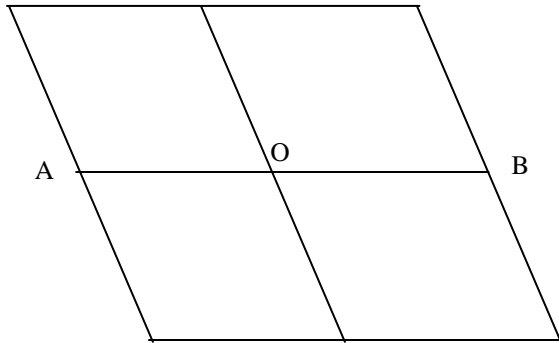


**Q)** Inscribe an ellipse in a parallelogram of sides 120 mm and 70 mm with an included angle of  $120^\circ$ .

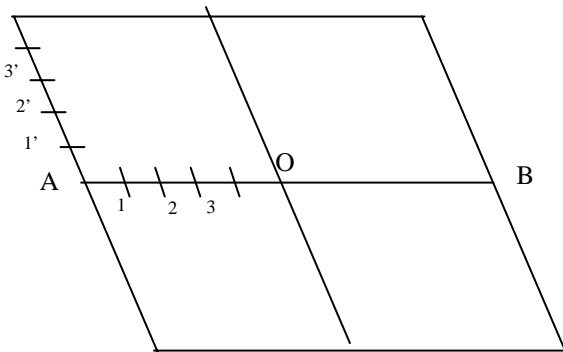
**Ans)** The ellipse has to be drawn by oblong method inside a parallelogram using sides as 120mm and 70 mm with angle between the sides as  $120^\circ$ .

**AB** = 120; **CD** = 70;  $\angle COB = 120^\circ$ .

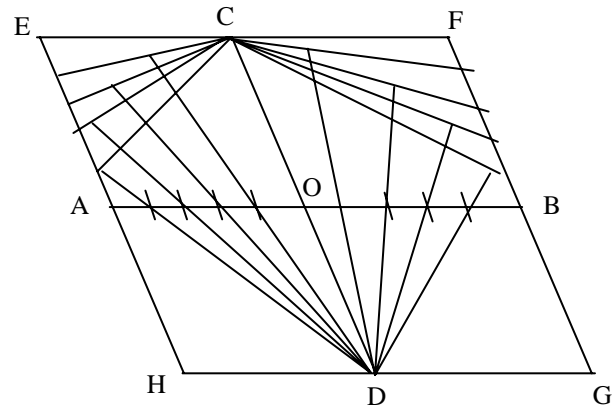
**1)** Draw **AB** = 120, **CD** = 70 with mid point as **O** and  $\angle COB = 120^\circ$  and a parallelogram **EFGH** around **ABCD** by drawing parallel lines.



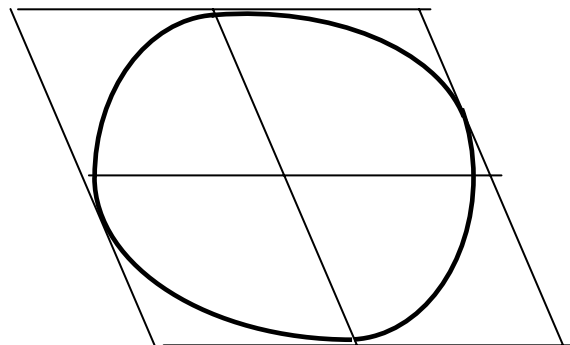
**2)** Divide **AE** and **AO** into equal no. of parts say 3 or 4 parts. Number them as 1, 2, 3, ... and  $1', 2', 3', \dots$



**3)** Join **C** to  $1', 2', 3'$ . Join **D** to **1** and extend to cut **C-1'** at  $P_1$ . Similarly join **D-2, D-3** and extend to cut **C-2', C-3'** to get all the points of ellipse  $P_1, P_2$ , etc.



**4)** The ellipse will be inclined and of shorter dimensions.



**Important Problem:** 2 points **A** & **B** are 100 mm apart. Point **C** is 75 mm from **A** and 60 mm from **B**. Draw an ellipse passing through **A, B** and **C**.

**Ans:** As the ellipse passes through **A, B** & **C**, **AB** is **major axis**. **C** is one end of **minor axis**. Mark **C** by arcs at 75 mm & 60 mm from (**A, B**). Join **C** to **O**, mid point of **AB**. Extend **CO** to **OD** so that **CD** will be the minor axis. Since **C** is not equidistant from **A** & **B**, **CD** will be inclined. Hence the ellipse is constructed by **parallelogram method** based on the inclination of **CD** with **AB** as explained in the above problem.