Activity 2

Objective

To represent some irrational numbers on the number line.

Material Required

Two cuboidal wooden strips, thread, nails, hammer, two photo copies of a scale, a screw with nut, glue, cutter.

Method of Construction

1. Make a straight slit on the top of one of the wooden strips. Fix another wooden strip on the slit perpendicular to the former strip with a screw at the bottom so that it can move freely along the slit [see Fig.1].
2. Paste one photocopy of the scale on each of these two strips as shown in Fig. 1.
3. Fix nails at a distance of 1 unit each, starting from 0, on both the strips as shown in the figure.
4. Tie a thread at the nail at 0 on the horizontal strip.

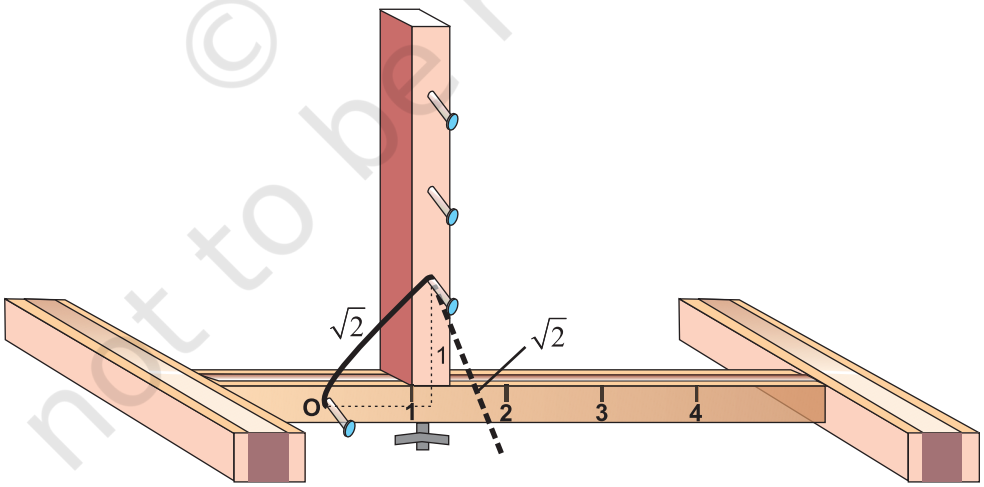

Fig. 1

Demonstration

1. Take 1 unit on the horizontal scale and fix the perpendicular wooden strip at 1 by the screw at the bottom.
2. Tie the other end of the thread to unit '1' on the perpendicular strip.
3. Remove the thread from unit '1' on the perpendicular strip and place it on the horizontal strip to represent $\sqrt{2}$ on the horizontal strip [see Fig. 1].

   Similarly, to represent $\sqrt{3}$, fix the perpendicular wooden strip at $\sqrt{2}$ and repeat the process as above. To represent $\sqrt{a}$, $a > 1$, fix the perpendicular scale at $\sqrt{a-1}$ and proceed as above to get $\sqrt{a}$.

Observation

On actual measurement:

$a - 1 =$ ..... $\sqrt{a} =$ .....

Application

The activity may help in representing some irrational numbers such as $\sqrt{2}$, $\sqrt{3}$, $\sqrt{4}$, $\sqrt{5}$, $\sqrt{6}$, $\sqrt{7}$, ... on the number line.

Note

You may also find $\sqrt{a}$ such as $\sqrt{13}$ by fixing the perpendicular strip at 3 on the horizontal strip and tying the other end of thread at 2 on the vertical strip.