



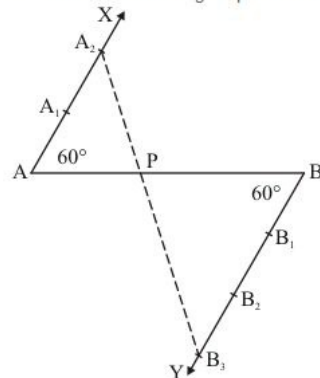
Constructions Ex 11.1 Q1

Answer :

Given that

Determine a point which divides a line segment of length **12 cm** internally in the ratio of **2 : 3**.

We follow the following steps to construct the given



Step of construction

Step: I- First of all we draw a line segment $AB = 12 \text{ cm}$.

Step: II- We draw a ray AX making an acute angle $\angle BAX = 60^\circ$ with AB .

Step: III- Draw a ray BY parallel to AX by making an acute angle $\angle ABY = \angle BAX$.

Step IV- Mark of two points A_1, A_2 on AX and three points B_1, B_2, B_3 on BY in such a way that

$$AA_1 = A_1A_2 = BB_1 = B_1B_2 = B_2B_3.$$

Step: V- Joins A_2B_3 and this line intersects AB at a point P .

Thus, P is the point dividing AB internally in the ratio of **2 : 3**

Justification:

In $\triangle AA_2P$ and $\triangle BB_3P$, we have

$$\angle A_2AP = \angle PBB_3 \quad [\angle ABY = \angle BAX]$$

$$\text{And } \angle APA_2 = \angle BPB_3 \quad [\text{Vertically opposite angle}]$$

So, AA similarity criterion, we have

$$\triangle AA_2P \approx \triangle BB_3P,$$

$$\frac{AA_2}{BB_3} = \frac{AP}{BP}$$

$$\frac{AP}{BP} = \frac{2}{3}$$

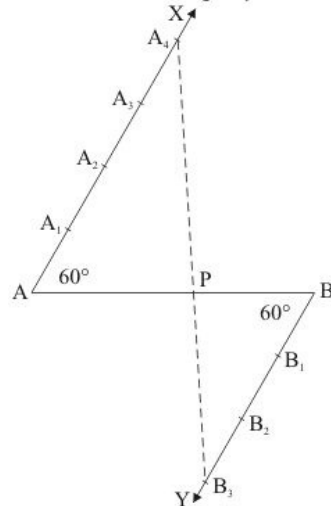
Constructions Ex 11.1 Q2

Answer :

Given that

Determine a point which divides a line segment of length **9cm** internally in the ratio of **4 : 3**.

We follow the following steps to construct the given



Step of construction

Step: I- First of all we draw a line segment $AB = 9\text{ cm}$.

Step: II- We draw a ray AX making an acute angle $\angle BAX = 60^\circ$ with AB .

Step: III- Draw a ray BY parallel to AX by making an acute angle $\angle ABY = \angle BAX$.

Step IV- Mark two points A_1, A_2, A_3, A_4 on AX and three points B_1, B_2, B_3 on BY in such a way that

$AA_1 = A_1A_2 = A_2A_3 = A_3A_4 = BB_1 = B_1B_2 = B_2B_3$.

Step: V- Joins A_4B_3 and this line intersects AB at a point P .

Thus, P is the point dividing AB internally in the ratio of **4 : 3**

Justification:

In $\triangle AA_4P$ and $\triangle BB_3P$, we have

$\angle A_4AP = \angle PBB_3$ [$\angle ABY = \angle BAX$]

And $\angle APA_4 = \angle BPB_3$ [Vertically opposite angle]

So, AA similarity criterion, we have

$\triangle AA_4P \approx \triangle BB_3P$,

$$\frac{AA_4}{BB_3} = \frac{AP}{BP}$$

$$\frac{AP}{BP} = \frac{4}{3}$$

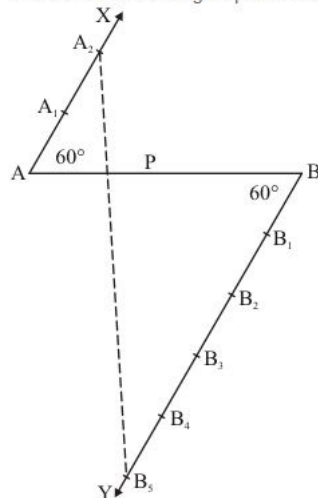
Constructions Ex 11.1 Q3

Answer :

Given that

Determine a point which divides a line segment of length **14cm** internally in the ratio of **2 : 5**.

We follow the following steps to construct the given



Step of construction

Step: I-First of all we draw a line segment $AB = 14 \text{ cm}$.

Step: II- We draw a ray AX making an acute angle $\angle BAX = 60^\circ$ with AB .

Step: III- Draw a ray BY parallel to AX by making an acute angle $\angle ABY = \angle BAX$.

Step IV- Mark of two points A_1, A_2 on AX and three points B_1, B_2, B_3, B_4, B_5 on BY in such a way that

$$AA_1 = A_1A_2 = BB_1 = B_1B_2 = B_2B_3 = B_3B_4 = B_4B_5.$$

Step: V- Joins A_2B_5 and this line intersects AB at a point P .

Thus, P is the point dividing AB internally in the ratio of $2 : 5$

Justification:

In $\triangle AA_2P$ and $\triangle BB_5P$, we have

$$\angle A_2AP = \angle PBB_5 \quad [\angle ABY = \angle BAX]$$

$$\text{And } \angle APA_2 = \angle BPB_5 \quad [\text{Vertically opposite angle}]$$

So, AA similarity criterion, we have

$$\triangle AA_2P \approx \triangle BB_5P,$$

$$\frac{AA_2}{BB_5} = \frac{AP}{BP}$$

$$\frac{AP}{BP} = \frac{2}{5}$$

***** END *****