

# Mathematics

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

(Class – IX)

## Exercise 6.3

### Question 5:

In Fig. 6.12,  $BA \parallel ED$  and  $BC \parallel EF$ . Show that  $\angle ABC = \angle DEF$ .  
[Hint: Produce DE to intersect BC at P (say)].

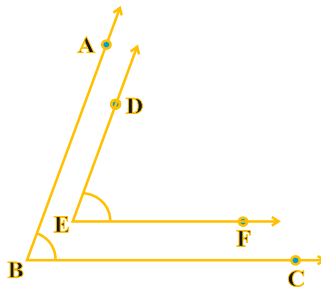


Fig. 6.12

### Answer 5:

Given:

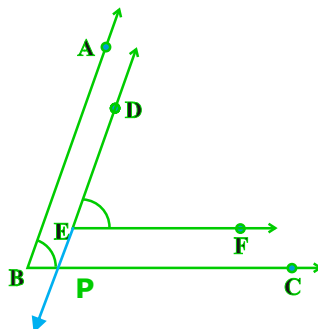
$BA \parallel ED$ , and  $BC \parallel EF$ .

To prove:

$\angle ABC = \angle DEF$ .

Construction:

Produce DE which intersect BC at P.



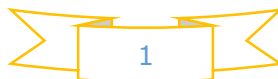
Proof:

In figure,

$BA \parallel ED \Rightarrow BA \parallel DP$

$\therefore \angle ABP = \angle EPC$

[corresponding angles]



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$$\Rightarrow \quad \angle ABC = \angle EPC \quad \dots \text{(i)}$$

$$\begin{array}{l} \text{Again,} \\ \therefore \end{array} \quad \begin{array}{l} BC \parallel EF \Rightarrow PC \parallel EF \\ \angle DEF = \angle EPC \end{array} \quad \dots \text{(ii) [corresponding angles]}$$

From equations (i) and (ii), we get  
 $\angle ABC = \angle DEF$

Hence proved.

