

E. content for UG STUDENTS

By-

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**Part-1**

**Practical Works**

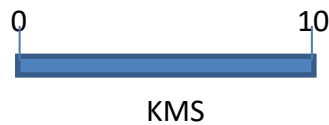
**Points to Remember**

- It is impossible to see the whole earth with necked eye. It is also impossible to draw map of the earth according to its actual radius/ data.
- Scientists have solved the problem with the **Globe**. They have made a globe and are the model of the actual earth.
- We can define Globe as- **Globe is the man - made model of the earth.**
- Globe has three main features: 1. it has true direction, 2. it has true area, and 3. it has true shape and size. The shape of the earth is called- **Geoid**.
- Map making process includes the effort to transfer the one or more than one features of the globe on a flat surface with the help of latitudes, longitudes and scale.
- No map can include all the three features of the globe.
- To draw the globe or whole earth or any part of it, we have to reduce the actual radius of the earth and calculate it with the given scale.
- Map making needs some basic information like- scale and extend of the area.
- First we have to know about Scale.
- **Scale is the ratio between two given points on the map and their corresponding actual distance on the ground.**
- Scale can be represented by three methods:
  - a. **Statement method**
  - b. **Graphical method**
  - c. **R.F. method**

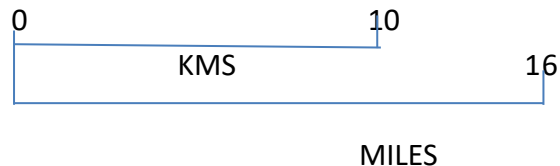
**a. Statement Method-** In this method, we simply show the scale by the statement. e.g.- one cm= one km or one inch = one mile.

**b. Graphical Method:** In this method, scale is represented through a graph. This can be sub divided into three methods-

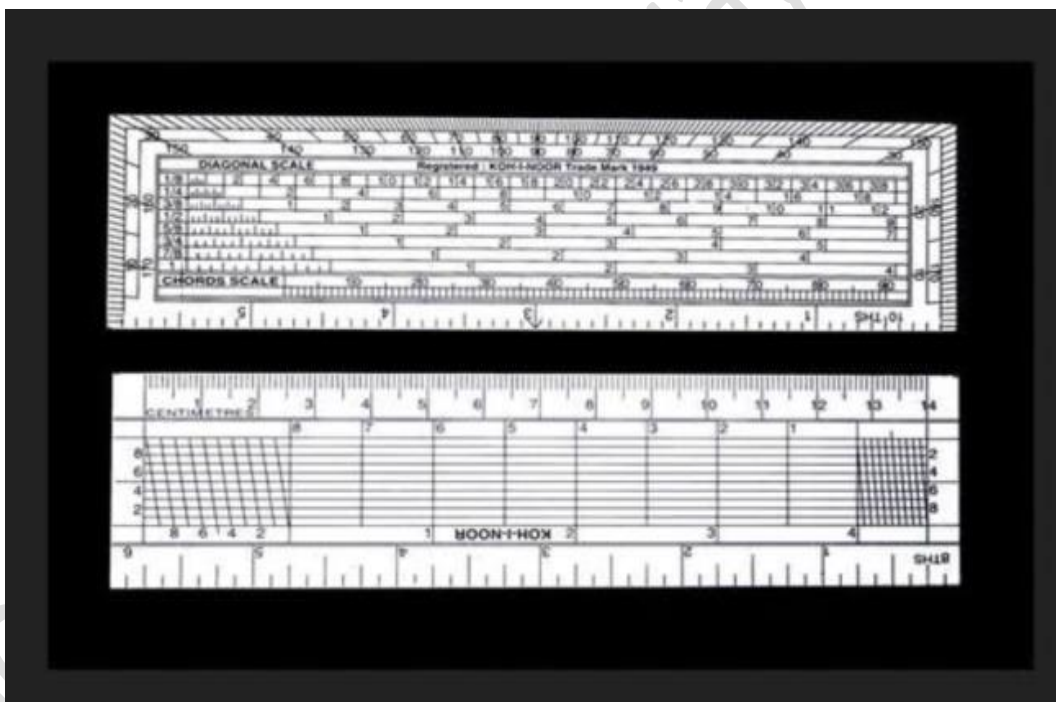
i- **Simple Linear Graph**- Scale is represented through a simple graph. In this method we can represent the 10<sup>th</sup> part of primary scale on secondary part. i.e= 2.7inches or 3.6 cms. In this scale 2 inch is primary and .7 is secondary part of a scale.



ii- **Comparative Graph** – In this method we represent the scale with two different units of distance but their starting point would be same.



iii- **Diagonal Scale** : In this method, we can represent the 100<sup>th</sup> part of primary scale on secondary part. e.g= 2.75 inches or 3.69 cms.



c. **Representative Fraction (R.F.):** When we represent the scale through a fraction , then it is known as Representative Fraction. In which nominator is always one (1).Fraction has two parts- Nominator/ Denominator. There is no unit of distance is implies in this method. We can simply convert the scale into the need.

It is written as- 1:250,000,000 and read as one is to two fifty million.

- Before making any map, projection is required. Projection is an art of cartography in which latitudes, longitudes, scale and extent of the area is requires. It can be define

as- Transferring of graticule of latitudes and longitudes on a plane surface with a definite scale.

- Transfer of globe on flat surface –
- Actual radius of the earth is 250,000,000 inches or 635,000,000 cms.
- When we calculate or divide the given R.F with the actual radius of the earth then it becomes  $r = \text{reduced radius of the earth}$ .
- Whatever be the calculated  $r$ , there scale is fixed.
- Whatever be the calculated radius=  
In inches it will converted into miles and if it is calculated in cms ,it will be converted into kms.
- In c.m calculated  $r$  1,2,or 3.... c.m = 6350=6000kms
- In inches, calculated  $r$  1, 2, or 3... inches = 4000 miles. always.
- E.g.
- Draw a graticule on R.F. = 1:125,000,000 for an area extending between 10° North to 50° North and 20° East to 80° East longitudes when interval being 10° apart.
- Calculation for  $r = 1/125000000/250000000 =$
- $R = 250,000,000/125,000,000$
- in other words – two fifty million is divided by one twenty five million
- $r = 2''$  or 2 inches.

Therefore, scale will be  $2'' = 4000$  miles. or  $1'' = 2000$  miles.

For c.m it will be like this-

$$r = 635000000/125000000 =$$

$$r = 5.08 \text{ c.m.}$$

Therefore scale will be  $5.08 \text{ cms} = 6000 \text{ kms}$ .

Thus, it is clear that whatever be the calculated  $r$ , its corresponding scale will be always 4000 miles for inches and 6000kms for c.m.

Thank you.

For any queries contact on 8651628205