Route Card

A route card is used as a navigational aid to hill walkers by setting out a step by step plan for an intended hike. It is good practice to make out a route card before every hike you or your patrol go on to reduce the risk of losing your way on the hills and to provide you with an estimate of your walk times and distances. It is always important to make a copy of any route card you make and to leave this copy with a home contact in case of emergency or failure to return from a hike at the expected time. Drawing up a route card requires a bit of patience and a lot of practice but is an essential skill for any budding mountaineer to master. Where possible, ask another scout or leader to check over your completed route card for mistakes; two heads are better than one!

Plan:

Before you begin putting your route card together, there are a few things you will need to consider. First of all, you should think about the nature of the hike you would like to undertake. Taking into account the fitness and experience of you and your group, how long and how difficult should it be? Will the weather affect the terrain of your intended route (e.g. heavy rain over a boggy area may prove challenging to walk in)? Is visibility due to be good (poor visibility will increase your reliability on easily identifiable features)? Does your route have any potential escape routes (i.e. quick ascent routes from a mountain in case of emergency or bad weather)? When you have answered all of the above questions, you can begin to select a route that best suits you and your patrol.

The next part of the planning stage in constructing a route card is to practice and learn the basic navigational skills set out in the checklist below. Check that you know how to:

- Take and read grid references,
- Take and read magnetic and grid bearings with a compass,
- Measure distances on a map,
- Read and understand the scale of a map,
- Adjust bearings to account for magnetic variance,
- Estimate walking paces for different terrains, groups and legs of a hike,
- Read and understand contours on a map,
- Recognise and understand the common features and legend of a map.

The final step of your planning stage is to research the weather and time of sunset for the date of your hike. Now you are ready to begin!

Do:

Below is an example of a well laid-out template of a route card used by the Sionnach Team which is a good format to begin with.

Once you know where you want to go hiking, pick a suitable start and end point for your route (this will be the same point if you are doing a loop). You will need to record a grid reference and label the landmark or feature found at these points. For example, if you are starting at a carpark, you would simply name your start point as ‘Carpark’.

Sample Route Card

Number in Group:	**8**	**Emergency Contact Phone:**	**0871234567 - Tim**
Map Sheet:	**56**	**Date/Event:**	**21/06/2014**

LANDMARK/ CHECK-POINT	Grid Reference	Bearing/ Feature	Pace (km/h)	Distance (Metres)	Height Climbed (Metres)	Distance Time (Mins)	Height Time (Mins)	Walk Time (Distance + Height)
GLENMALUR CARPARK	T067,942	310˚	4	1000	50	15	5	20
BEND IN TRACK	T059, 946	160 ˚	4	700	50	11	5	16
BEND IN TRACK	T062, 940	248 ˚	4	1500	70	23	7	30
RIVER CONFLUENCE	T049, 935	240 ˚	4	600	150	9	15	24
RIVER CONFLUENCE	T045, 932	260 ˚	4	1750	340	27	34	61
SHOULDER OF LUG	T029, 927	151 ˚	4	600	50	9	5	14
(SOUTH PRISON) CLIFF EDGE	T034, 920	234 ˚	4	400	30	6	3	9
SUMMIT OF LUGNAQUILLA	T032, 917	54 ˚	4	400	-30	6	0	6
(SOUTH PRISON) CLIFF EDGE	T034, 920	96 ˚	4	2300	-80	35	0	35
SUMMIT OF CLOGHERNAGH	T058, 919	94 ˚	4	2300	-450	35	25	50
START OF TRACK	T080, 919	80 ˚	4	1300	-220	20	15	35
T-JUNCTION IN ROAD	T087, 922	317 ˚	4	3000	40	45	4	49
GLENMALUR CARPARK	T067, 942							
		Totals:		15.85 KM	780M	**Total Walk Time:**		5 HRS 50 MINS
						Total Route Time: (Including rest, approx.10 mins/hour)		6 HRS 45 MINS

Start Time: 10am **Finish Time:** 4:45pm

Escape Route / Emergency Notes:

On ascent from Glenmalur carpark, quickest and safest descent at any time on route to summit is to back track along original route.

Weather Forecast / Time of Sunset:

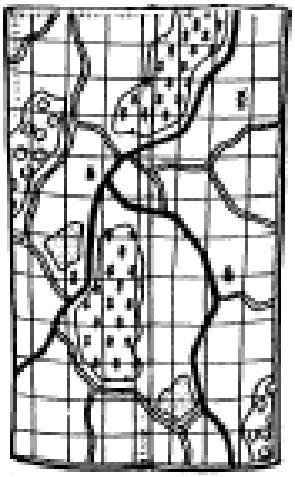
Clear skies, temperature range 16˚-20˚. Light winds. Sunset: 9:57pm.

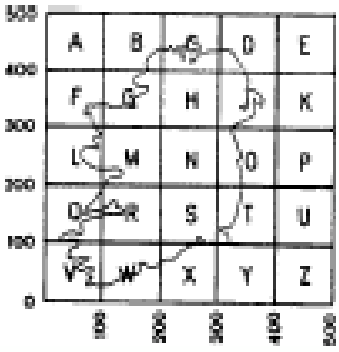
Magnetic Variance:

4˚ West. Wicklow, June 2014.

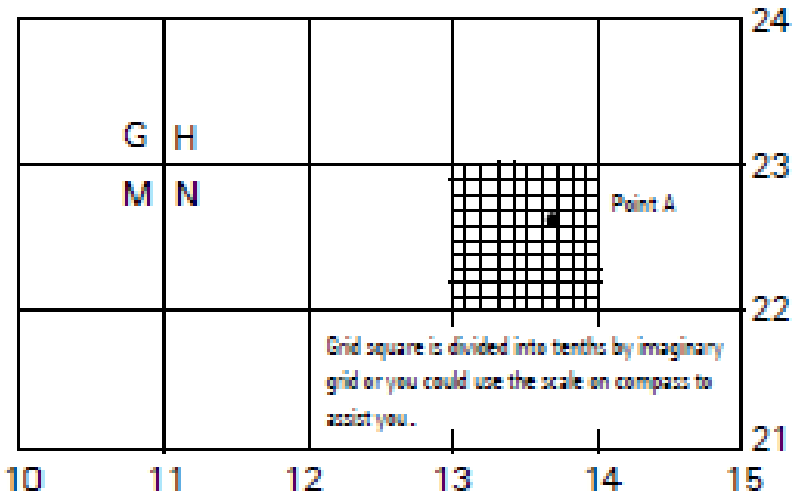
Grid References

A **grid reference** is a six (or sometimes eight) digit number, prefixed by a letter, which allows you to pinpoint any point on an OS map (to the nearest 100 metres on a 1:50000 map) and appears in the form of O391,826 (for example). There are three steps to taking a grid reference and we remember these steps using the term '**LEN**'; **L**etter, **E**asting, **N**orthing. Ireland is divided into a grid of 25 letters (A-Z excluding the letter I) and you will need to locate the letter for the area you are working with on your map. Some maps may cover areas where multiple letters meet. It is important to be very careful that you select the correct letter which correlates to your point.





Next, you will need to record the easting figure for your point. Eastings are the numbers which run horizontally (from west to east) along the bottom and top of a map. The first two digits of your easting figure will relate to the box in which your point is located. The third digit is calculated by breaking the box down into ten equal parts and measuring (using the ruler or scales on your compass) which section of the box matches up to that point. For example, a point located halfway along the 83 easting box would be recorded as 835 and a point two parts (of ten) into the box would be recorded as 832. The next figure you must record is the northing number.



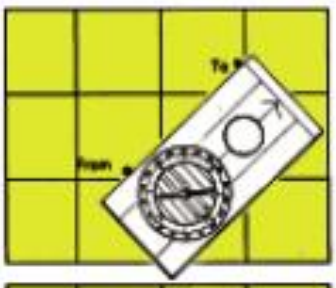
Grid reference for point A is N 137 227

Northings are the numbers which run vertically (from south to north) at the left and right of a map. Similar to Eastings, to work out the northing figure for your selected point, find the box which matches up to the point, record the two digits and break the box down into ten equal parts to work out the third digit.

Once you have selected your start and end points and jotted down the grid references for each, you should closely examine the route you are taking and pick out the features and landmarks that you will encounter while walking to use as navigational checkpoints. Examples of good features to use as checkpoints include road junctions, cairns, lakes, large rivers, tracks, buildings, well-defined peaks, spot heights or ridges, footbridges and walls. Where possible, pick features that are easily identifiable to avoid uncertainty when navigating. Broad landmarks such as plateaus, shoulders or spot heights on relatively flat areas of ground may be hard to recognise so avoid using these unless absolutely necessary. You should also be wary of some features which may be recorded on a map but could possibly change or disappear on land such as an area of coniferous forest which has been deforested or a small stream which runs underground or has dried up. When you have picked features that are sufficiently close and provide a manageable distance to navigate between, record in a list and record the grid references.

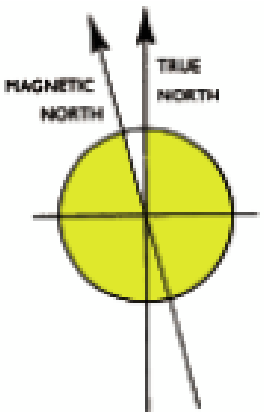
Compass Bearings

Your next task is to record the **magnetic bearing** between each checkpoint on which you will travel. To do this, lay your compass flat on your map with the edge of the compass perfectly lined up with your two points and the directional arrow pointing in the direction of travel. Next, rotate the dial of your compass so that the orienting lines of the compass perfectly align with the easting gridlines on your map and the red orienting arrow points to the north of the map. Remove the compass and carefully read the bearing at the top of the dial to the nearest degree. This is called a grid bearing.



This bearing is not the bearing you will follow on the hills however as it not totally accurate. The reason for this is that a compass needle will always point towards magnetic north, the location of which does not perfectly correlate with true north (i.e. the North Pole). Magnetic north is constantly fluctuating and for this reason, we need to amend our grid bearing by a few degrees to take into account what is called **Magnetic Variance** or **Declination**. Magnetic variance differs from place to place and the easiest way to find out what the magnetic variance is for any particular area is to check online or calculate it using the figures provided on any OS map.

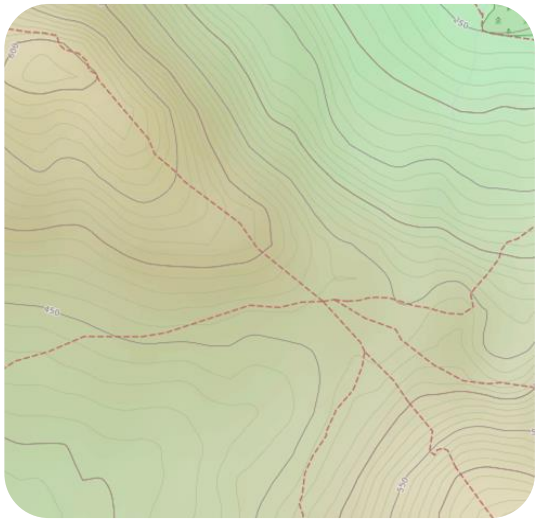
Generally, when calculating a magnetic bearing from a grid bearing, you add the magnetic variance (although this is slowly changing and soon we may need to subtract this figure). The rhyme you can currently use to help you to remember this is '*From Grid to Mag- Add. From Mag to Grid- Get Rid*'! For example, if magnetic variance for the area you are hiking in is 4˚ West and your grid bearing is 312˚, your magnetic bearing and the bearing you will follow on your compass will be 312˚+ 4˚=316˚.



Measuring Distance

Now that the grid references and bearings are out of the way, it is time to measure the **distance** of each leg of your hike. There are a number of different methods to doing this and you should use whichever you find easiest. If you are travelling in straight lines, you can simply line the ruler or romer scale of your compass between the two points and use your scale to convert the length in millimetres and centimetres to metres and kilometres.

For example, on a map with a scale 1:50000, 2 centimetres on a map = 1 kilometre on land. So a measurement of 1.6 centimetres = 800 metres and so on. If you are not travelling in straight lines between checkpoints however, measuring distances is slightly trickier. The string method is a popular way to measure curved line distances. To do so, place the end of a piece of string at the start of your first point and carefully curve and turn the string around each bend in your route until you reach your second point. Mark this point on your string and then measure the length of string from that point to the end against a ruler to calculate the distance as above.

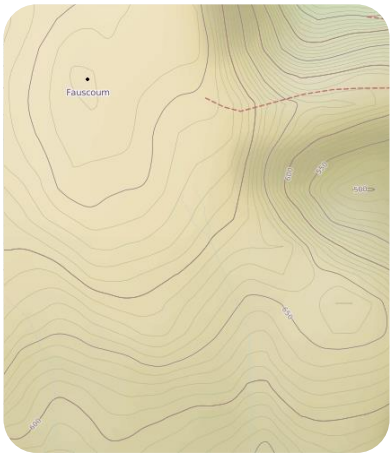


Estimating the **pace** of each leg of your hike is the next element of your route card to complete. A number of factors will affect the pace you can expect to travel at on the hills including the terrain, the gradient of the land, the weight of your pack and the fitness of your group. For example, a fit patrol carrying light packs and travelling on a road with little or no slope to the land might expect to travel at 5km/hour. In contrast, a patrol carrying heavy packs over marshy ground on an uphill slope might only cover 2km/hour.

Using your estimated pace and distance calculated, you can then work out the **distance time** for any leg of a hike. There are a number of ways of calculating this. For example, you could say that at a pace of 4km/hour, you will travel 1km in 15 minutes and therefore 100 metres in 1.5 minutes. So if you are travelling 700 metres at this pace, your distance time will be 7x1.5=10.5 minutes. If however your pace dropped to 2km/hour, you would travel 1km in 30 minutes and therefore 100 metres in 3 minutes. 700 metres at this pace would take 7x3=21 minutes.

Measuring Height

Having worked out your distance and distance time, you will now need to record your **height gained** and height times. **Contours** on a map denote areas of land of equal height. On a standard 1:50000 OS map, each contour represents a 10 metre height gain. To work out the height you will gain or lose when travelling between two points, simply count the contour lines between the two points and multiply your answer by ten. For example, if your first point is on the 250 metre contour line and the second point is 9 contours above this, your height gained when travelling between these points will be 9x10=90 metres. We also take into account when estimating our walking time that we are slower travelling uphill than on flat ground. Your added **height time** should be 1 minute for every 10 metres climbed. So a 90 metre height gain would add 9 minutes to your walk time for that leg. Generally speaking, additional time is only added for height lost if the downhill slope is steep in nature and a 1 minute allowance may not always be suitable. Where a downhill slope is gentle or very gradual, additional time is unnecessary.



Walk Time

Walk time is calculated by adding together the distance time and height time for each individual leg of a hike.

Almost there! Finally, you can add together the walk times, distances and height gained for each leg of your hike to work out your total estimated walk time, distance and height gained. Added to your total walk time should be sufficient rest times. Allow yourself at least 10-15 minutes per hour for rests and then fill in your scheduled start and expected finish times to complete your route card. Write down any contact numbers to be used in an emergency, any potential escape routes at various stages of the hike, the forecasted weather and the time of sunset to use as a reference point.

Review:

As mentioned above, it is good practice to have another member of your patrol check over your bearings and figures a second time for any mistakes or errors. Confidence in your navigation and route card will come with practice and experience but the golden rule is to always trust your compass. When lost or in any doubt, reverse your compass bearing by 180˚ and backtrack to your last known location to reassess your route and walking options. Following a hike, review your route card and note any mistakes such as wrong estimations for pacing or poor choices of checkpoint features so that you will know what to avoid in future or what changes you should make on your next hike! Route cards are valuable records to have so keep a copy of any that you make for future reference. You can even put them to use in your mountain logbook to attain higher levels in the Hill Walking Adventure Skill!