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CLASS – 9

MATHEMATICS

Chapter – 6

Lines and Angles

Part – 6

Example 4 to 6

Vikas sir

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Example : 4

In Figure, if PQ || RS, ∠MXQ = 135° and ∠MYR = 40°, find ∠XMY.

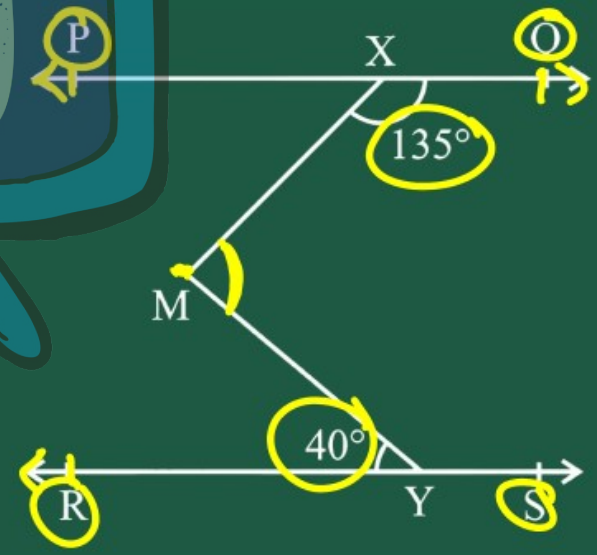
Given:-

PQ || RS

& ∠MXQ = 135°

∠MYR = 40°

To find:- ∠XMY



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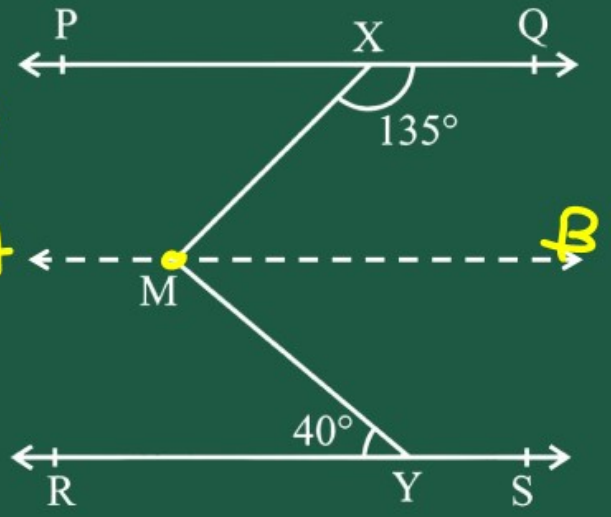
Construction :→ Constructing a line AB passes through M

S.t PQ ∥ AB.



Soln :→ Since PQ ∥ AB [By const.]

PQ ∥ RS [Given]

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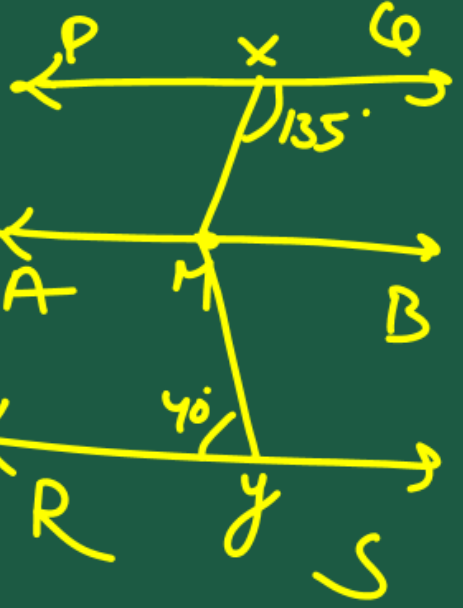
$\therefore$ PQ || RS || AB

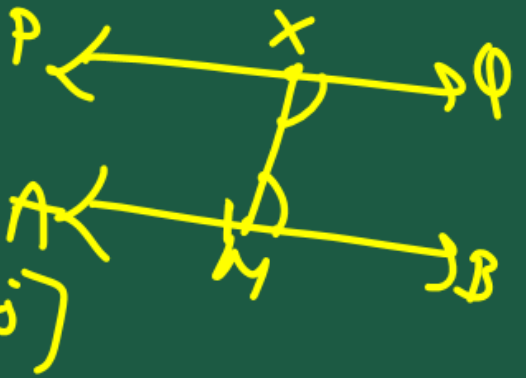


Now PQ || AB

$\angle MXQ + \angle XMB = 180°$

$\angle MXQ + \angle XMB = 180°$

[Proved (Co-interior angle is 180°]



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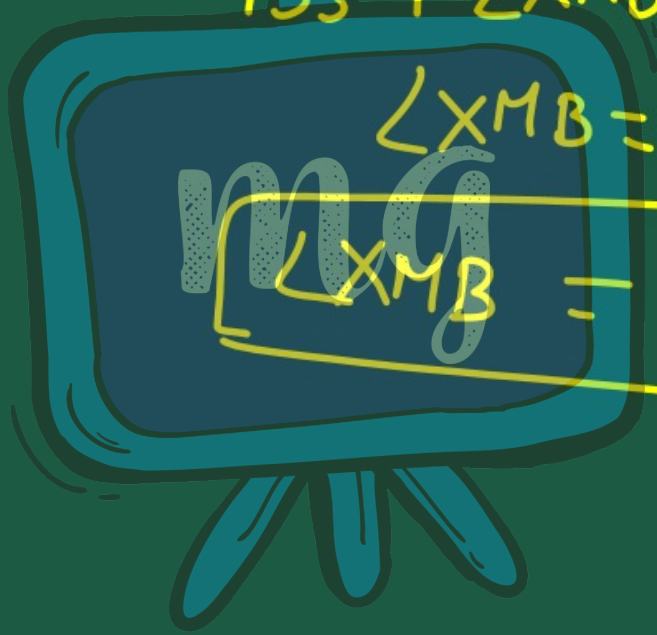
$\angle MXQ + \angle XMB = 180$

$135^\circ + \angle XMB = 180$

$\angle XMB = 180 - 135$

$\angle XMB = 45^\circ$



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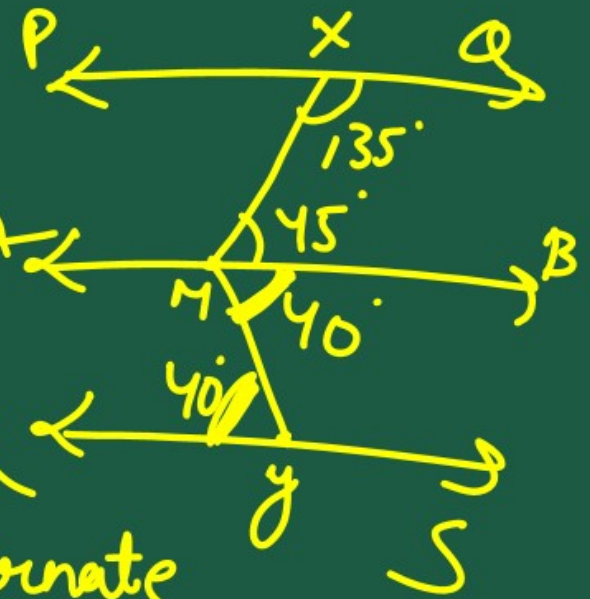
Since AB || RS,

MY is transversal



Then

$\angle BMY = \angle MYR$

$\angle MYR = 40°$ [Given]

[Alternate Interior Angle]

$\angle BMY = 40° = \angle MYR$

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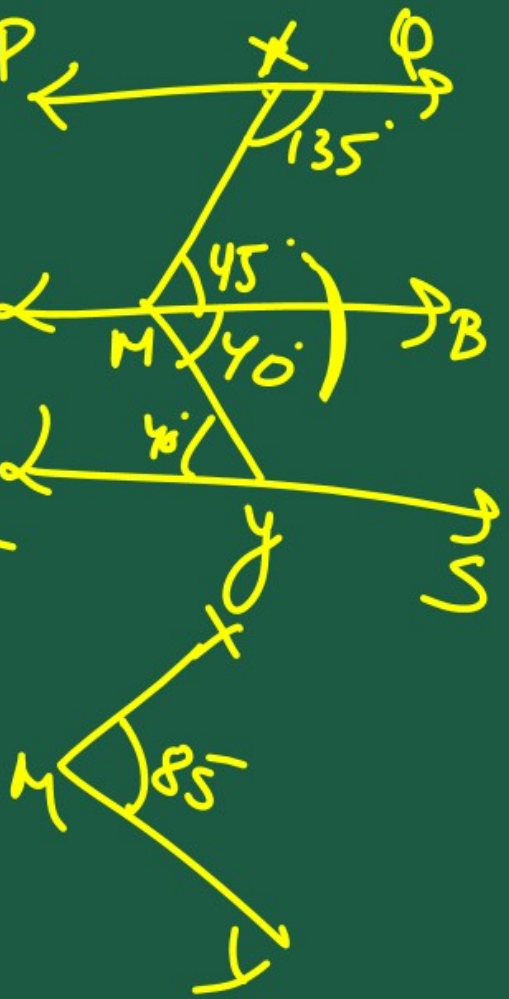
Sum

$\angle XMy = \angle XMB + \angle BMy$

$\angle XMy = 45^\circ + 40^\circ$

$\angle XMy = 85^\circ$



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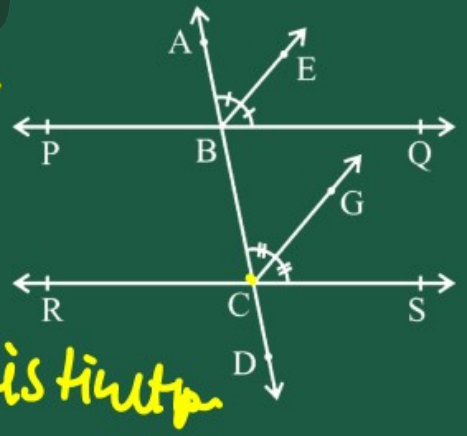
Example : 5

Given. → PQ & RS are two lines which are intersected by a transversal AD at B & C two distinct p.

If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.



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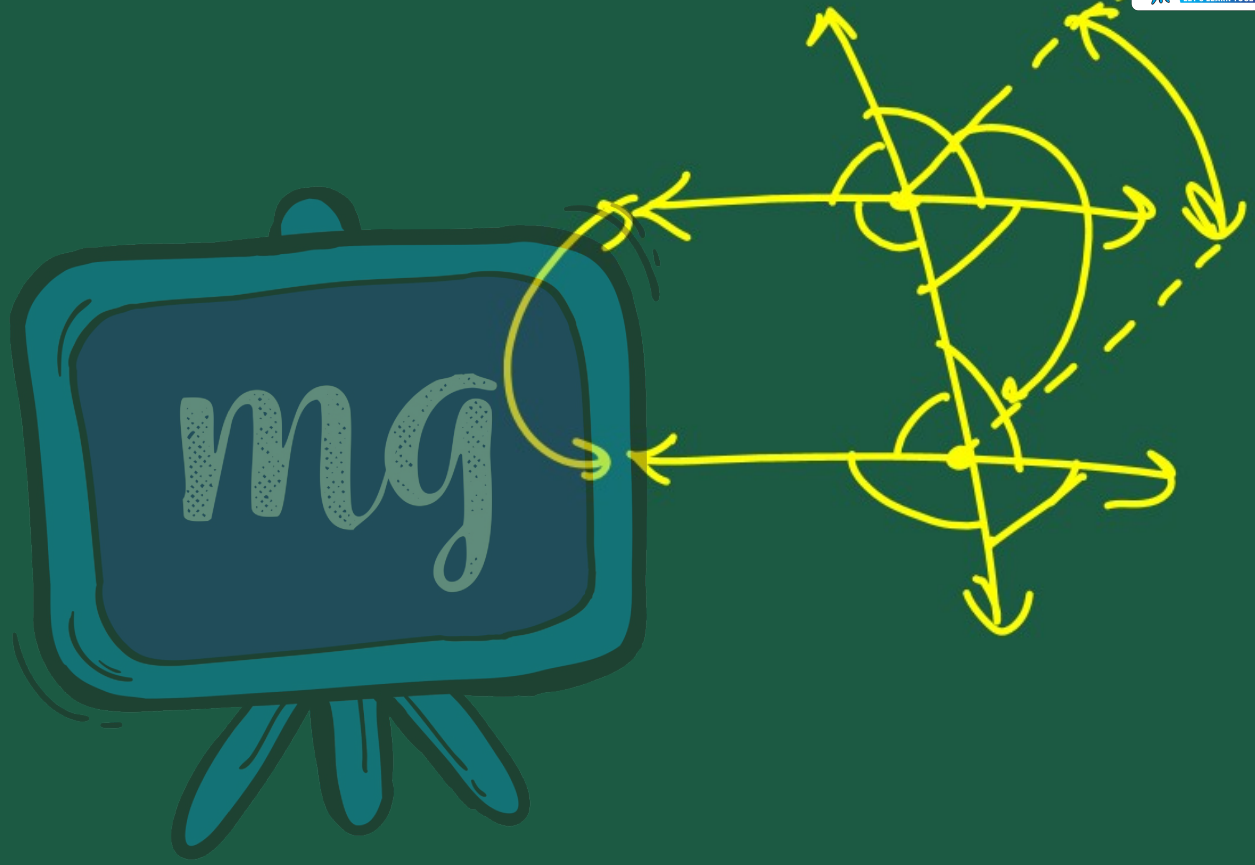

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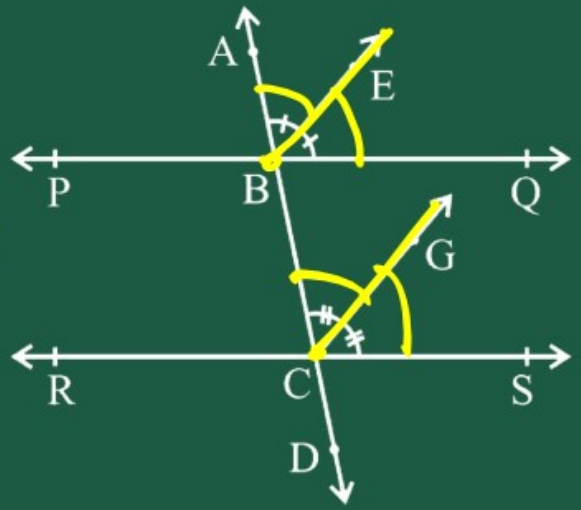
$\angle ABQ$ & $\angle BCS$ are two corresponding angles where BE bisector of $\angle ABQ$ & CG bisector $\angle BCS$ respectively

$\therefore \angle ABE = \angle QBE = \frac{\angle ABQ}{2}$ & $BE \parallel CG$.

$\angle BCG = \angle SCG = \frac{\angle BCS}{2}$



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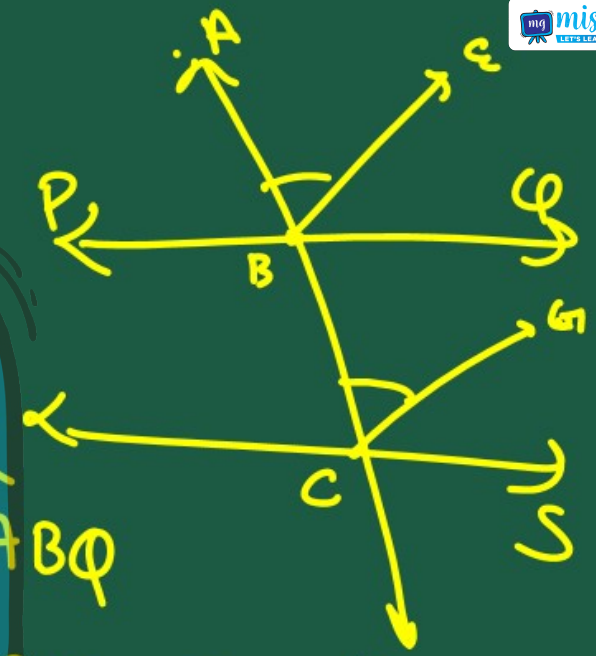
To prove:→ PQ ∥ RS.

Soln:→ Since

BE bisector of ∠ABQ

$\angle ABE = \angle QBE = \frac{\angle ABQ}{2}$ ——— (1)

[Given]



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IIy CG bisector $\angle BCS$

$\angle BCG = \angle SCG = \frac{\angle BCS}{2}$ [Given]

$\angle BCG = \frac{\angle BCS}{2}$ ... (2)

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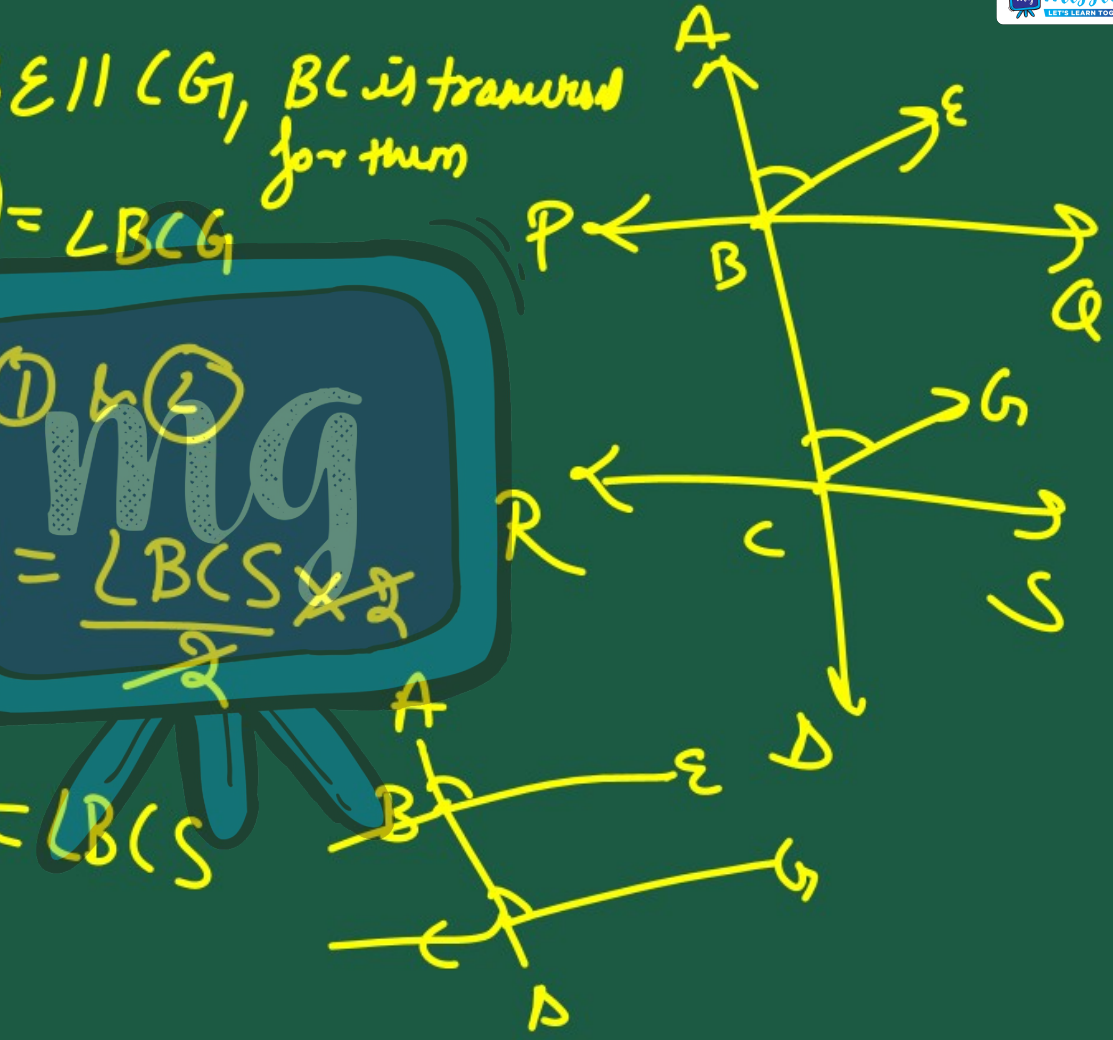
$BE \parallel CG$, BC is transversal for them

$\angle ABE = \angle BCG$

from eq (1) & (2)

$2 \times \frac{\angle ABQ}{2} = \frac{\angle BCS}{2} \times 2$

$\angle ABQ = \angle BCS$



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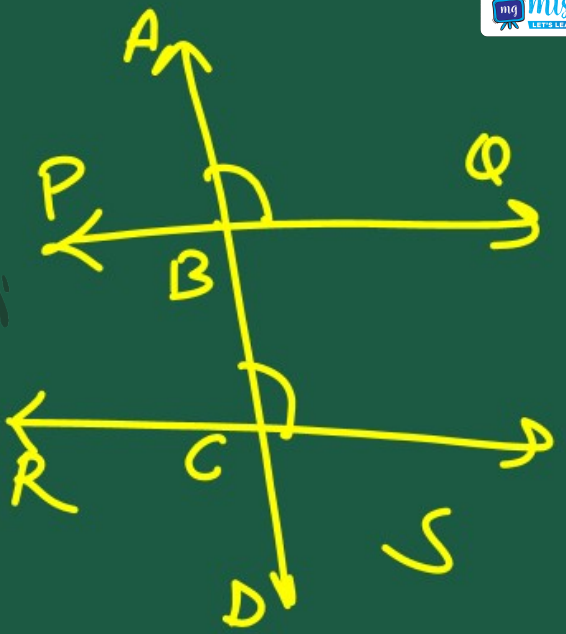
Since $\angle ABQ = \angle BCS$

Since $\angle ABQ$ & $\angle BCS$ are corresponding Angles



Since corresponding are equal

$\therefore PQ \parallel RS$

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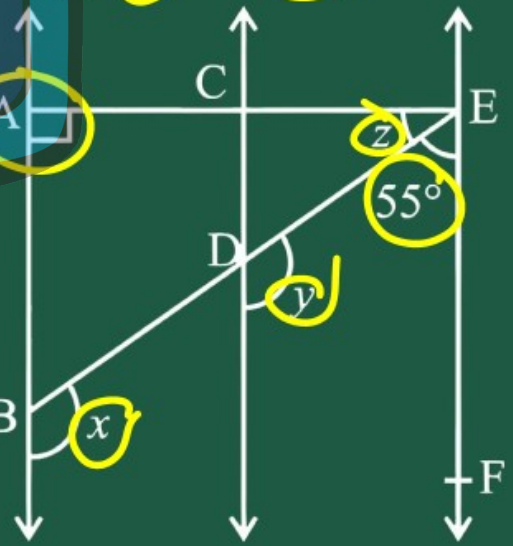
Example : 6

Since AB || CD
CD || EF
∴ AB || EF also

In Figure, AB || CD and CD || EF. Also EA ⊥ AB. If ∠BEF = 55°, find the values of x, y and z.



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$AB \parallel EF$ & EA is transversal

$\angle BAE + \angle AEF = 180^\circ$ [Co-interior]

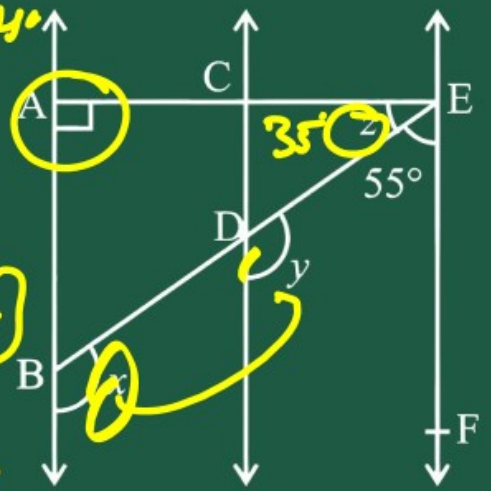
Line $\angle AEF = \angle AEB + \angle BEF$

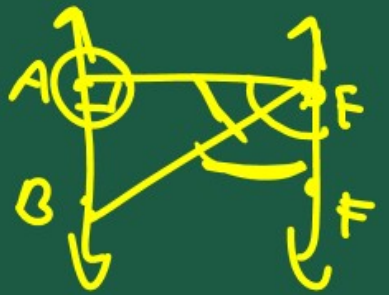
$= z + 55^\circ$

$\therefore \angle BAE + \angle AEB + \angle BEF = 180$

$90^\circ + z + 55^\circ = 180$

$145 + z = 180^\circ$





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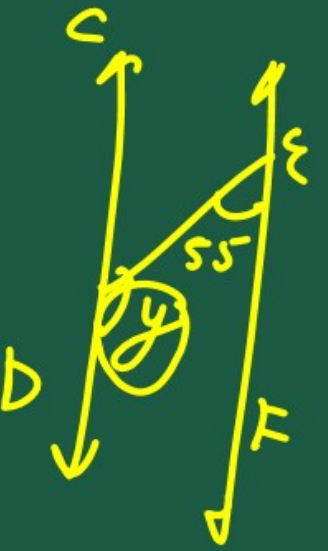
$145^\circ + z = 180$

$z = 180 - 145^\circ$

$z = 35^\circ$



Sin CD || EF, ED is transversal

$y + 55 = 180^\circ$ [Co-interior]

$y = 180 - 55^\circ$

$y = 125^\circ$

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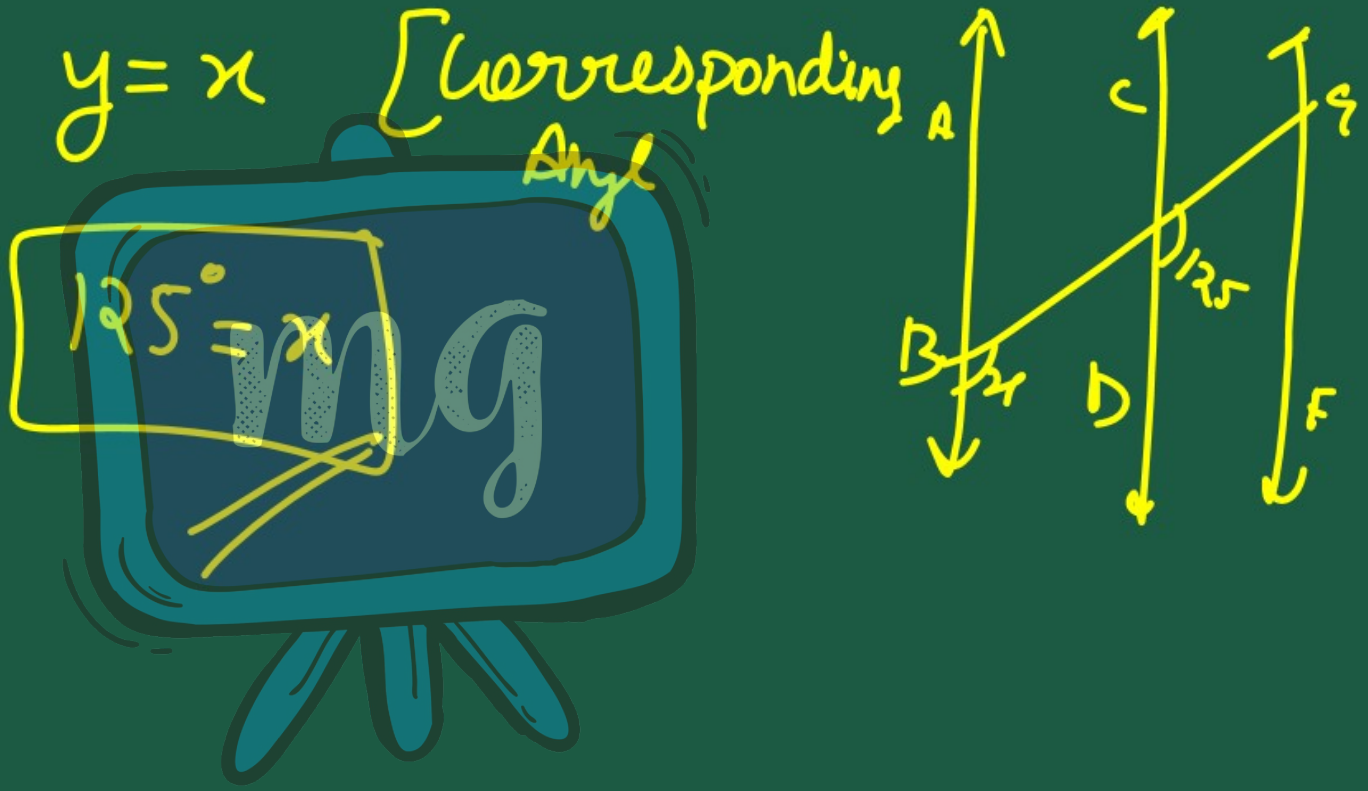

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