

NAVIGATION WITH MAP & COMPASS....Sumac Skillshare, 23/2/08

A. MAP SKILLS

Understand scale, and therefore distance – the two usual OS scales are 1:50,000 (1 km on the ground = 2cm on the map) and 1:25,000 (1km = 4cm). In other words, a grid square is always equivalent to 1km.

Grid references – subdivide a grid square into tenths to give a 6-figure grid ref; quote the horizontal figures first, then vertical (*Mnemonic* : “Go into the house before going up the stairs”). A six-figure reference gives a position to within 100 metres.

Contours – learn to use these to visualise landforms. The closer together they are, the steeper the ground. Rivers etc. are useful in working out which way is uphill!

Naismith's Rule – this gives a useful estimate of expected time to walk part of a route. To estimate, predict 15 minutes per kilometre of distance, plus 1 minute per 10 metre of contour height gained. Difficult terrain or bad weather will obviously affect this; also factor in rest stops etc.

B. USING THE COMPASS

It may help to think of a compass as having two different roles :

- As a needle that always points north;
- As a protractor to measure angles.

Combining these is the essence of compass navigation.

Compass method #1 : Setting the map – Simply use the magnetic needle to turn the map until it is oriented north-south, thus matching the needle. Basic, but useful in making the map “match the landscape”

Compass method #2 : Bearings in the field – point the direction of travel arrow to the desired object; hold baseplate steady, then turn housing until magnetic needle matches orienting arrow (*Mnemonic* : “put red in the shed”). Read off bearing.

To find an object on a certain bearing, set compass to that bearing by turning housing, then turn the whole compass until “red is in the shed”. Direction of travel arrow/baseplate will point to object.

Compass method #3 : Bearings off the map – Ignore the magnetic needle! Place baseplate /direction of travel arrow on map, linking the two points in question. Turn housing until orienting lines lie parallel with N-S grid lines on map. Read bearing.

To find object on a certain bearing, set compass to that bearing, and turn whole compass on map until orienting lines lie parallel to N-S map lines. Object will be on line formed by baseplate.

Declination – because the earth is dynamic and maps have to be static, there is a difference between grid north (which maps use) and magnetic north (to which the compass needle points). This difference varies geographically and over time; typically magnetic north is 3-4 degrees west of grid north in UK. For really accurate navigation, this needs to be taken into account, by adding or subtracting the difference in degrees. (*Mnemonic* : *Grid to Mag, ADD; Mag to Grid, GET RID*).

In practice, you may often be able to ignore this complication. For accurate navigation however, *always* correct for declination - especially in difficult or dangerous terrain, or over long distances.

Walking on a bearing – ensure compass is not affected by metal (eg. belt, camera etc.); hold flat and walk where the direction of travel arrow points! Sight to a static object on your bearing. In featureless terrain, be aware of how far you are going, by counting double paces. In general, TRUST THE COMPASS – as long as you are totally confident you have set the bearing correctly, and there are no magnetic rocks to worry about!

Back bearings – to confirm your position, take field bearings to 2 points you can identify both in the field and on the map. Convert to grid bearings, and plot lines on the map. Where the 2 lines intersect should be your position.

Other techniques

- Use of “handrails” (linear features) is more useful than point features.
- “Aiming off” by deliberately aiming to the left or right of a feature is safer!
- Always break a route down into “legs” between easily identifiable features.

