

Mathematics

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(Chapter – 6) (Lines and Angles)(Exemplar Problems)

(Class – IX)

Exercise 6.3

Question 3:

AP and BQ are the bisectors of the two alternate interior angles formed by the intersection of a transversal t with parallel lines l and m (Fig. 6.11). Show that $AP \parallel BQ$.

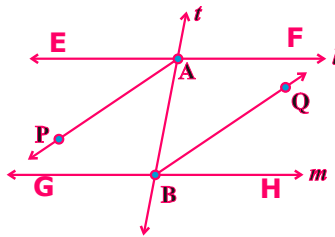


Fig. 6.11

Answer 3:

Given:

In figure, $l \parallel m$, AP and BQ are the bisectors of $\angle EAB$ and $\angle ABH$ respectively.

To prove:

$AP \parallel BQ$

Proof:

Since, $l \parallel m$ and t is transversal.

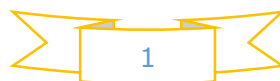
Therefore, $\angle EAB$ and $\angle ABH$ [alternate interior angles]

$$\Rightarrow \frac{1}{2} \angle EAB = \frac{1}{2} \angle ABH \quad [\text{dividing both sides by 2}]$$

$$\Rightarrow \angle PAB = \angle ABQ$$

[AP and BQ are the bisectors of $\angle EAB$ and $\angle ABH$]

Since, $\angle PAB$ and $\angle ABQ$ are alternate interior angles with two lines AP and BQ and transversal AB, hence, $AP \parallel BQ$.



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