

Exercise 11.1

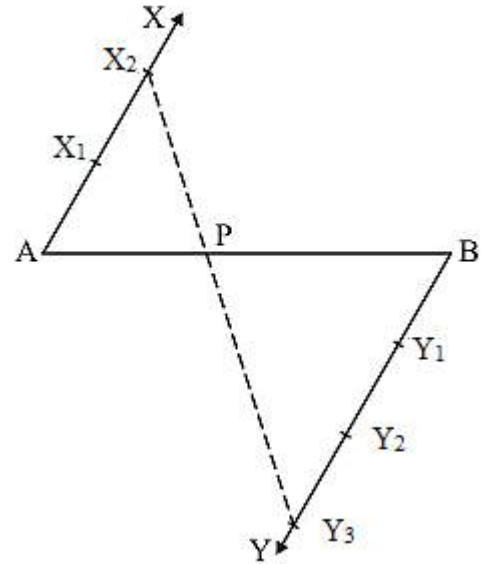
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1. Determine a point which divides a line segment of length 12 cm internally in the ratio of 2: 3. Also, justify your construction.

Solution:

Steps of construction:

1. Draw a line segment $AB = 12$ cm by using a ruler.
 2. Through the points A and B draw two parallel line on the opposite side of AB and making the same acute angles with the line segment.
 3. Cut 2 equal parts on AX and 3 equal parts on BY such that $AX_1 = X_1X_2$ and $BY_1 = Y_1Y_2 = Y_2Y_3$.
 4. Join X_2Y_3 which intersects AB at P
- Hence, $AP/PB = 2/3$.



Justification:

In ΔAX_2P and ΔBY_3P , we have

$\angle APX_2 = \angle BPY_3$ [vertically opposite angle]

$\angle X_2AP = \angle Y_3BP$ [alternate interior angles]

$\Delta AX_2P \sim \Delta BY_3P$ [Because AA similarity]

$\therefore AP/BP = AX_2/BY_3 = 2/3$ [From C.P.C.T]