

# Mathematics

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(Chapter – 7) (Triangles)(Exemplar Problems)  
(Class – IX)

## Exercise 7.3

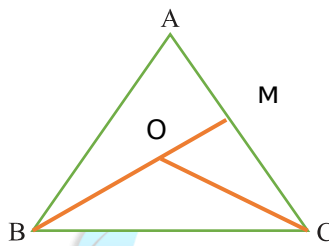
### Question 9:

Bisectors of the angles B and C of an isosceles triangle with  $AB = AC$  intersect each other at O. BO is produced to a point M. Prove that  $\angle MOC = \angle ABC$ .

### Answer 9:

**Given:** In  $\triangle ABC$ ,  $AB = AC$  and OB & OC are the bisectors of  $\angle B$  &  $\angle C$  respectively.

**To Prove:**  $\angle MOC = \angle ABC$ .



**Proof:** In  $\triangle ABC$ ,  $AB = AC$

[ $\because$  Given]

$$\angle ABC = \angle ACB$$

[ $\because$  Angles opposite to equal sides]

$$\Rightarrow \frac{1}{2} \angle ABC = \frac{1}{2} \angle ACB$$

$$\Rightarrow \angle OBC = \angle OCB$$

[ $\because$  OB & OC are the bisectors of  $\angle B$  &  $\angle C$ ]

Now,  $\angle MOC$  is exterior angle of  $\triangle OBC$

$$\Rightarrow \angle MOC = \angle OBC + \angle OCB \quad [\because \text{Exterior angle property}]$$

$$\Rightarrow \angle MOC = \angle OBC + \angle OBC \quad [\because \angle OBC = \angle OCB]$$

$$\Rightarrow \angle MOC = 2 \angle OBC$$

$$\Rightarrow \angle MOC = \angle ABC \quad [\because 2 \angle OBC = \angle ABC]$$

Hence Proved.

