

Navigation

This booklet is intended for use by recruits prior to them beginning their Phase 1 Initial Training with the British Army.

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Navigation

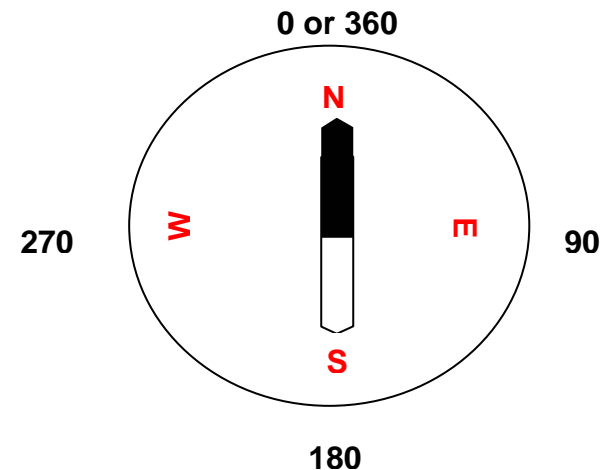
Introduction

1. One of the skills you will be taught as a Soldier under Training is navigation. You may have done this previously in the Cadets, the Scouts or at School and may know this as Map Reading. Some people may also have done orienteering. However if you have not don't worry as you will be taught and practiced in all aspects of Navigation during training.

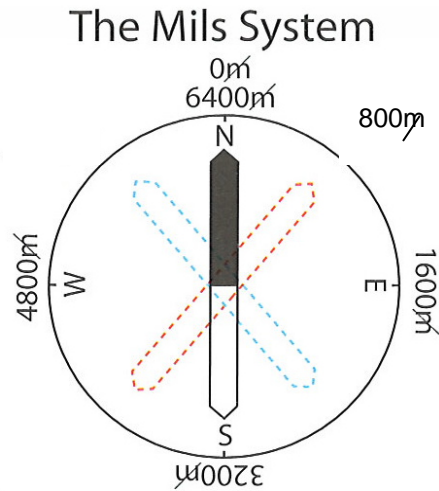
The Compass

2. During training you will be shown how to use a compass which allows you to march in a straight line called a bearing. The 4 points on the compass which are North, South, East and West. We also split down the points in-between such as half way from North to East which is North East. The compass points make a circle which if divided into degrees gives us 0 to 360 as shown below. A bearing will normally be taken in units of 5 degrees.

The Degrees System



3. The Army uses a different system which allows us to sub divide the compass further thus giving us a more accurate reading. We use a system called mils which is shown in the diagram below.



Q1 - You can see that North East which was 45 degrees is now 800 mils. South East was 135 degrees but what would it be in mils? All answers are found on page 9.

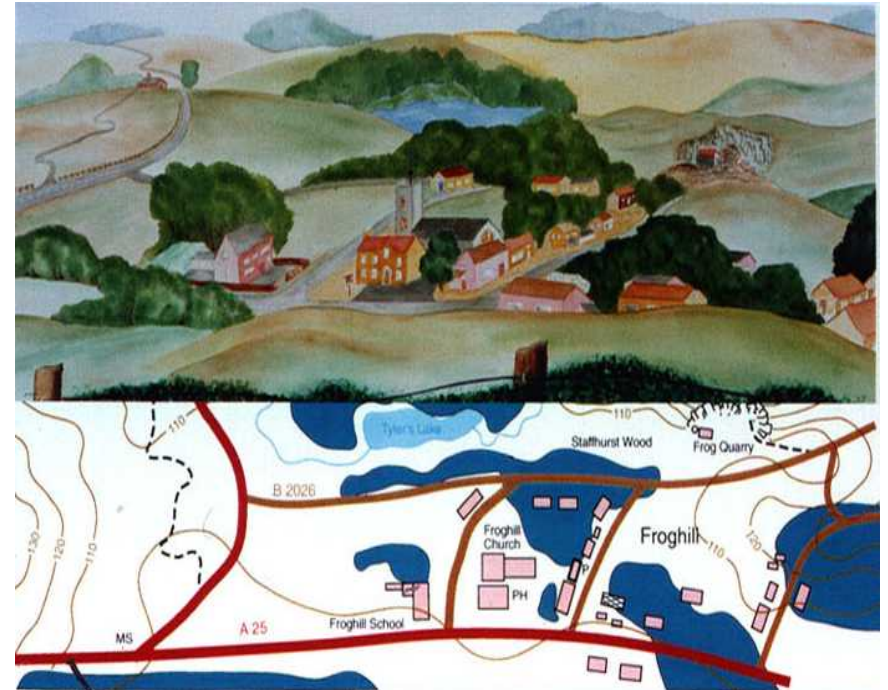
Maps

4. A map is a birds eye view of a piece of ground which is reduced or drawn to scale. A map will normally have the following features:

- Physical features. Such as rivers or woods.
- Man Made Features – Houses or roads for example.
- Relief information – Such as hills and valleys.

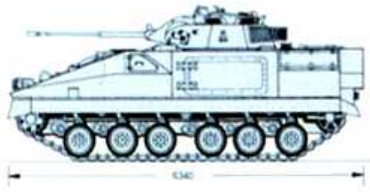
- Scale – This means we can measure a small area on our map and work out what the distance on the ground really is.

Here is an example of a picture of the ground and how it would be shown on a map.



Scale

5. If you think of a drawing of warrior for example. The drawing might be 6cm long and the real vehicle is 6m (or 600cm) long. This means the drawing is 100 times smaller than real life. The scale is therefore 1:100 meaning 1 unit of the model (1cm) is the same as 100 units (100 cm) in real life.



Scale drawing



Real life

Q2 – If the scale is 1:250 and a model tank measures 8cm in length what would the real length of the tank be?

6. There are different scales and there are a number of ways in which we apply them in maps. You need to understand how this works to allow you to measure a distance on the map and work out how far this is on the ground. This will allow you to estimate the time it will take to move from one point to another for example. Below are some examples of ways in which you will see scale shown on a map.

a. As a Ratio e.g. 1:50,000 or 1 to 50,000

b. By a Scale line



c. In Words e.g. 2cm to 1km or 2cm equals 1km

d. As a Fraction e.g. 1/50,000 or $\frac{1}{50,000}$

7. In all cases above 1cm on the map equals 50,000cm on the ground. Or as there are 100cm in 1m, 1cm equals 500m. This means that if we measure a distance between 2 points on our map which is 4cm this is 2000m, or 2km, on the ground.

Q3 – If you have a map with a scale of 1:50,000 and measured a distance between 2 points which is 9cm on the map how far will this be on the ground?

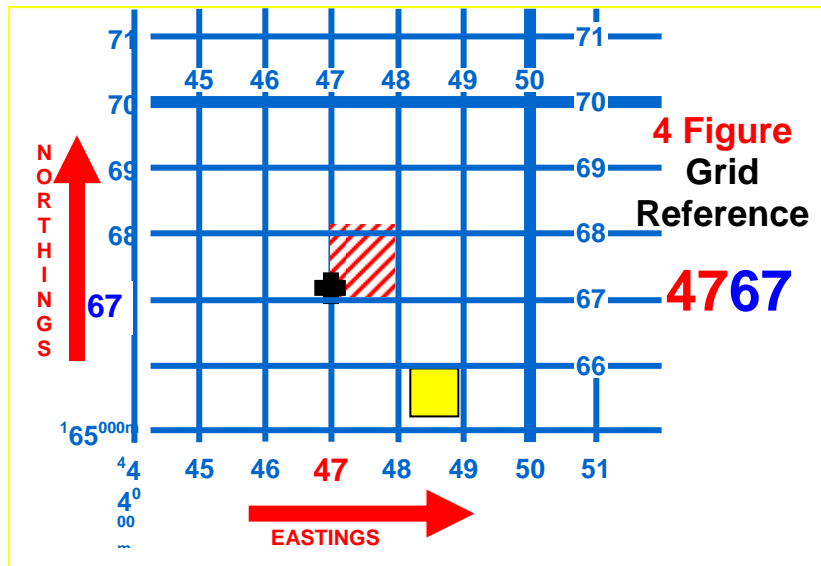
8. The map is also divided by lines running vertically and horizontally known as Grid lines. The lines running vertically are numbered from left to right, or if you think of the compass from West to East. These are called Eastings and measure how far East a point on the map is.



9. The other lines that run horizontally are numbered from top to bottom or from South to North known as Northings.



10. The lines create boxes which can be identified by reading the Grid lines and working out what is called a Grid Reference. We need to read how far East then how far North it is on the map using the Grid lines. Therefore we are reading the left, bottom corner of the box. On the diagram below the red shaded Grid square has its Grid reference shown.

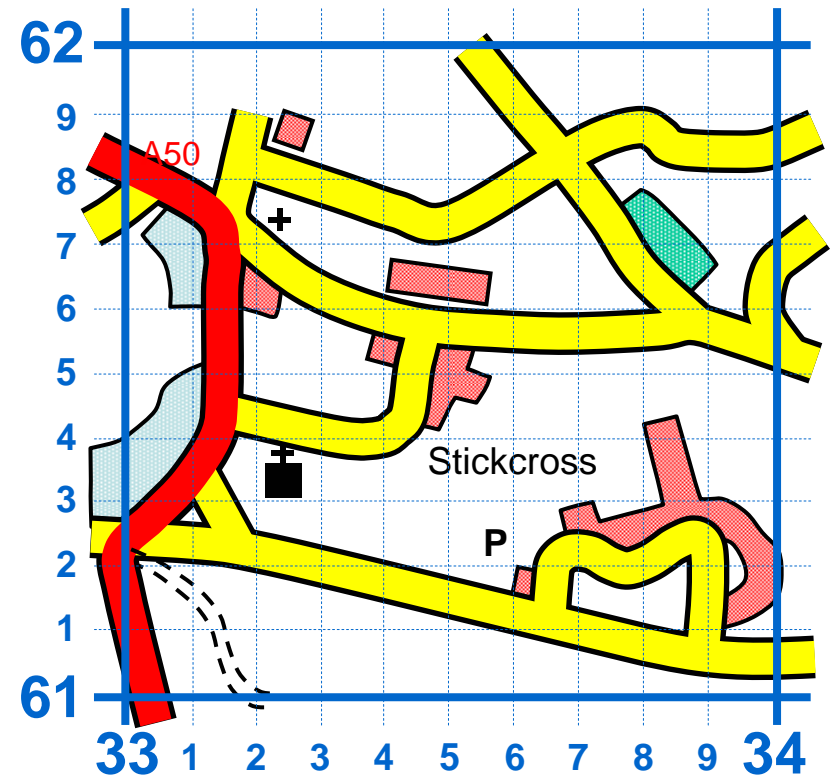


Q4 – Using the same procedure what is the Grid reference of the Grid square containing the yellow box above?

11. We now know how to identify a Grid square; however we may require to locate a specific point on the ground or an object within that square. This is done by dividing the square down into segments and then reading the reference in the same way, Eastings followed by Northings.

12. If we take Grid square 33 62 for example and wanted to give the location of the church which is the black square with a cross on top we would sub divide the square down into 10

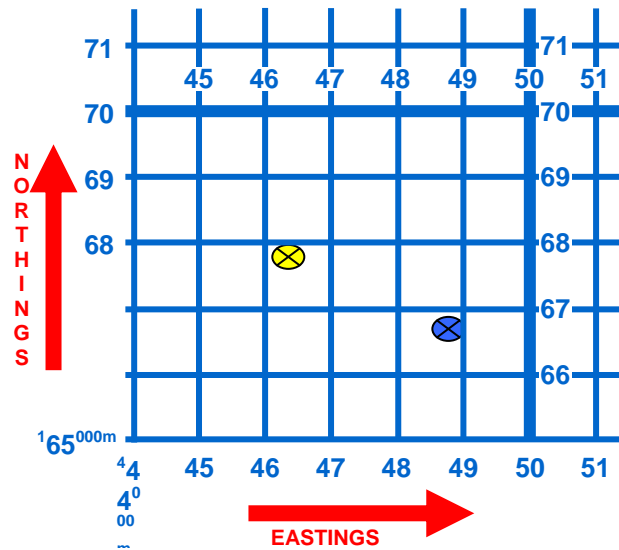
sections as shown below. We start with the Eastings line 33 and read across to the number 2 so the first part would be 332. We do the same for the Northings and get 613. So the grid reference would be 332 613. This is a six figure Grid reference and is more accurate than before.



Q5 – Using the same procedure work out the six figure Grid reference of the single black cross.

13. In the example the sub divisions were shown; however this is not the case on a real map so you need to estimate. If you look at the example below the Grid reference of the centre of the blue circle is approximately 488 698. To be more accurate you can use a compass or a protractor to aid you.

This will be taught to you during your training but if you now understand the method of reading a grid reference this will really help you in the future.



Q6 – What is the six figure grid of the centre of the yellow circle?

ANSWERS

Q1 – 2400 mils.

Q2 – 2000cm or 20m

Q3 – 4.5km

Q4 – 48 65

Q5 – 332 617

Q6 – **463** (if you have 462 or 464 that is ok) **678** (if you have 677 or 679 that is ok)