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SCALES **&** **GRID SYSTEMS**

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LESSON PLAN MR 1

(Part 2)

SCALES AND GRID SYSTEMS

Scale: Scales help us work out distance to our destination and therefore how long it will take us to get there. The smaller the area a map covers, the larger the scale will be. So if you have a map on a square meter of paper and the scale of them map is 1:50,000 and another map on the same size paper with a scale of 1:25,000, the area covered by the first map will be 4 times the area covered by the second map.

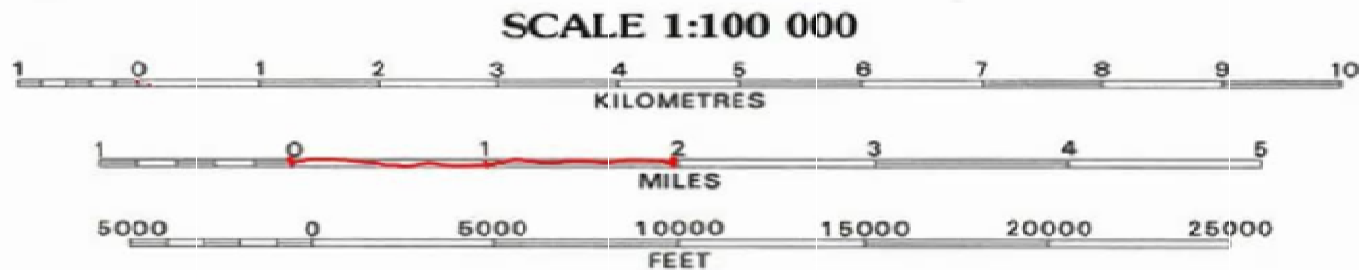
Every map will carry a scale, not just the value of say 1:50,000, but also a depiction of that scale.

Definition of Scale

Scale is the proportion which the distances between the two points on the map that relates to the distance between two points on the ground. Everything on the map must be reduced and the extent to which the size is reduced makes the scale of the map.

Understanding Scales

Scales are used to find the actual distance between two points on a map. They're also used to get a better idea of the actual size of an area.

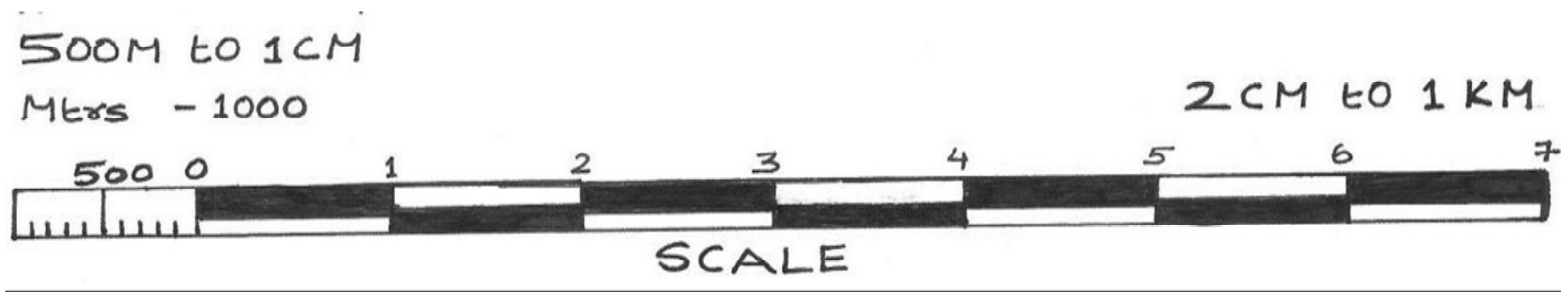


METHODS OF EXPRESSING A SCALE

- (a) **In Words:** 1 inch to 1 mile, it means that 1 inch on the map represents 1 mile on the ground.
- (b) **As a Representative Fraction (RF):** This is the scale expressed in the form of a fraction. If the scale of a map is given as $1/100000$ this means that one unit of the map represents 100000 of the same unit on the ground. It could mean that one centimetre on the map represents 100000 cm on the ground.

Scale line

Below the scale is the scale line by means of which distance on the map can be measured. In this scale 2 cm on map is equal to 1 km on ground. An example of the scale line for a scale “2 cm to 1 km” is at Fig-3 below:



Definition of Grid and Grid Lines

The Grid is a systematic pattern on Earth by laying a vertical and horizontal grid over the Earth's layout. The vertical lines are called the longitude and the horizontal lines are known as the latitude. Combinations of these lines are known as **Grid Lines**.

Purpose

The purpose of Grid Lines is to make possible giving and reading Grid References and to facilitate measurement of bearings.

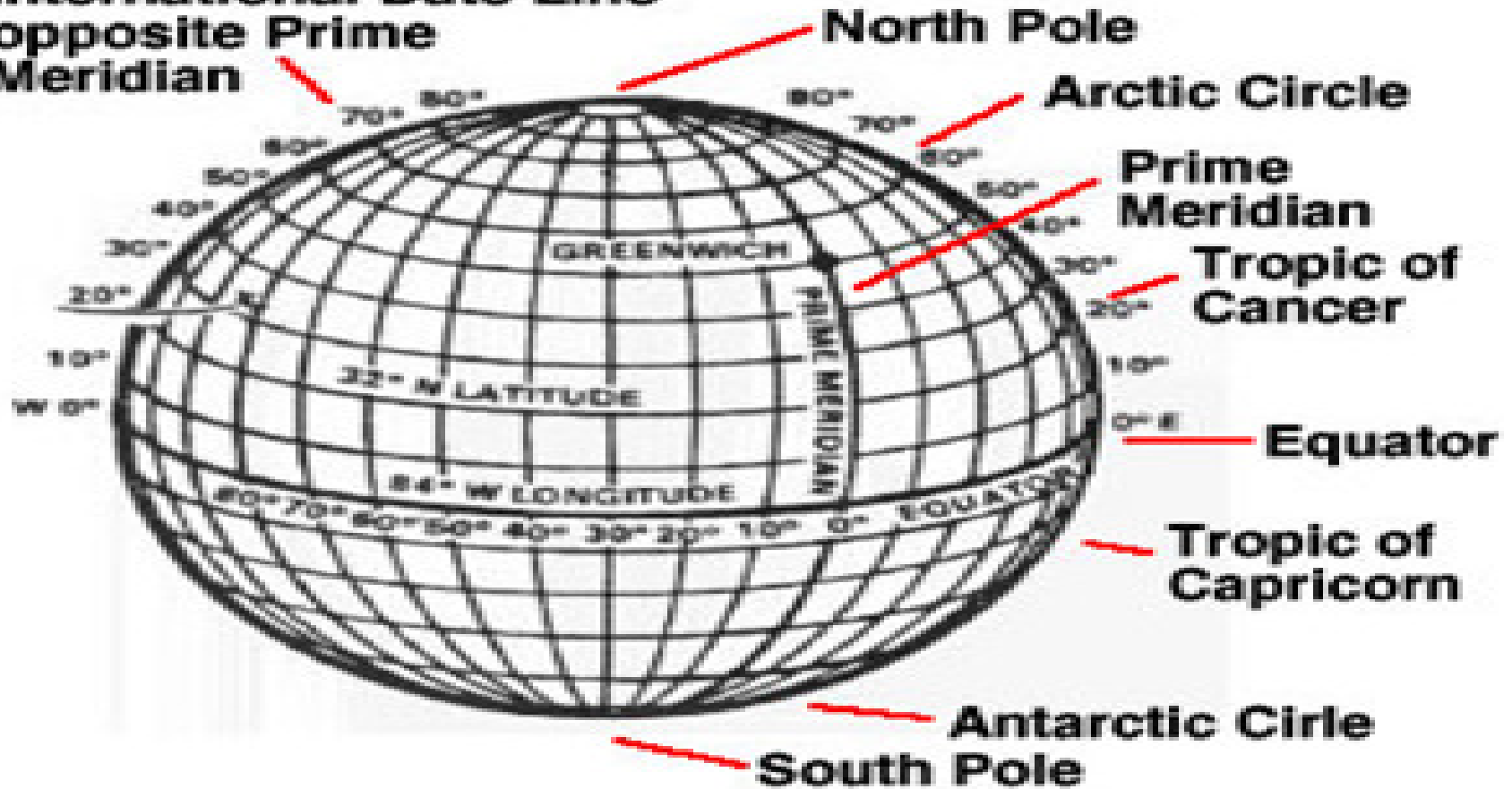
Method of Grid Reference

In giving a Grid Reference following rules should be remembered:

- (a) A reference must always contain an even number of figures, normally it contains six figures.

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**International Date Line
opposite Prime
Meridian**



- (b) EASTING lines are the black colour vertical lines.
- (c) NORTHING lines are the black colour horizontal lines.
- (d) Always count along the **EASTING** lines first from the WEST to EAST and then **NORTHING** from SOUTH to NORTH.
- (e) Grid References are of different types viz. Four Figure, Six Figure, Eight Figure and Ten Figure.
- (f) Mostly Six Figure Grid Reference is used.

- (g) For six figure Grid Reference the third and the Sixth figure represent the divisions of 1000 meters square to the nearest 10th part, so they have to be estimated and for these figures a slight latitude is allowed.
- (h) If a general Grid Reference is to be given or there is only one such object in one square e.g. bridge, temple, road junction then its identity and four figure grid reference would suffice.

Example

As we already said when giving a four figured grid reference, always give the eastings number first and the northings number second.

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In the diagram below, the number 4 is in square 28 across (on the horizontal) and square 54 up (on the vertical) and therefore, the four-figure grid reference is '2854'.



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The other number in the square above would get the following grid

2755

2855

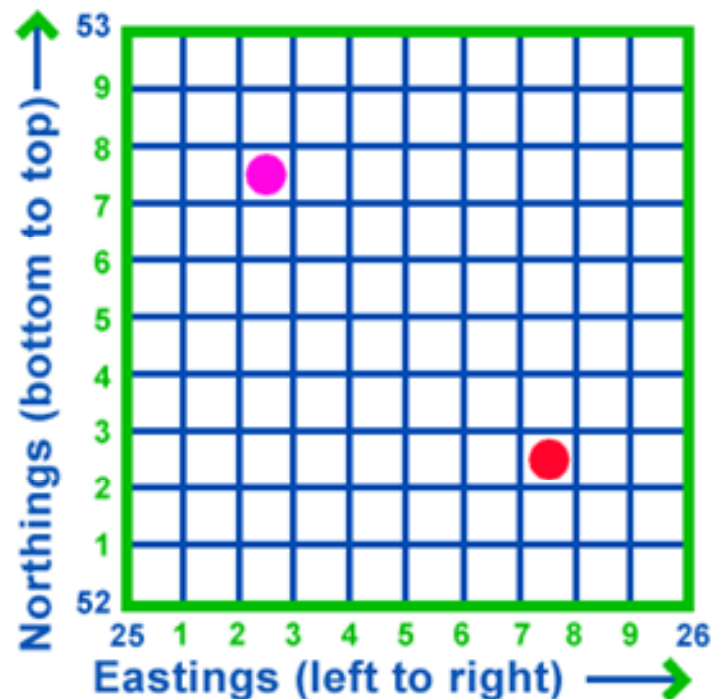
2754

2854

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In order to be little more precise with your grid references, you can give a 6 figure grid reference as shown in diagram given below



Here, we have taken the lower right square from the previous diagram and divided it by 10 in each direction. The pink circle is in the four-figure grid reference square '2552', but more accurately it is 2 tenths across and 7 tenths up within that enlarged grid square, therefore the six-figure map reference is '252527'. The red circle has 6 figure grid references of 257522.

Conclusion

For effective and correct map reading, it is essential that cadets should be able to differentiate between Maps of different scales and find out the correct Grid Reference of the object. The cadets should also be able to relate the scale on map to the actual distance of object on ground.

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THANK YOU



JAI HIND

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