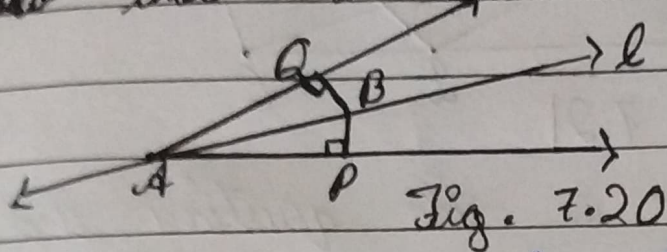


5) Line l is the bisector of an angle A and B is any point on l . BP and BQ are perpendiculars from B to the arms of A (see Fig. 7.20).
Show that : i- $\triangle ABP \cong \triangle AQB$



ii- $BP = BQ$ or B is equidistant from the arms of A

Ans) It is given that the line " l " is the bisector of angle A and the line segment BP and BQ are perpendiculars drawn from l .

i- ~~$\triangle ABP$~~ $\triangle APB$ and $\triangle AQB$ are similar by A.A.S congruency because :

$\angle P = \angle Q$ (They are two ~~to~~ right angles)

$AB = AB$ (it is the common arm)

$\angle BAP = \angle BAQ$ (As line l is the bisector of angle A)

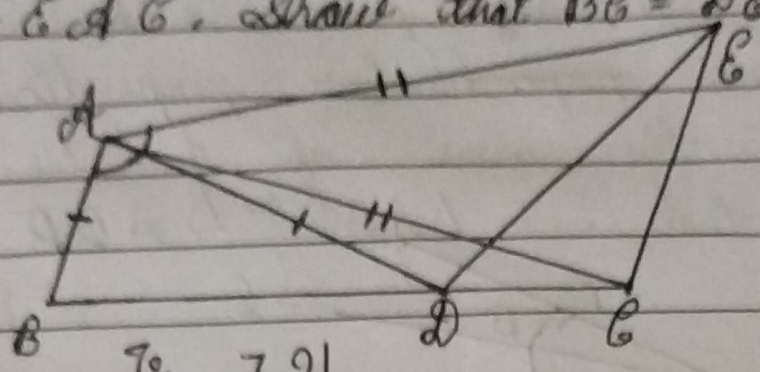
also,

$$\triangle BQA \cong \triangle APB$$

ii- By the Rule of C.P.C.T, $BP = BQ$.

also, it can be said the point B is equidistant from ~~one~~ arms of A .

6) In Fig 7.21, $AC = AE$, $AB = AD$ and $\angle BAD = \angle EAC$. Show that $BC = DE$.



ans) It is given in the question that $AB = AD$, $AC = AE$, and $\angle BAD = \angle EAC$
To prove:

The line segment BC and DE are similar i.e., $BC = DE$.

Proof:

We know that $\angle BAD = \angle EAC$

By adding $\angle DAC$, we get,

$$\angle BAD + \angle DAC = \angle DAC + \angle CAE$$

$$\Rightarrow \angle BAC = \angle EAD$$

Now, $\triangle ABC$ and $\triangle ADE$ are similar by S.A.S.

i- $AC = AE$ (Given)

ii- $\angle BAC = \angle EAD$

iii- $AB = AD$ (Given)

$\therefore \triangle ABC$ and $\triangle ADE$ are similar

i.e., $\triangle ABC \cong \triangle ADE$.

So,

by the rule of [C.P.C.T], it can be said that $BC = DE$.

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 $\angle EPA = \angle DPB$ (see Fig. 7.22).
Show that: i- $\triangle DAP \cong \triangle EBP$

ii- $AD = BE$

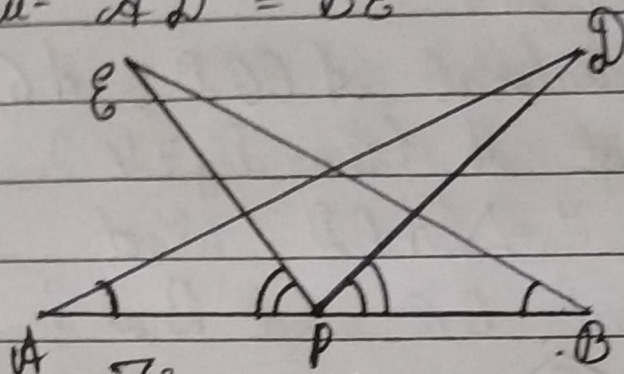


Fig. 7.22

ans) In the question, it is given that P is the midpoint of line segment AB . Also, $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$

i- It is given that $\angle EPA = \angle DPB$

Now adding $\angle DPE$ on the both sides, we get,

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

$$\Rightarrow \angle DPA = \angle EPB$$

Now consider the triangles DAP and EBP .

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

$AP = BP$ (since P is the mid-point)

$\angle BAD = \angle ABE$ (As given in the Q)

So, by ASA $\triangle DAP \cong \triangle EBP$.

ii- By the rule of CPCT, $AD = BE$.