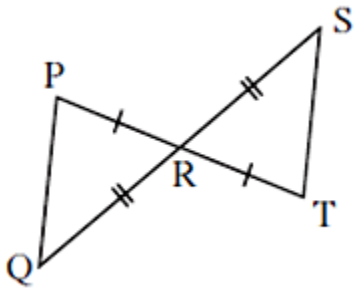
∠MST =∠TBM

MST TBM

∠SMT =∠BTM

∠STM =∠BMT.

(ii) In the triangles of ΔPRQ & ΔTRS,



∵ Side PR = Side TR (Given)

∵ ∠PRQ=∠TRS (Given vertically opposite angles)

∵ Side SR = Side TR (Given)

∴ By the property of **SAS**, it is proved that ΔPRQ ≅ ΔTRS.

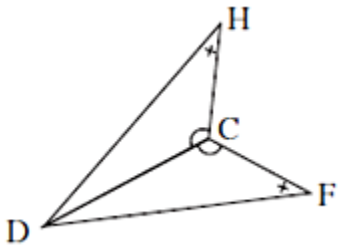
∴ The observations are as

Side PQ = Side TS

∠QPR = ∠RTS

∠RQP =∠RST

(iii) In the triangles of ΔDCH & ΔDCF,



∵ ∠DCH=∠DCF (Given)

∵ ∠DHC=∠DFC (Given)

∵ Side DC is common between two Δs. (Given)

∴ By the property of **AAS**, it is proved that ΔDCH≅ΔDCF.

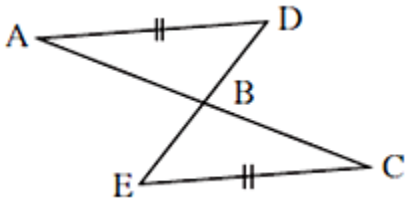
∴ The observations are as

Side HC = Side FC

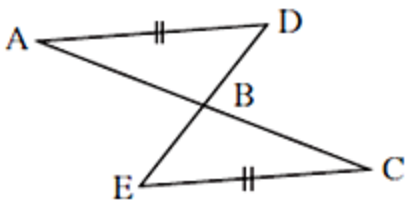
Side DH = Side DF

∠CDH = ∠CDF.

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



Answer : In the triangles of ΔABD & ΔEBC,



∠ABD = ∠EBC [Vertically opposite angles]

∵ Side AD = Side EC (Given)

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

Either AD ‖EC or ∠BAD = ∠BEC or ∠BDA = ∠BCE

Hence proved.