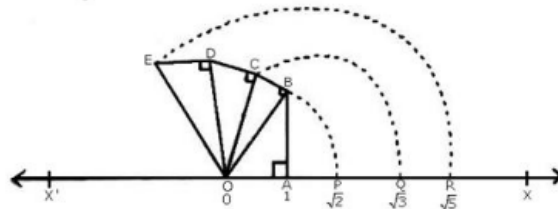




Exercise 1C

Question 3:



Let $X'OX$ be a horizontal line, taken as the x -axis and let O be the origin. Let O represent 0 .

Take $OA = 1$ unit and draw $BA \perp OA$ such that $AB = 1$ unit, join OB . Then,

$$\begin{aligned} OB &= \sqrt{OA^2 + AB^2} \\ &= \sqrt{1^2 + 1^2} = \sqrt{2} \text{ units} \end{aligned}$$

With O as centre and OB as radius, drawn an arc, meeting OX at P .

Then, $OP = OB = \sqrt{2}$ units

Thus the point P represents $\sqrt{2}$ on the real line.

Now draw $BC \perp OB$ such that $BC = 1$ units

Join OC . Then,

$$\begin{aligned} OC &= \sqrt{OB^2 + BC^2} \\ &= \sqrt{(\sqrt{2})^2 + 1^2} = \sqrt{3} \text{ units} \end{aligned}$$

With O as centre and OC as radius, draw an arc, meeting OX at Q . The,

$OQ = OC = \sqrt{3}$ units

Thus, the point Q represents $\sqrt{3}$ on the real line.

Now draw $CD \perp OC$ such that $CD = 1$ units

Join OD . Then,

$$\begin{aligned} OD &= \sqrt{OC^2 + CD^2} \\ &= \sqrt{(\sqrt{3})^2 + 1^2} = \sqrt{4} = 2 \text{ units} \end{aligned}$$

Now draw $DE \perp OD$ such that $DE = 1$ units

Join OE . Then,

$$\begin{aligned} OE &= \sqrt{OD^2 + DE^2} \\ &= \sqrt{2^2 + 1^2} = \sqrt{5} \text{ units} \end{aligned}$$

With O as centre and OE as radius draw an arc, meeting OX at R .

Then, $OR = OE = \sqrt{5}$ units

Thus, the point R represents $\sqrt{5}$ on the real line.

***** END *****