MAP SCALES

Considering the actual surface dimensions, drawings are made to smaller scale of the area. It is never possible to make its drawing to full size. This operation is generally known as *'drawing to scale'*

Scales of the maps are represented by the following two methods:

(*i*) Numerical scales.

(*ii*) Graphical scales.

1. Numerical scales. Numerical scales are further divided into two types, *i.e.*, *(a)* Engineer's scale (*b*) Fraction scale.

(*a*) *Engineer's scale*. The scale on which one cm on the plan represents some whole number of meters on the ground, is known as *Engineer's scale.*

For example, 1 cm = 5 m; 1 cm = 10 m, etc.

(*b*) *Fraction scale***.** The scale on which an unit of length on the plan represents some number of the same unit of length on the ground is known as *Fraction Scale.*

For example, 1: 500; 1: 1000; 1: 5,000, etc.

To convert an engineer's scale into fraction scale, multiply the whole number of meters by 100. Similarly, a fraction scale may be converted into engineer's scale by dividing the denominator by 100 and equating the quotient to 1 cm.

Example 1.1. *The engineer's scale of a drawing, is stated to be 1 cm= 4 m. Convert this to fraction scale.*

Solution.

Engineer's scale is 1 cm = 4 m Fraction scale is 4 · 100 *or* 1: 400.

Example 1.2. *The fraction scale of a map is stated to be 1: 50,000. Convert this to Engineer's scale.*

Solution.

1 unit on plan = 50,000 units on the ground
1 cm on plan = 50,000 cm on the ground
or 1 cm on plan = 500 m on the ground
Engineer's scale is 1 cm = 500 m. Ans.

2. *Graphical scales***.** A graphical scale is a line subdivided into plan distances corresponding to some convenient units of length on the surface of the earth.

1.11. CLASSIFICATION OF SCALES

The scales drawn on the maps or plans, may be classified as under: (*i*) Plain scale (*ii*) Diagonal scale.

1. **Plain Scales.** A plain scale is one on which it is possible to measure only two dimensions, *i.e.*, meters and decimeters; kilometers

Plain Scales as Recommended by IS: 1491 - 1959

Full Size 1: 1
50 cm to a meter 1: 2
40 cm to a meter 1: 2.5
20 cm to a meter 1: 5
10 cm to a meter 1: 10
5 cm to a meter 1: 20

2 cm to a meter 1: 50

1 cm to a meter 1: 100

5 mm to a meter 1: 200

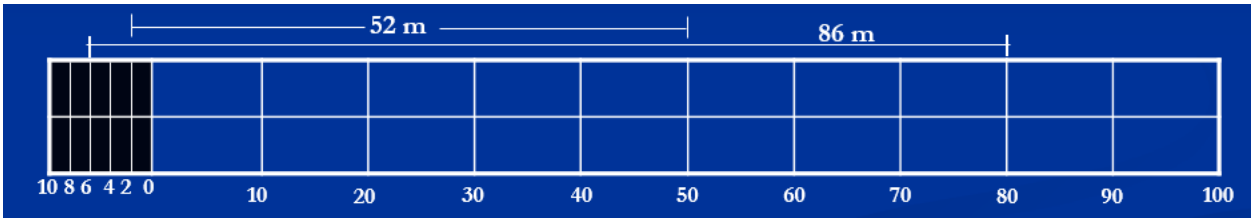
2 mm to a meter 1: 500

1 mm to a meter 1: 1000

0.5 mm to a meter 1: 2000

Example: - **Construct a linear scale 1 / 1000 to read (2 m) accuracy and measured a distances (52 m) , (86 m) on it ?**

ANS :- scale 1 / 1000 R.F 1cm on a map = 10 m on ground
No. of division = value of main part / scale accuracy = 10 / 2 = 5



2. Diagonal Scales. On a diagonal scale, it is possible to measure three dimensions such as kilometers, hectometers and decameters