

Preliminary Information

Name :- Ch. Prasanna

Class :- IX

Section :- A

Roll no :- 23

Subject :- Mathematics.

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Name of the lesson :- Real numbers

No. of the project : 1

Allotment of the work : Individual.

*) Title of the project :-

Construction of square root spiral.

*) Objectives of the project :-

* How to represent and construct irrational number using geometry.

* Showing irrational number geometrically.

3) Materials used :- geometry box, crayons, pencils, jell pens, black gram, long scale etc.....

4) Tools :-

* preparation of material.

* Identification :- Pythagoras theorem.

* Comparison :- length of $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$





Procedure

a) Introduction :-

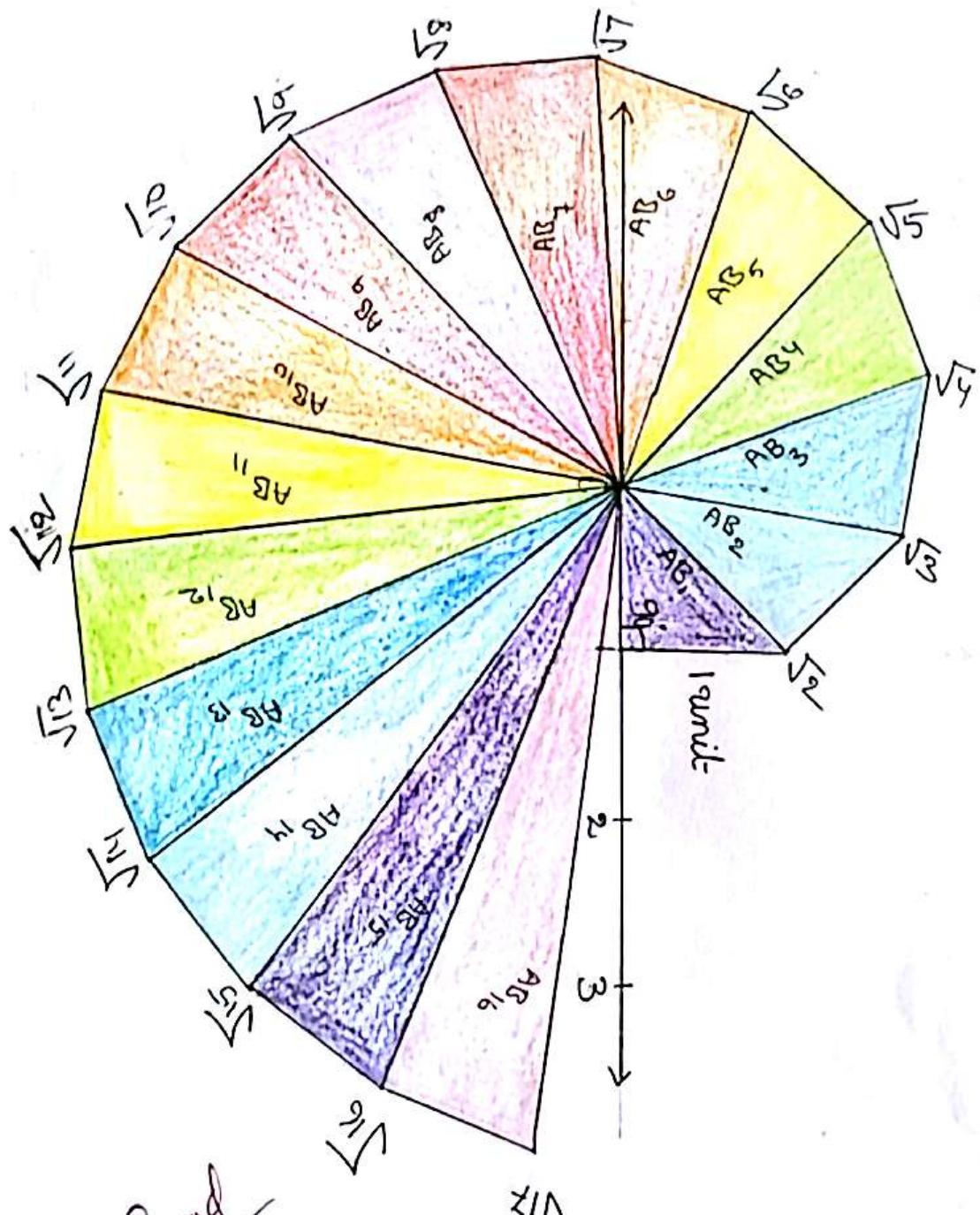
Representation of irrational number on number line.

b) Process :-

- * Take a white sheet. Draw a parallel line using scale.
- * Take compass of radius 1 unit mark on the line segment say AB
- * from B draw an arc above the line.
- * Draw perpendicular line from B using protractor meet the arc at B₁. Join AB₁ to form ΔABB₁.
- * As a base AB₁ from B₁ draw an arc of 1 unit and a perpendicular.
- * Then we get AB₁B₂ is a right angle triangle
- * Continue this process upto B₁₄ or B₁₅



Representation of irrational numbers on number line.



J. Good

Observations:-

1) In figure $\triangle ABB_1$, is right angle triangle

where $AB = 1$ unit

$$BB_1 = 1 \text{ unit}$$

$$AB_1^2 = 1^2 + 1^2 = 2$$

$$AB_1 = \sqrt{2}$$

2) $\triangle ABB_1$, is a right angle triangle

$$AB_1 = \sqrt{2}, BB_2 = 1 \text{ unit}$$

$$AB_2 = AB_1^2 + B_1 B_2^2$$

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

$$= 2 + 1 = 3$$

$$AB_2 = \sqrt{3}$$

3) Similarly we can observe that

$$AB_3 = \sqrt{4}$$

$$AB_4 = \sqrt{5}$$

$$AB_5 = \sqrt{6}$$

$$AB_6 = \sqrt{7}$$

Conclusion :-

Every irrational number (surd) can be expressed or showed geometrically

Experience of student :-

- Enjoy the construction of irrational number on number line.
- Understand the pythagoras theorem.
- Easily construct an irrational number on number line.

Doubts and questions :-

→ How can we represent non terminating and non repeating decimal on ~~number line~~.

Reference books and resources :-

class VII text book

NCERT IX class text book.

Signature of student
ch. prasanna.