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CLASS – 9

MATHEMATICS

Chapter – 7

Triangles

Part –7

Example (4 to 6)

Vikas Saini

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Example : 4

In ΔABC, the bisector AD of $\angle A$ is perpendicular to side BC (see Figure). Show that AB = AC and ΔABC is isosceles.

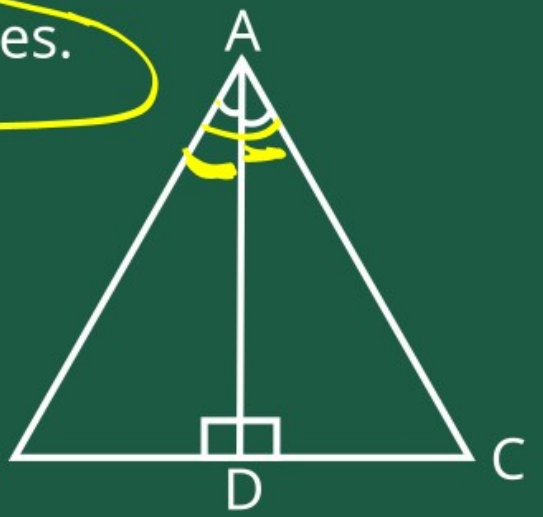
Given :- ΔABC is triangle in which $AD \perp BC$

& AD is also bisector of $\angle A$

$\angle BAD = \angle CAD = \frac{\angle A}{2}$

To prove :- $AB = AC$

& ΔABC is isosceles &



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Now, In $\triangle ABD$ & $\triangle ACD$

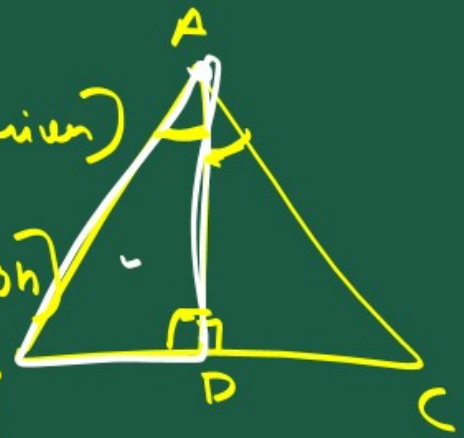
$\angle ADB = \angle ADC = 90^\circ$ [Given]

$AD = AD$ [Common]

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

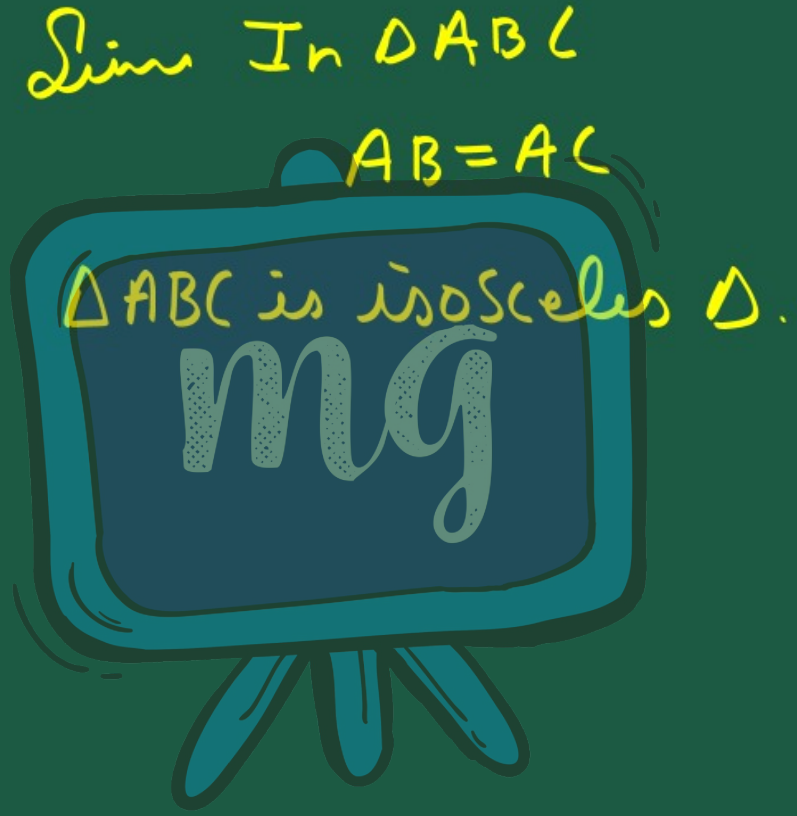
So, $\triangle ABD \cong \triangle ACD$ By ASA Rule

$AB = AC$ [By C.P.C.T]



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Example : 5

Given: In $\triangle ABC$, E and F are respectively the mid-points of equal sides AB and AC of $\triangle ABC$ (see Figure). Show that BF = CE.

E & F are mid points of AB & AC respt.

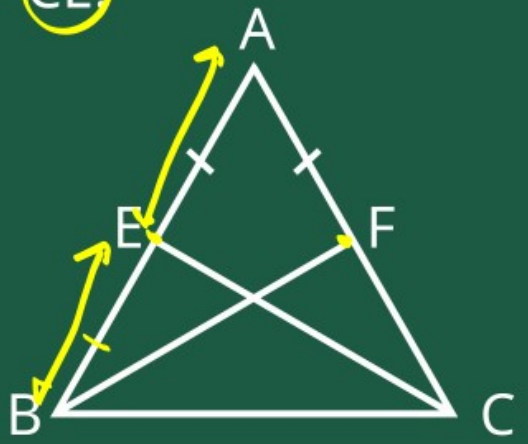
$\therefore AE = BE$

$AF = CF$

& $AB = AC$.

Top rows

$\Rightarrow BF = CE$



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Since $AB = AC$ [Given]

$AE = BE = \frac{AB}{2}$ [Given]

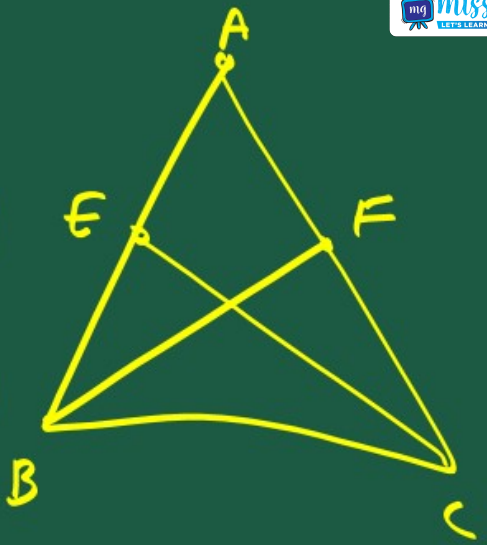
$AF = CF = \frac{AC}{2}$ [Given]

If $AB = AC$

$\frac{1}{2}$ multiply

$\frac{AB}{2} = \frac{AC}{2}$

$AE = AF$



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In $\triangle ABF$ & $\triangle ACE$

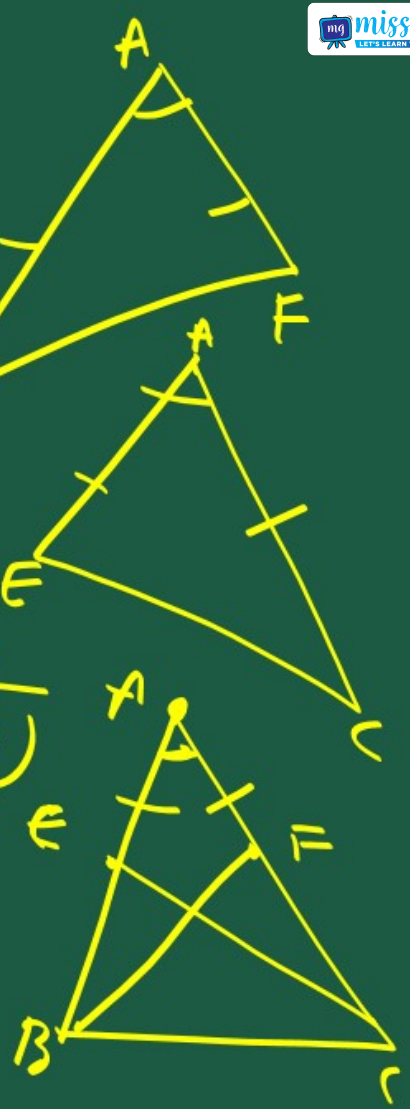
$AB = AC$ [Given]

$AF = AE$ [Provided above]

$\angle A = \angle A$ [common]

$\therefore \triangle ABF \cong \triangle ACE$ By SAS Rule

$BF = CE$ By C.P.C.T



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Given:

Example : 6

In an isosceles triangle ABC with AB = AC, D and E are points on BC such that BE = CD (see Figure). Show that AD = AE.

ΔABC is isosceles

$AB = AC$

& D, E are points on BC

S.t

$BE = CD$

To prove :- $AD = AE$



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Sol:→ $BE = CD$ [Given]

Since $BE = BD + DE$ — (1)

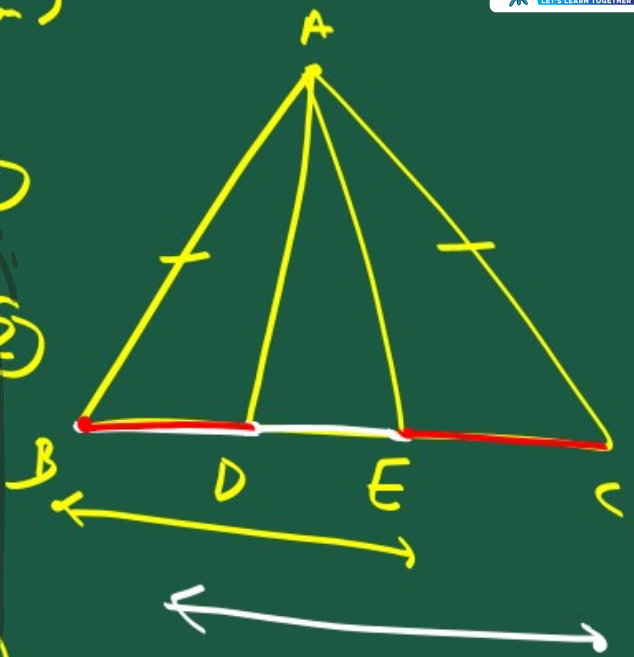
$CD = CE + DE$ — (2)

$\therefore BD + DE = CE + DE$

$BD + DE = CE + DE$

$BD + DE - DE = CE$

$\boxed{BD = CE}$



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Now, In $\triangle ABD$ & $\triangle ACE$

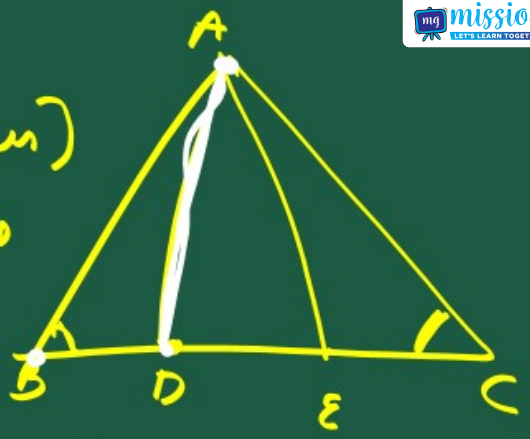
$AB = AC$ [Given]

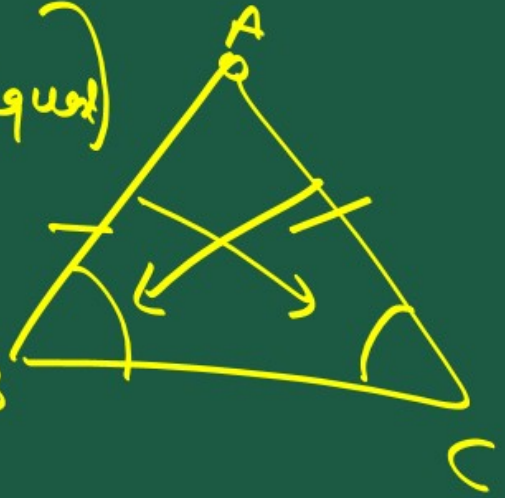
$\angle B = \angle C$ [∵ opp sides are equal then opp. angle are also equal]

$BD = CE$ [Proved above]

$\triangle ABD \cong \triangle ACE$ By SAS Rule

$AD = AE$ [By C.P.C.T]





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In $\triangle ABD$ & $\triangle ACE$

$AB = AC$

$\angle C = \angle B$

$BE = CD$

