



Navigation presentation teaching notes

Candidates should be informed that they will need to bring walking gear, notebook, pencil, a local OS map and a Silva style compass.

SLIDE 1 - Introduction to the navigation section. For leading remote and challenging walks, leaders need to know how to use a map and compass competently.

SLIDE 2 – Mapping basics. Grid lines don't help with reading a map, but all map readers need to know how to use them for communicating a position. Grid lines useful for, grid references, basis for compass bearings and are a handy scale for estimating distance

Ordnance Survey grid lines are based on a grid whose origin is to the south west of the Scillies and covers the UK, with 100km squares each allocated an identifying letter-pair.

The 2-figure numbers in blue on the edge of the map and repeated at 10-kilometre intervals in the body of the map (get students to identify them in their own maps) give the numbering within the 100km square. The numbers get bigger to the east (*eastings*) and to the north (*northings*).

SLIDE 3 – Map types. The types of maps available

SLIDE 4 – Grid references. Giving a grid reference (GR).

Each grid square is 1 km across, or 1.5 km diagonally. To give the GR of a *grid square* (i.e. defining a particular 1km square), you have to give the 2-figure numbers of the two lines defining the square i.e. a four-figure grid ref. Show this on the slide, and then get students to give and identify 4-fig GRs on their own maps, everyone use, say, the top left page of the map.

Six-figure GRs: to be precise, i.e. to specify square 100 metres across, you need to give 6-fig GRs. You estimate the-distance in tenths within the *grid square*. NOTE: when quoting a GR, to guard against error, always say what the GR refers to, "meet you at the crossroads at GR662143." The GR is read along the bottom first and then up the side: "along the corridor and up the stairs"

SLIDE 5 - Romer. When estimating tenths across the square by eye, you will probably be accurate to 200m. To get the full 100m accuracy, you need to use a romer. Find it on the compass or a plastic romer

SLIDE 6 – Grid reference practice. Give the students some grid refs from their map and ask them to work in groups and to tell the tutor what they would find there.

SLIDE 7 – Scale. An understanding of scale is needed so that we can measure distances from the map and know what they represent on the ground. Obviously we need to do this when planning our walk, but we also make lots of distance judgments on the walk itself as we navigate our way along a route.

Scale is the relation between a distance on the ground and the distance it represents on the map. For Explorer maps this means that one centimeter on the map equals 25,000 centimeters on the ground — or 250 metres —or 0.25 kilometer.

Get people to look at the grid squares on their maps, which are 4cm across — what distance does this represent on the ground?

SLIDE 8 – Map symbols. OS map symbols can be downloaded from the OS website. Working in groups, give each group a set of cards and ask the students to identify the symbols by quizzing each other.

SLIDE 9 – Contours. Contours are important because: don't change or get out of date, give some of best clues when route-finding, when planning a walk help calculate how much climbing, which slopes are too steep, where best views are, and much more. It really pays to get to grips with contours so persevere!

Explain with reference to the 'two hills slide':

- a contour line joins points of equal height above sea-level
- the contour interval is the vertical distance in meters between adjacent contour lines

Ask, if the contour interval is 10 meters, what are the heights of the two hills?

SLIDE 10 - Concave slopes – contours closer together at the top

SLIDE 11 - Convex slope – contours closer together at the bottom.

SLIDE 12 – Contour quiz. In groups ask candidates to match the number with the letter.
(Answers: 1=D, 2=C, 3=B, 4=E, 5=A) Point out the convex and concave slopes in 1 and 5.

SLIDE 13 - Map features. Explain how to tell a spur from a valley when there are no streams: the “Vs” point uphill if a valley; downhill if a spur/

SLIDE 14 - Parts of a compass

SLIDE 15 - Setting the map. Comparing map and countryside - Where are we?

The starting point of navigating a leg is to pinpoint your position. To do this you need to be sure the objects in the countryside around you match up with the features around your presumed position on the map - comparing map and countryside.

This process is best done if you first 'set or orientate' the map, i.e. twist the map round so the map is in the same alignment as the countryside.

You can set the map (1) by compass or (2) by aligning the map with features you can recognise easily. For everyday walking setting by compass is better. For setting by features you need to be sure of your location!

You can practice setting the map by compass in the classroom - see slide. Comparing map with countryside and pinpointing position has to be done outside on a practical

SLIDES 16 – 18 Taking a bearing. Taking a bearing from the map to point the way on the ground is the main use of a compass, apart from setting the map.

You want to get from the building to the bridge over the stream. You will 'aim off'.

Give each person a photocopy of this slide as a paper copy. After taking each bearing in the classroom the class can stand up and point the direction they have found. They should all be pointing in the same direction

SLIDE 19 - Measuring the distance. Different ways of measuring distance.

By eye - estimate length of route by eye as it crosses grid squares. These are 1km across and 1.5km along the diagonal. Use this method when needing to re-plan during a walk. Get participants to practice both methods - by eye, and then check by string.

By string - lay it along the walk following all twists and turns. Then stretch out the string so measured across grid squares to give number of kilometers

Use a straight edge, like a piece of paper and mark off each point where the path bends then measure the total distance along the straight edge against a ruler or scale.

Map measurers- wheels with the scale marked on them, can be bought cheaply.

SLIDE 20 - Map exercise. Give the class the GR of 3 or 4 start and end points and ask them to identify what they are, the distance from each start to end point and the bearing between them.

SLIDE 21 – Timings for walk. Working out the timing of the route from the map and Naismith's Rule: Allow 1 hour for every 3 miles (5 km) forward, (or whichever walking speed is appropriate for your party and the conditions), plus ½ hour for every 300 meters of ascent.

SLIDE 22 – Further guidance and advice. More information can be obtained from the Led Walks Officer and the website. Please remember to thank all the walk leaders for their attendance and enthusiasm and for the time they dedicate to leading walks on behalf of the Ramblers.

PRACTICAL EXERCISES FOR IN THE FIELD

In the classroom, each group can devise a route starting from the venue, and then take it in turns to lead their group on the walk, acting as if they were actually leading: talking to people, pointing out interesting points and checking the map as they go. Remember to practice with the compass.

Simulate an incident; an asthma attack, someone dropping behind, falling, etc... with no warning given. The tutor can brief one of the party beforehand to be the "actor". The management of the incident can be reflected on after the incident, or at the end of the day.

Other scenarios/questions:

1. The meeting point for the walk is at a popular place, so there are lots of other people about besides those coming on your walk. How would you tackle counting the members of your party?
2. A member of the party is suggesting to some others that they want to take a different path to your chosen one because there is some feature that they think people would like to see. You know this will lengthen the walk. What do you do?
3. The party is following a path when the backmarker notices a couple of people a short way behind who seem to be taking the same route. He noticed they were standing at a distance from the party at the meeting place. Are they part of the party or not? The leader is currently out of sight due to high hedges, and not within earshot. What should the backmarker do?
4. Someone rings the leader 2 days before a 10 mile walk and says they are registered partially sighted and may they come on the walk with a friend who will act as guide. How should you react?
5. You have a large party and the route goes over a couple of stiles and immediately through a wood with lots of path junctions. The wood is a popular place for walking, so other people are likely to be there. How will you ensure you don't lose anyone, or pick up any extras?
6. Since your recce a month ago a stile step has broken and a member with restricted mobility can't climb it without the step. What action will you take?
7. You have a large party (say 30 people). The path leads onto a road where you need to turn right and follow it for about 200 yards, then take a path going off to the left. How will you manage your party?
8. Having decided on a route for a walk, ask the class to identify any points where special care might be needed. (Choose a route which has some potential hazards, such as roads, rail crossings, or paths beside a quarry, steep drops, crossing rough or boggy ground, or where there are lots of paths and the party might become split, etc...).
9. The weather has improved dramatically during your walk and an extra climb to an extra view-point is tempting you as leader, and some others. How do you decide whether or not to extend the walk?

(Last updated 2011)