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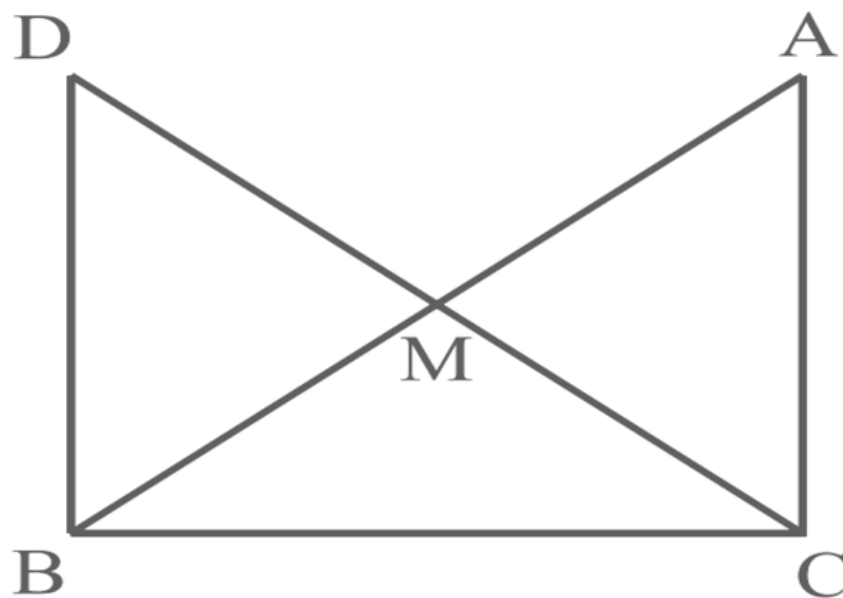
Figure 1: $\triangle$**ACB**, $\triangle$**DCB** with Mid-Point **M**

   (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
l	6	Length of a side

Table 1: Input Parameters

(b) the output can be calculated as ;

Parameter	Value	Description
C	$\begin{pmatrix} l \\ 0 \end{pmatrix}$	point **C** with length l on the same axis of **B**
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	$\left(\frac{\mathbf{A+B}}{2} \right)$	Mid-point of **AB**

Table 2: Output Parameters

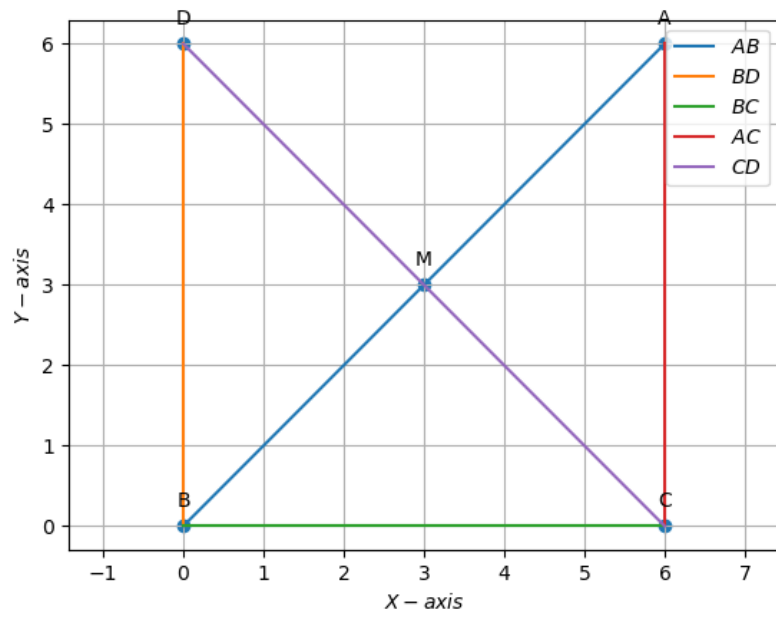$\therefore$ By, Plotting these points we get the required Image Fig. 2

Figure 2: PYTHON Plot of $\triangle \mathbf{ACB}, \triangle \mathbf{DBC}$ with Mid-Point $\mathbf{M}$