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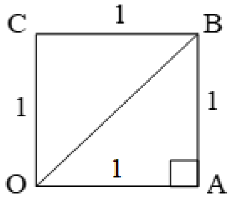
(Affiliated to CBSE up to +2 Level)

CLASS : IX SUBJECT : MATHEMATICS DATE:18.04.2021

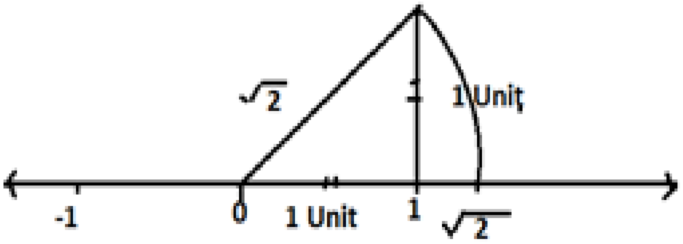
Represent $\sqrt{2}$ & $\sqrt{3}$ on the number line:

Greeks discovered this method. Consider a unit square OABC, with each side 1 unit in length. Then by using Pythagoras theorem



OB=$\sqrt{1+1}$= $\sqrt{2}$

Now, transfer this square onto the number line making sure that the vertex O coincides with zero



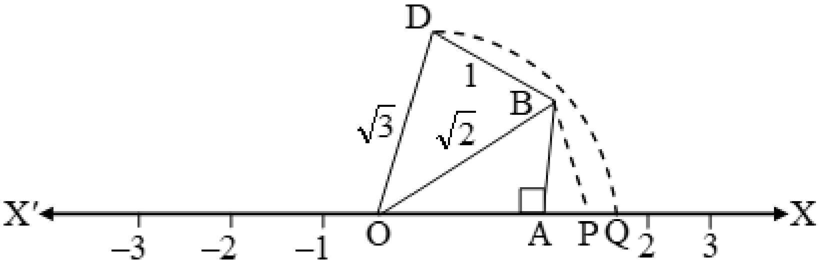
With O as centre & OB as radius, draw an arc, meeting OX at P. Then

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

Then, the point represents $\sqrt{2}$ on the number line

Again

Now draw, BD ⊥ OB such that BD = 1 unit join OD. Then



OD = (2–√)2+(1)2−−−−−−−−−−√=3–√ = units With O as centre & OC as radius, draw an arc, meeting OX at Q. Then

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

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

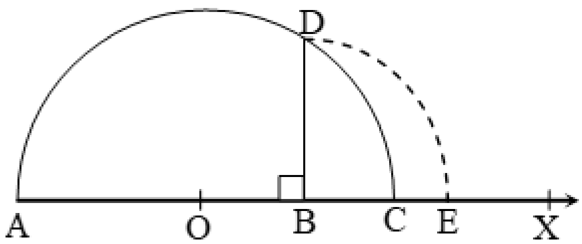
Existence of $\sqrt{4.3}$ for a positive real number:

The value of $\sqrt{4.3}$ geometrically : –

Draw a line segment AB = 4.3 units and extend it to C such that BC = 1 unit.

Find the midpoint O of AC.

With O as centre and OA a radius, draw a semicircle.



Now, draw BD ⊥ AC, intersecting the semicircle at D. Then, BD = $\sqrt{4.3}$ units.

With B as centre and BD as radius, draw an arc, meeting AC produced at E.

Then, BE = BD = $\sqrt{4.3}$ units