

CBSE CLASS 9

CHAPTER 7 : EXERCISE 1.8

1. In right triangle ABC , right angled at C , M is the mid-point of hypotenuse AB . C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B see Fig. 1. Show that:

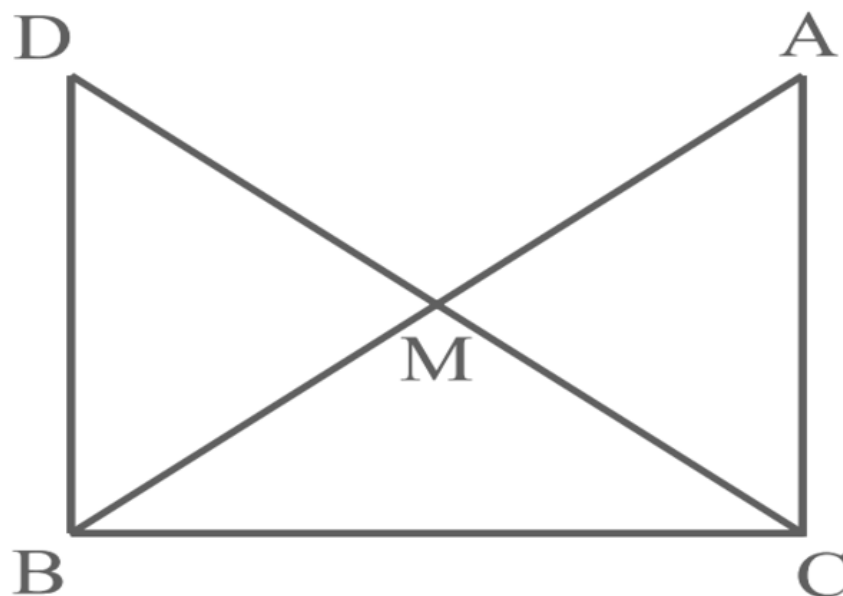


Figure 1: $\triangle ACB$, $\triangle DCB$ with Mid-Point M

- (i) $\triangle AMC \cong \triangle BMD$
- (ii) $\angle DBC$ is a right angle.
- (iii) $\triangle DBC \cong \triangle ACB$
- (iv) $CM = \frac{1}{2}AB$

Solution:

CONSTRUCTION STEPS :

(a) Let us Assume , the input parameters as ;

Parameter	Value	Description
B	$\begin{pmatrix} 0 \\ 0 \end{pmatrix}$	Reference point at Origin
C	$\begin{pmatrix} 6 \\ 0 \end{pmatrix}$	point C on the same axis of B
l	$\ \mathbf{B} - \mathbf{C}\ $	Length of side BC

Table 1: Input Parameters

(b) the output can be calculated as ;

Parameter	Value	Description
D	$\begin{pmatrix} 0 \\ l \end{pmatrix}$	$x = 0$, $y = l$ i.e x, y are co-ordinates of axes in XY-plane
A	$\begin{pmatrix} l \\ l \end{pmatrix}$	$x = l$, $y = l$
M	$\left(\frac{\mathbf{A} + \mathbf{B}}{2}\right)$	Mid-point of AB

Table 2: Output Parameters

\therefore By, Plotting these points we get the required Image Fig. 2

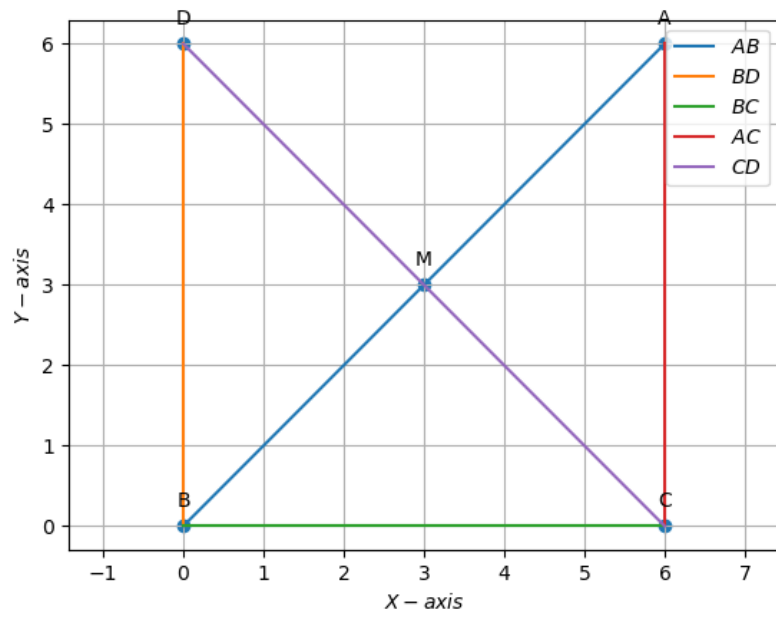


Figure 2: PYTHON Plot of $\triangle ACB, \triangle DCB$ with Mid-Point **M**