

Activity Worksheet

Challenging brain

Sub : Mathematics

Grade: IX

Date:

Name:

ID No.....

Activity

To construct the 'square root spiral'.

- Take a point O on a sheet of paper and draw a line segment OP_1 of unit length.
- Draw a line segment P_1P_2 perpendicular to OP_1 of unit length.
- Draw a line segment P_2P_3 perpendicular to OP_2 again of unit length.
- Now draw a line segment P_3P_4 perpendicular to OP_3 .
- Continuing in this manner, you can get the line segment $P_{n-1}P_n$ by drawing a line segment of unit length perpendicular to OP_{n-1} .
- Join them to create a spiral depicting $\sqrt{2}, \sqrt{3}, \sqrt{4}, \sqrt{5}, \dots$

Proof:

In ΔOP_1P_2 , by Pythagoras theorem

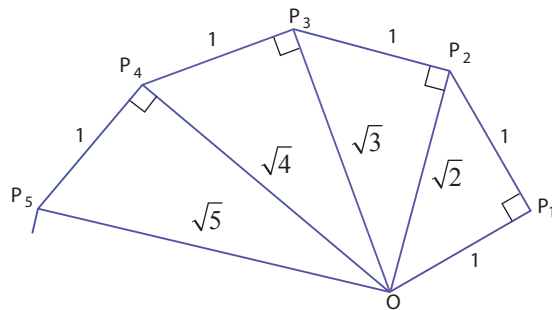
$$(OP_2)^2 = (OP_1)^2 + (P_1P_2)^2 = 1^2 + 1^2 = 2$$

$$\Rightarrow OP_2 = \sqrt{2}$$

Similarly in ΔOP_2P_3

$$(OP_3)^2 = (OP_2)^2 + (P_2P_3)^2 = (\sqrt{2})^2 + 1^2 = 2 + 1 = 3$$

$$\therefore OP_3 = \sqrt{3}$$



Like wise we can show that the line segment OP_4, OP_5, \dots etc. are of length $\sqrt{4}, \sqrt{5}, \dots$ etc. respectively.

Suggested activities

1. Write the history of irrational numbers.

2. Give, brief life sketch of Pythagoras..
