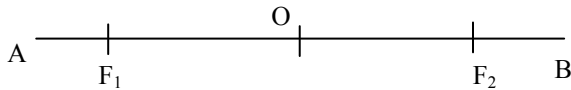


7) Two **fixed points** are 100 mm apart. Draw the locus of a point P moving in such a way that **sum of its distances** from the fixed points is always constant and is equal to 125 mm.

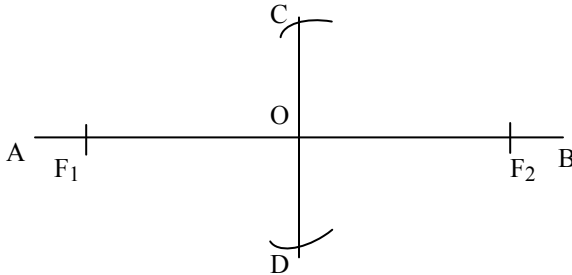
**Ans)** Since the **sum of distances** from two **fixed points** is always constant, the **fixed points** are the **foci** and the **curve** is an **ellipse**. The eqn of locus is  $PF_1 + PF_2 = Const = 2a$ . Hence the construction of the ellipse is by arc of circles method

**Foci (F<sub>1</sub>F<sub>2</sub>) = 100; Major axis (AB) = 125.**

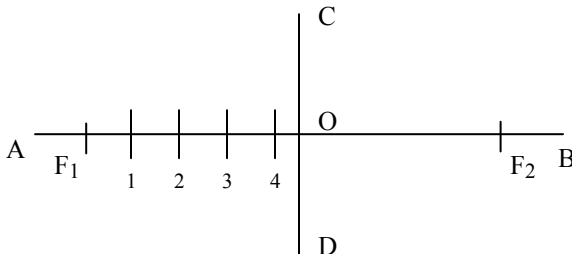
1) Draw AB = 125, F<sub>1</sub>F<sub>2</sub> = 100 with mid point as O.



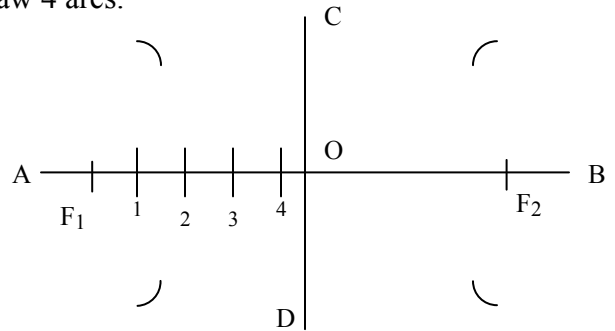
2) Using OA=CF, centre as F and radius=OA, cut arcs on  $\perp$  to AB to get C & D.



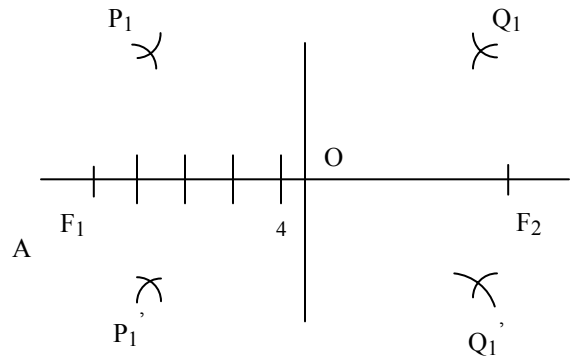
3) From F<sub>1</sub>, mark points at 10mm up to O; label them as 1,2,3,4,etc.



4) With Centre (F<sub>1</sub>, F<sub>2</sub>) & Radius=A1, draw 4 arcs.



5) With Centre (F<sub>1</sub>, F<sub>2</sub>) & Radius=B1, cut the 4 arcs to get points P<sub>1</sub>, Q<sub>1</sub>, etc.



6) With Radius = (A<sub>2</sub>, B<sub>2</sub>), (A<sub>3</sub>, B<sub>3</sub>), etc get the remaining points of ellipse and join them.

