SER No	CONTENT

LESSON PLAN : MR-9
MAP TO GROUND AND GROUND TO MAP

Period - Three

Type - Lecture/Practice

Code - MR-9

Term - I & II

Training Aids

1. Map Sheets, Compass, Service protractor, Pointer, Charts, Black board & Chalk.

Time Plan

2.	(a)	Introduction	-	05 Min
	(b)	Map to Ground	-	35 Min
	(c)	Ground to Map	-	35 Min
	(d)	Conclusion	-	05 Min
	(e)	Practice	-	40 Min

AIM

3. The aim of this lecture is to introduce the Cadets to the basics of finding objects from Map to ground and ground to map.

PREVIEW

4. The lecture will be conducted in the following parts:-

(a) Part I - Map to ground

(b) Part II - Ground to map

(a) **PART I: MAP TO GROUND**

Introduction

5. To find out the details of map on ground is known as map to ground. Following methods are used to identify objects from map to ground:-

(a) **Bearing and Distance Method.** With the help of bearing and distance, find out own position. Find out the distance of the object to be identified on ground with the help of a scale on the map. Using service protractor, find out the bearing of the object and convert it into magnetic bearing. Set the magnetic bearing on compass and look for the object in the given bearing. Estimating the distance on ground the object will be identified.

(b) **Direction and Distance Method.** Draw a line on the map between own position and object to be identified. Calculate its distance and using any of the following methods find the direction cf the object:-

(i) With the help of a sight rule find the ground direction of the object.

(ii) With the help of two points on the map estimate the ground direction.

(iii) Place a foot ruler /pencil at own position and align it with line of the map.

(iv) Place a pin each at own position and at the object on the map. Align both pins and find general direction.

(c) **By Estimation Method**. In this method measuring bearing, distance and direction, object is identified with the help of other details in the proximity of the object.

(b)

PART II: GROUND TO MAP

6. To find out an object indicated on ground on the map is called ground to map. Method used to identify objects from ground to map arediscussed in succeeding paras.

7. **Simple Method**

(a) **Using Bearing.** Find out the distance and the magnetic bearing of the object. Translate magnetic bearing to grid bearing. Set the map and find own position. From own position draw a line at the given grid bearing. Measuredistance with service protractor and mark the given distance on the line. The object will be in the proximlty of the given mark.

(b) **Intersection Method.** To find out the objects which are at a larger distance or in hilly terrain, intersection method is used. In this method help of minimum two prominent objects are taken which can be easily identified on the ground. Lines are drawn from the prominent objects to the object to be identified on map. This method is used when we cannot estimate exact distance. Intersection is done in two ways:-

(i) **By Compass Bearing** . Take the bearing of the object from twoknown prominent objects. Draw the lines on the map. The object will be in the proximityofthe intersection of the two lines. Magnetic bearing is foundbytwo methods:-

(aa) **By Compass**. Take the forward bearing from known object.

(ab) **By Back Bearing.** In war, in case we intercept the enemy's transmission, with the help of the fall of the shot we can find out the location by working out back bearing.

(c) **By Direction Method**. In this method set the map and mark own position. With the help of any of the following methods find the direction of object on the map. Draw a line from own position in that direction. Put a mark on the line at the estimated distance of the object. The object will be in the proximity of the marked point:

(i) Place a foot ruler /pencil at own position and align it in the direction of the object.

(ii) Place a pin at own position on the map. Place the second pin in the direction of the object.

(iii) With the help of details around the object, find direction and mark the object on the map.

(ív) With the help of sight rule find exact direction of the object.

(d) **By Estimation Method.** By knowing the bearing and distance of the object on ground it can be identified on map by estimation.