

## Fractal- Geometry Method-

→ Natural objects, such as mountains and clouds, have irregular and fragmented features and Euclidean methods do not realistically model these objects.

→ These objects can be described with fractal geometry models.

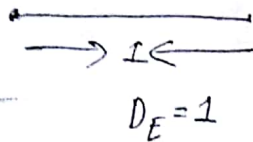
→ Two basic characteristics of fractal object -

- 1) Infinite details at every point.
- 2) Self-similarity between the object part and overall features of the object.

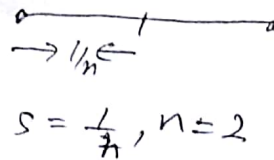
## Fractal Dimensions -

→ Variation in fractal objects can be described with a number  $D$ , called fractal dimension, which measures roughness or fragmentation of the object.

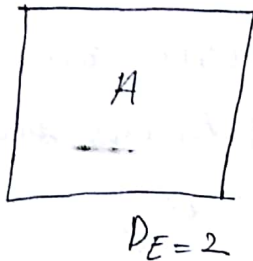
→  $S$  is scalar factor, is obtained by analogy with the subdivision of a Euclidean object.



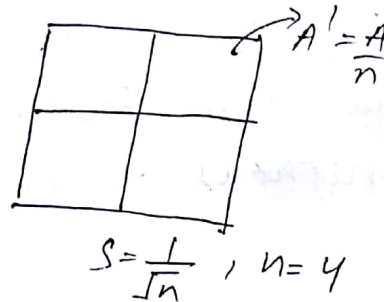
$\Rightarrow$



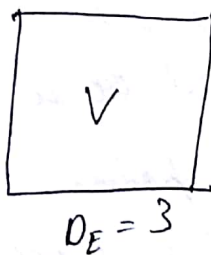
$$nS^1 = 1$$



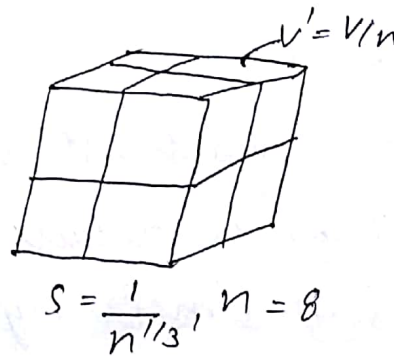
$\Rightarrow$



$$nS^2 = 1$$



$\Rightarrow$



$$nS^3 = 1$$

→ For Fractal Dimensions  $D$ , self-similar objects can be obtained from-

$$nS^D = 1$$

$$D = \frac{\ln n}{\ln (1/S)}$$