Target audience	DofE participants at Bronze
Objective	Provide training material to develop participants to the level that groups are competent to navigate in the terrain that they are likely to experience in their DofE expeditions
Delivery method	Combination of class-room study, practical exercises and self-learning.

	Training element	**Key messages**	**Training delivery and materials**
1.	Introduction to navigation	What is navigation Why do we do it What tools do we use (map, route card, compass) "5 Ds"	classroom session with Leader using trainer's notes (see below)
2.	The importance of observation	Navigation is something we all do all the time	Exercise for each participant to make a simplified route card for their walk to school, concentrating on labelling the waypoints and writing meaningful descriptions. Using existing route card template
3.	Introduction to map reading	How to understand the symbols on a map	• Lupine powerpoint presentation "Intro to OS maps", (with supporting Lupine notes) (see below) • With leader, look at some maps representative of the areas we use
4.	Matching the landscape to the map	First step in map reading	Stand outside and list 5 - 10 things you can see that should be on the map. Are they points; lines; or areas? Walk 100 metres (75 double paces) and record 5-10 features that you couldn't see before? Identify all those features on the map provided. Align the map with the ground, and point out where you are on the map, and the route you took to get there.
5.	Using a compass	Theory and practice: The parts of a compass Aligning a compass and a map Following a compass bearing	• Face to face demonstration of a compass by leader (see below) • Following a series of bearings to navigate around the school grounds

6.	Route cards and maps	Practice linking route cards and maps	Description by Leader of all the fields in the route card, including all the header information. Classroom exercise with existing Glen Esk maps and exemplar route cards
7.	Prepare route cards for expedition(s)	Making route cards	1. identify start point, campsite, finish point 2. Mark waypoints on the map 3. write description of way points on the route card 4. write description of route on the route card 5. Peer review of descriptions 6. Add the numerical fields 7. Add the other information

Lupine ppt link: https://www.lupineadventure.co.uk/images/downloads/powerpoints/2-Navigating-using-maps.pptx

and the notes: https://www.lupineadventure.co.uk/images/downloads/powerpoints/2-Navigating-using-maps.docx

Session 1: Introduction to navigation

1 the fundamentals

Navigation is about:

- knowing where you are,
- knowing where you want to get to, and
- charting a course to get there.

We navigate very day to get to school, to go home. to friends, etc. The places and routes are familiar and we navigate by memory.

If we are in an unfamiliar place we can follow sign posts, ask directions, google maps, etc.

On a DofE expedition, we may not know where we are, or where we are going, and the terrain may be very variable so the most direct route may not be the best. We need to bring the right tools and know how to use them.

- route card
- map
- compass

You prepare your route card before your expedition, and it is your primary aid to navigation on the expedition. Your route card divides the journey into manageable legs between landmarks, or check points. Fundamentally, the route card gives you the 5 Ds for each leg.

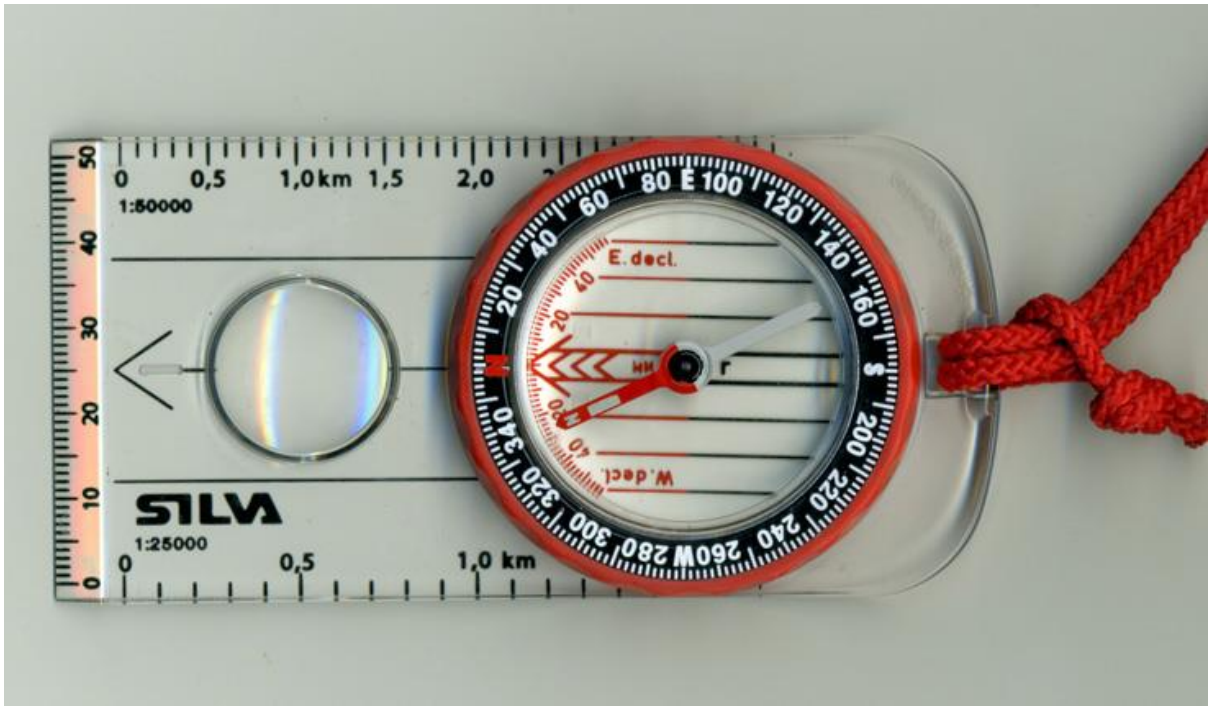
- Destination where are you going to, how will you know when you get there?
- Description describes the route so it is easy to follow
- Direction which direction are you going
- Distance how far is it to the destination
- Duration how long will it take you to get there
- (Dangers – navigational and physical)

When writing your destination and route description, make sure you consider the following features:

- handrail – usually a footpath but could be a stream, ridge or even compass bearing
- Tick feature – something you will come to while on your handrail
- Catchment point – a defining feature at the end of your leg
- Overshoot – something you will come to if you go too far

Look at a blank route card. Explain the various fields. Discuss examples to go into the Destination and Description for local routes the class knows

5 How to use a compass (copied from [Using a compass - Ramblers])



Learning how to use a compass is a skill that everyone who enjoys the outdoors will find useful and can be essential if you walk in isolated areas or in more challenging conditions.

To navigate successfully you will need to use your compass alongside a map – so first make sure you are comfortable with **reading maps**. In urban areas and lowland countryside (in good visibility), good map readers can navigate well without using a compass.

For walking we recommend an orienteering compass with a rectangular base (like the above), which is marked with km/m scales that can be seen even in poor light.

Uses of a compass

A compass helps you to:

- Know which direction you are travelling in – this is called your **heading**
- Align or orientate your map with your surroundings – **setting** the map
- Work out which direction an object or destination is from you – its **bearing**
- Follow a straight line of travel – called **following a bearing**

Main features of a compass

- Baseplate - the plastic base
- Compass dial - also known as the compass wheel, with a mark every two degrees covering 360 degrees, and the four main compass points N-S-E-W
- Magnetic needle - red end for north, white for south
- Compass lines - on the bottom of the base. These are also called ‘orienting lines’

- Orienting arrow - fixed and aligned to north within the dial
- Index line - extension of the direction of travel arrow
- Direction of travel arrow - the big arrow at the end of the baseplate
- Map scales 1:25 000, 1:50 000 and metric measurer (known as Romer scales)

Magnetic north

The key thing about the compass is that the needle always points to magnetic north. This is slightly different from grid north, and the difference between them varies in different areas of the world and over time. Information about this ‘magnetic declination’ is usually printed on walkers’ maps. Over short distances it should make little difference to your navigation but if you are walking on a single bearing for a very long distance in open countryside you need to compensate for it in order to navigate accurately.

Checking your heading

- Hold the compass in front of you with the direction of travel arrow pointing in the direction you’re walking
- Rotate the dial so that the N aligns with the red end of the compass needle
- The figure on the rim of the housing at the index line is your heading

Setting the map

An excellent use of a compass is to help you set the map, aligning it so that it corresponds to the surrounding landscape. This makes it much easier to relate the map to what you see on the ground.

- Put the map as flat as possible in front of you
- Put the compass anywhere on the map
- Turn the map and compass until the needle on the compass aligns with the north-south gridlines on the map, with the red needle pointing to the top of the map

Following a bearing

- Find a distant feature on the map that you want to walk towards
- Identify this feature on the ground
- Put the compass on the map so that orienting lines on the compass point line up with your route towards that feature, as it is shown on the map
- Without moving the map or compass, rotate the dial so that the orienting arrow points towards north on the map - the figure on the rim of the housing at the index line is the bearing you need to follow
- Take the compass off the map and hold it with the direction of travel arrow pointing straight ahead away from you
- Rotate your whole body, including the compass, until the red end of the needle lies parallel with the orienting arrow
- The direction of travel arrow should now point towards your distant feature
- Walk in the direction indicated by the direction of travel arrow until you reach your destination, checking your bearing along the way

The same technique can also be used to check the direction of a path on the ground after taking its bearing from the map.

Advanced techniques include using a map and compass with a pencil to locate your exact position by taking bearings from two or more distant landmarks, known as re-sectioning.