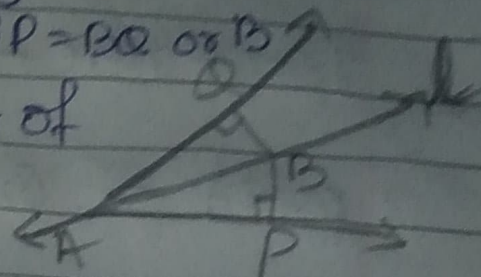


5) Line  $l$  is the bisector of an angle  $\angle A$  and  $B$  is any point on  $l$ .  $BP$  and  $BQ$  are perpendiculars from  $B$  to the arms of  $\angle A$ . Show that: i)  $\triangle APB \cong \triangle AQB$  is equidistant from the arms of  $\angle A$  ii)  $BP = BQ$  or  $B$

$\rightarrow$  Given  $\therefore l$  is the bisector of  $\angle A$

So,  $\angle PAB = \angle QAB$



$BP$  &  $BQ$  are perpendiculars from  $B$ ,

So,  $\angle APB = \angle AQB = 90^\circ$

To prove  $\therefore$  (i)  ~~$\triangle APB \cong \triangle AQB$~~   $\triangle APB \cong \triangle AQB$   
ii)  $BP = BQ$ .

Proof  $\therefore$  In  $\triangle APB$  and  $\triangle AQB$

$$\angle APB = \angle AQB (90^\circ)$$

$$\angle PAB = \angle QAB \text{ (given)}$$

$$AB = AB \text{ (common)}$$

$$\therefore \triangle APB \cong \triangle AQB \text{ (AAS)}$$

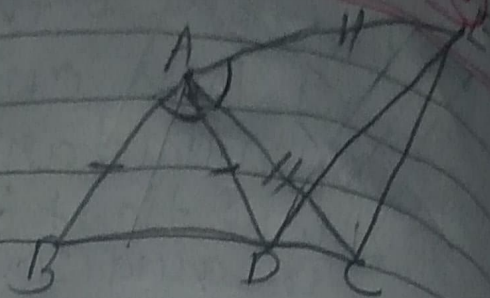
$$\therefore BP = BQ \text{ (cpct)}$$

Hence proved.

6) In Fig,  $AC = AE$ ,  $AB = AD$  and  $\angle BAD = \angle EAC$ . Show that  $BC = DE$ .



⇒ Given -  $AC = AE$   
 $AD = AB$   
 $\angle BAD = \angle EAC$



To Prove -  $BC = DE$

proof -> Given that

$$\angle BAD = \angle EAC$$

$$\angle BAD + \angle DAC = \angle EAC + \angle DAC$$

$$\angle BAC = \angle DAE$$

Adding  $\angle DAC$  on both the sides.

In  $\triangle ABC$  and  $\triangle ADE$

$$AB = AD \text{ (Given)}$$

$$\angle BAC = \angle DAE \text{ (proved earlier)}$$

$$AC = AE \text{ (given)}$$

$$\therefore \triangle ABC \cong \triangle ADE \text{ (SAS)}$$

$$\therefore BC = DE \text{ (cpct)}$$

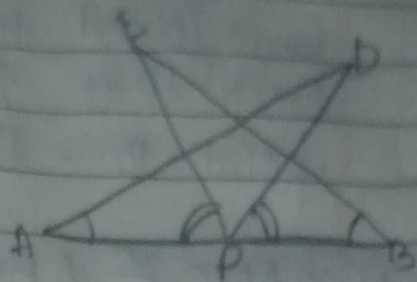
Hence proved.

7) AB is a line segment and p is its mid-point. D and E are points on the same side of

AB such that  $\angle BAD = \angle ABE$  and  $\angle DPA = \angle EPB$ . show that.

i)  $\triangle DAP \cong \triangle EBP$

ii)  $AD = BE$



$\Rightarrow$  Given  $\therefore$  P is the midpoint of AB

So,  $AP = BP$  (Given)

$\angle BAD = \angle ABE$  (given)

$\angle EPA = \angle DPB$  (given)

To prove  $\rightarrow$  i)  $\triangle DAP \cong \triangle EBP$  ii)  $AD = BE$

proof  $\therefore$   $\angle EPA = \angle DPB$

We add  $\angle DPE$  both sides.

$$\angle EPA + \angle DPE = \angle DPB + \angle DPE$$

$$\angle DPA = \angle EPB$$

$$\therefore \triangle DAP \cong \triangle EBP$$

(ASA)

In  $\triangle DPA$  and  $\triangle EBP$ ,

$$\therefore AD = BE \text{ (cpct)}$$

$$\angle BAP = \angle EBP \text{ (given)}$$

$$AP = BP \text{ (given)}$$

$$\angle DPA = \angle EPB \text{ (proved earlier)}$$