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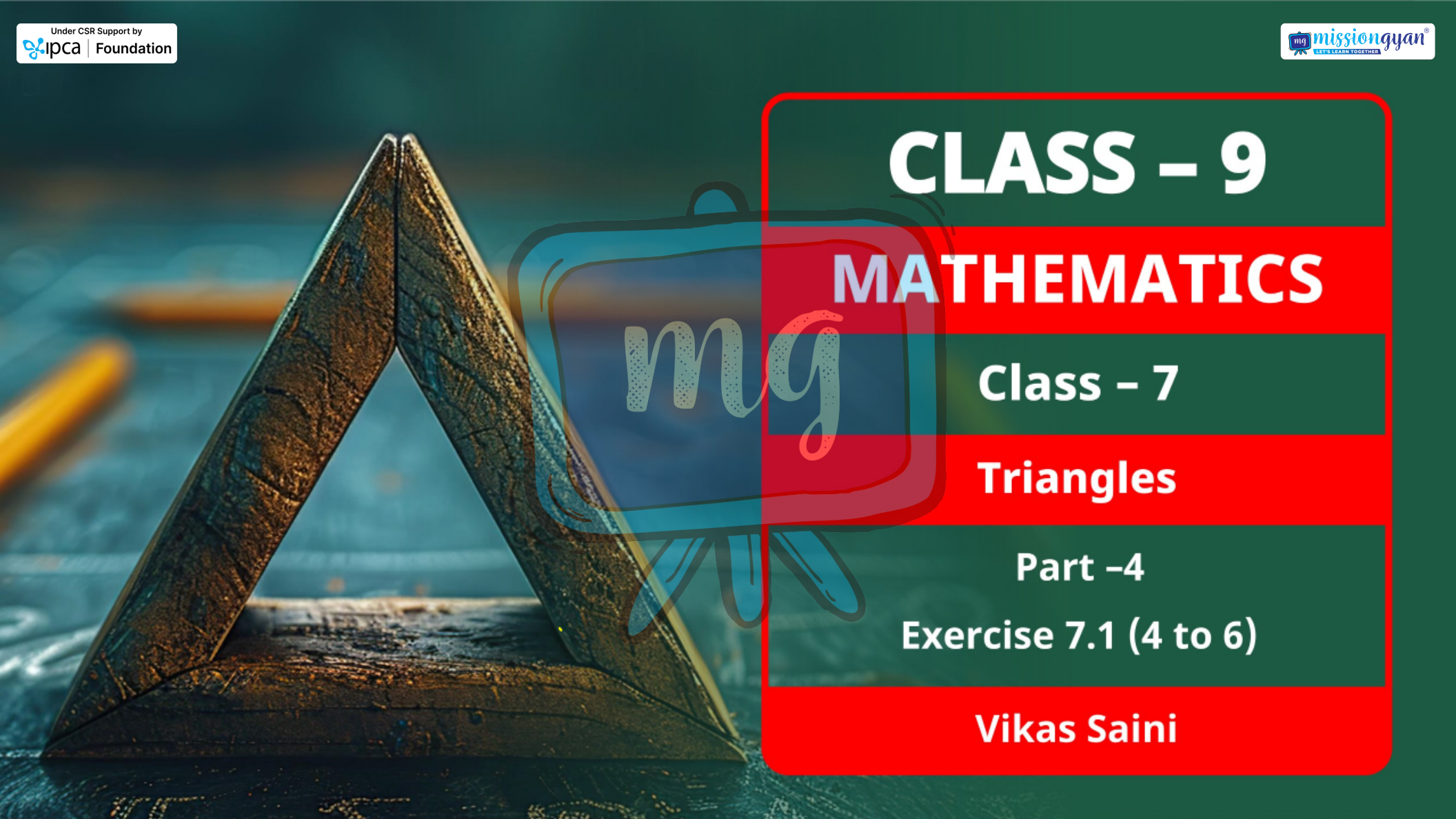

CLASS – 9

MATHEMATICS

Class – 7

Triangles

Part –4

Exercise 7.1 (4 to 6)

Vikas Saini

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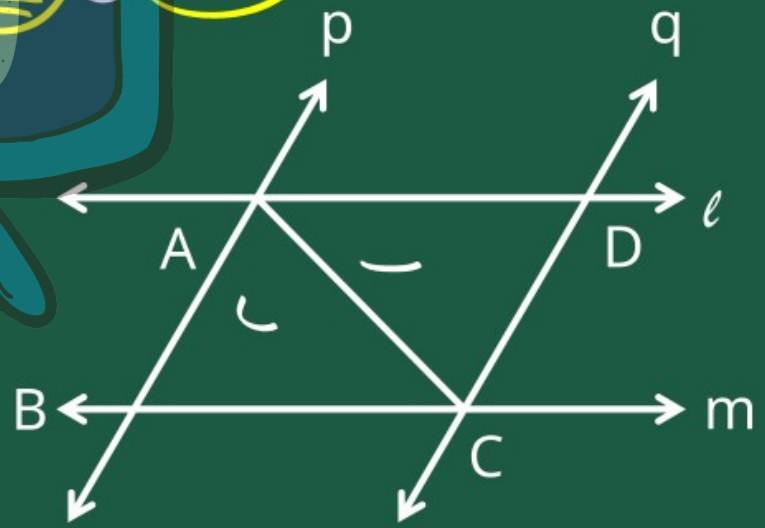
4. ℓ and m are two parallel lines intersected by another pair of parallel lines p and q. Show that $\Delta ABC \cong \Delta CDA$.



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Given:→ two lines l & m are Parallel

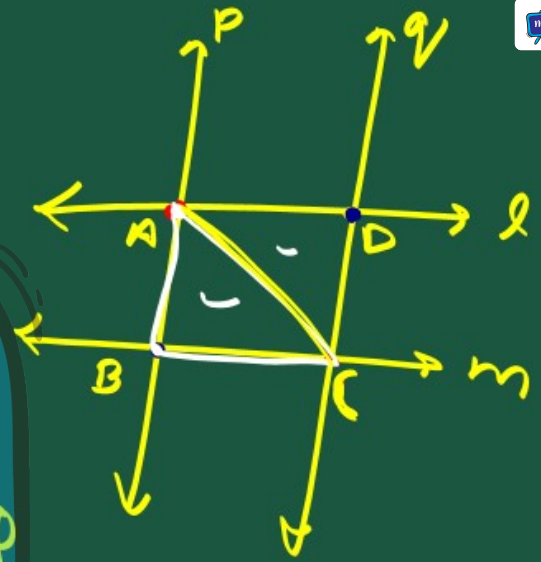
l ∥ m

& another pair of Parallel lines P & Q

P ∥ Q

Both pair intersect each other at A, B, C & D

To prove:→ $\triangle ABC \cong \triangle CDA$



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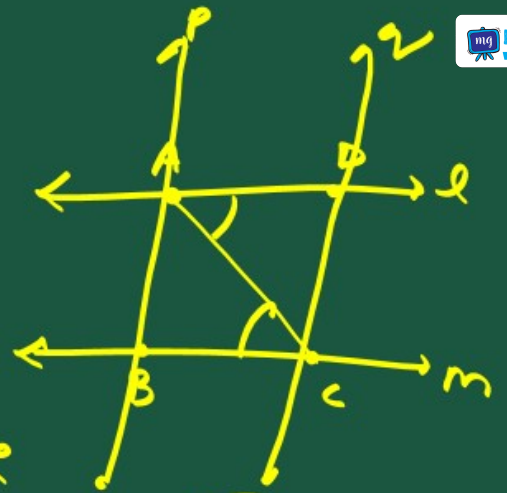
Soln :→ Given $l \parallel m$ [Given]

where AC is traversal



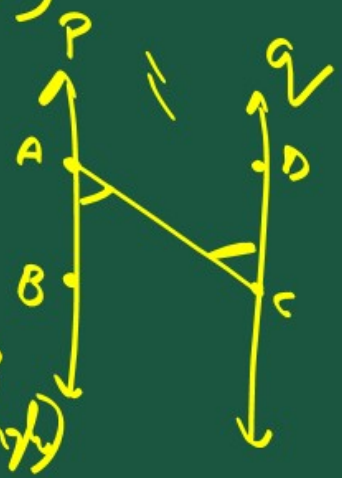
$\angle ACB = \angle CAD$ —— (1)

[Alternate interior Angles]

Now Similarly

$P \parallel Q$ [Given]

AC is tranversal.



$\angle BAC = \angle DCA$ —— (2) [Alternate Interior Angles]

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Now,

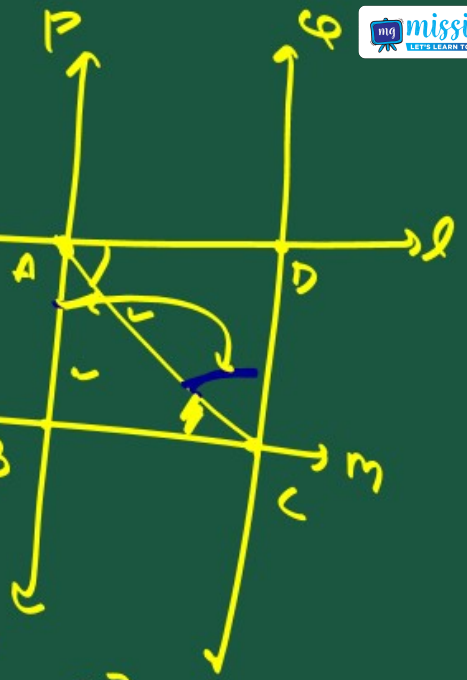
In $\triangle ABC$ & $\triangle CDA$

$\angle BAC = \angle DCA$ [A·I·A Proved above]

$\angle ACB = \angle CAD$ [Proved Above eq (i)]

$AC = CA$ [common Side]

So, $\triangle ABC \cong \triangle CDA$ By ASA Rule





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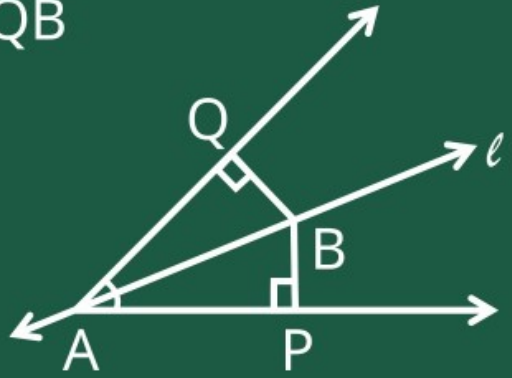
5. Line ℓ is the bisector of an angle $\angle A$ and B is any point on line ℓ. BP and BQ are perpendiculars from B to the arms of $\angle A$.

Show that:

(i) $\triangle APB \cong \triangle AQB$

(ii) BP = BQ



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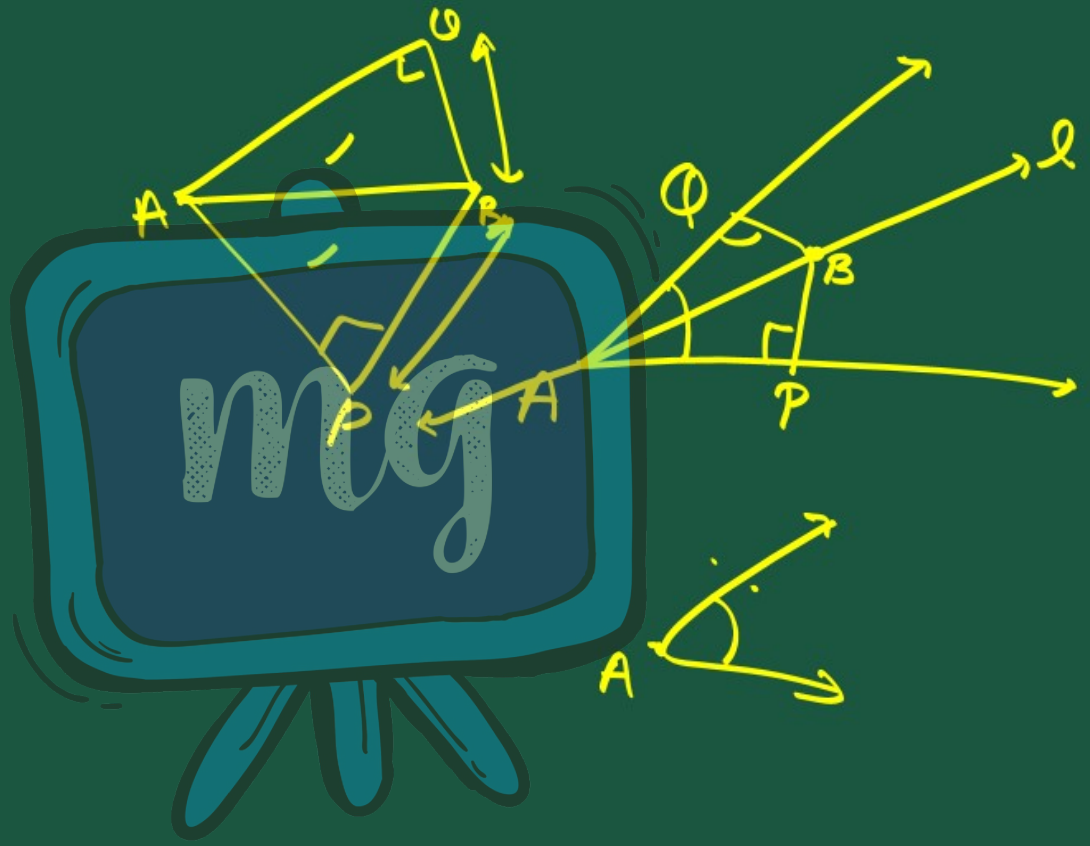

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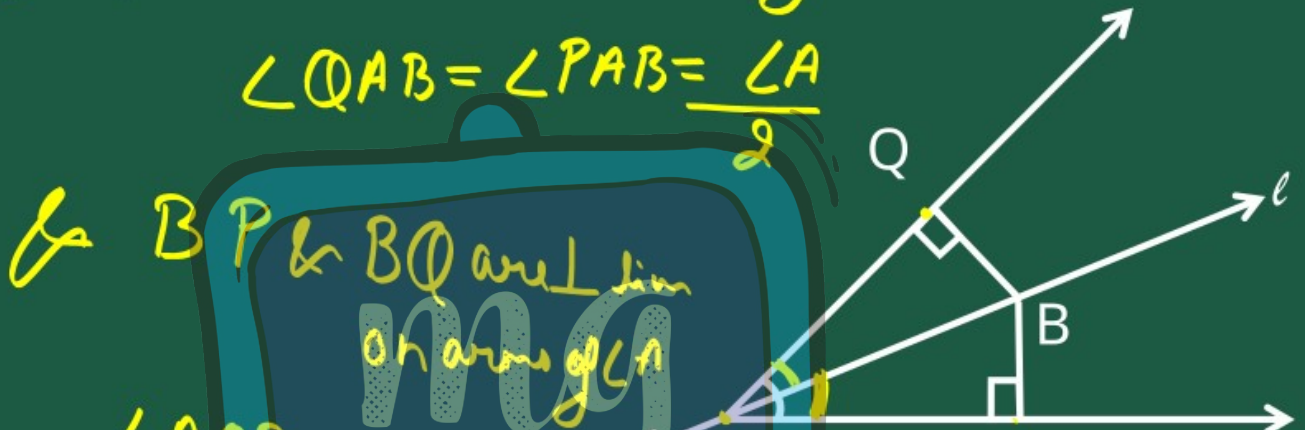
Given: line l is bisector of $\angle A$

$\angle QAB = \angle PAB = \frac{\angle A}{2}$

& BP & BQ are $\perp$ lines on arms of $\angle A$

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



To prove: $\triangle APB \cong \triangle AQB$

$BP = BQ$

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Sol:→ In $\triangle AQB$ & $\triangle APB$

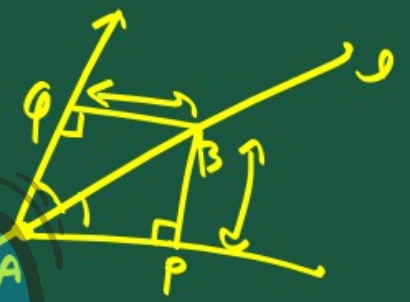
$\angle AQB = \angle APB = 90^\circ$

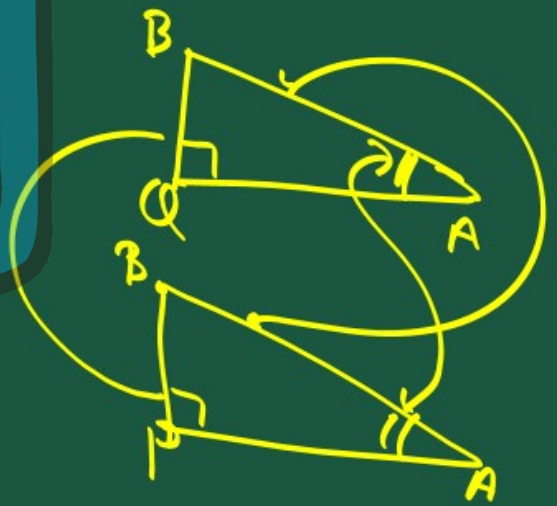
$\angle QAB = \angle PAB$ [Given]

$AB = AB$ [Common]

So, $\triangle AQB \cong \triangle APB$ By AAS Rule

$BQ = BP$ [By C.P.C.T]





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Given:-

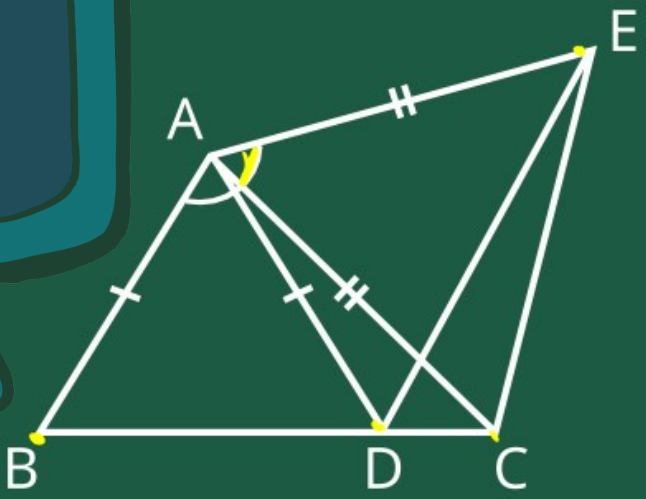
AC = AE

AB = AD

∠BAD = ∠EAC

To prove:- BC = DE

6. In Figure, AC = AE, AB = AD and ∠BAD = ∠EAC. Show that BC = DE.



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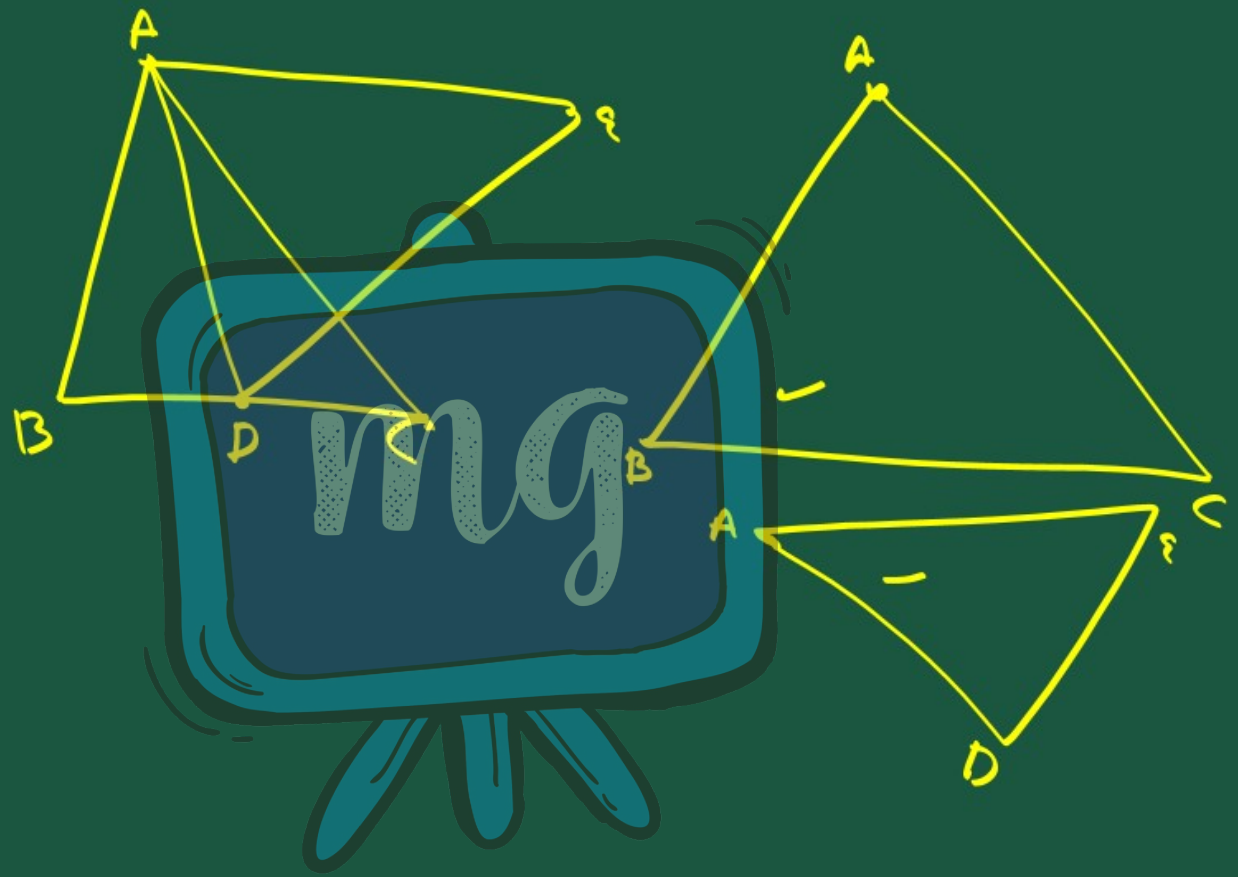

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Solⁿ:→

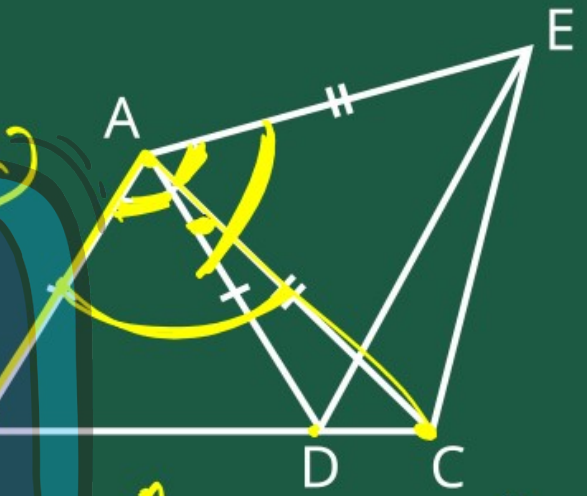
$\angle BAD = \angle EAC$ [Given]

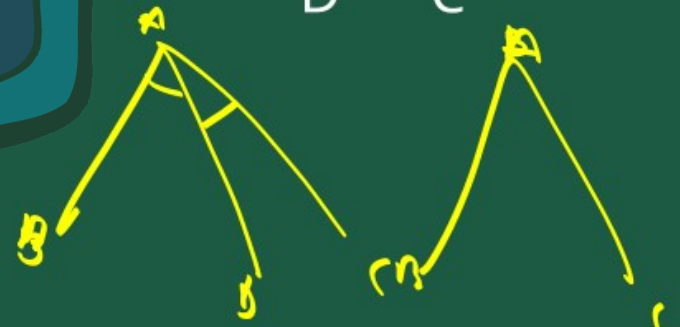
Now, Add $\angle ADC$ to Both Side

$\angle ADC + \angle BAD = \angle EAC + \angle ADC$

$\angle BAC = \angle EAD$ — (1)

Now,





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$\angle BAC = \angle EAD$

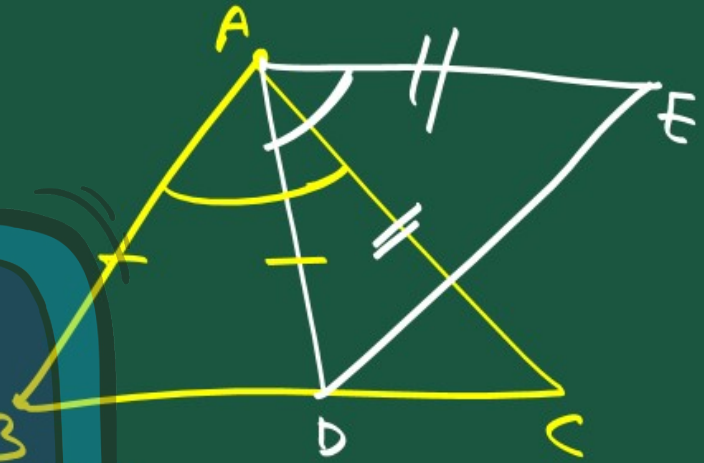
Now

In $\triangle ABC$ & $\triangle ADE$

$\angle BAC = \angle DAE$ [Proved above]

$AB = AD$

$AC = AE$ [Given]



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So, $\triangle ABC \cong \triangle ADE$ By SAS Rule

$BC = DE$ [By C.P.C.T]

