

Mountain Leader Training

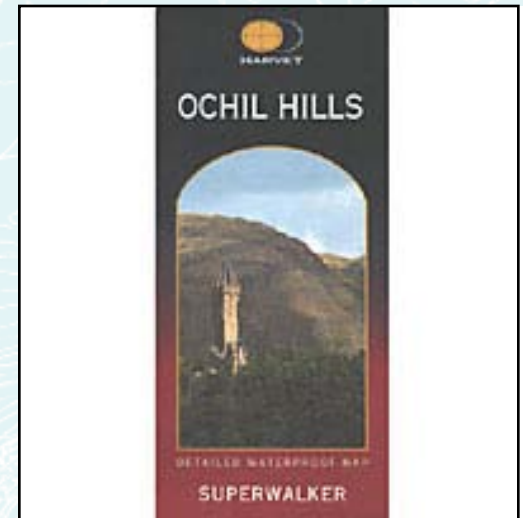
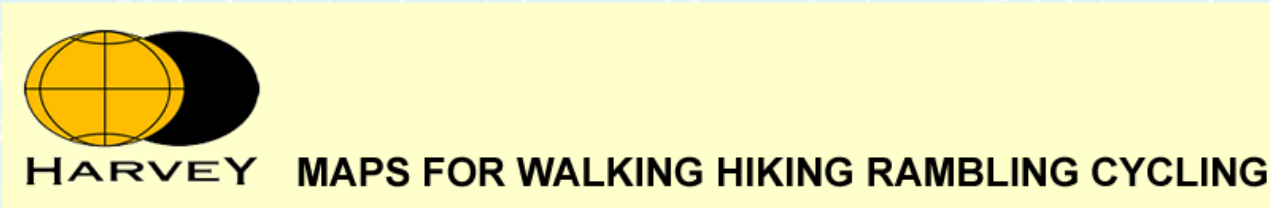
Mountain Navigation

Getting the basics right ... where to start

Where to start!



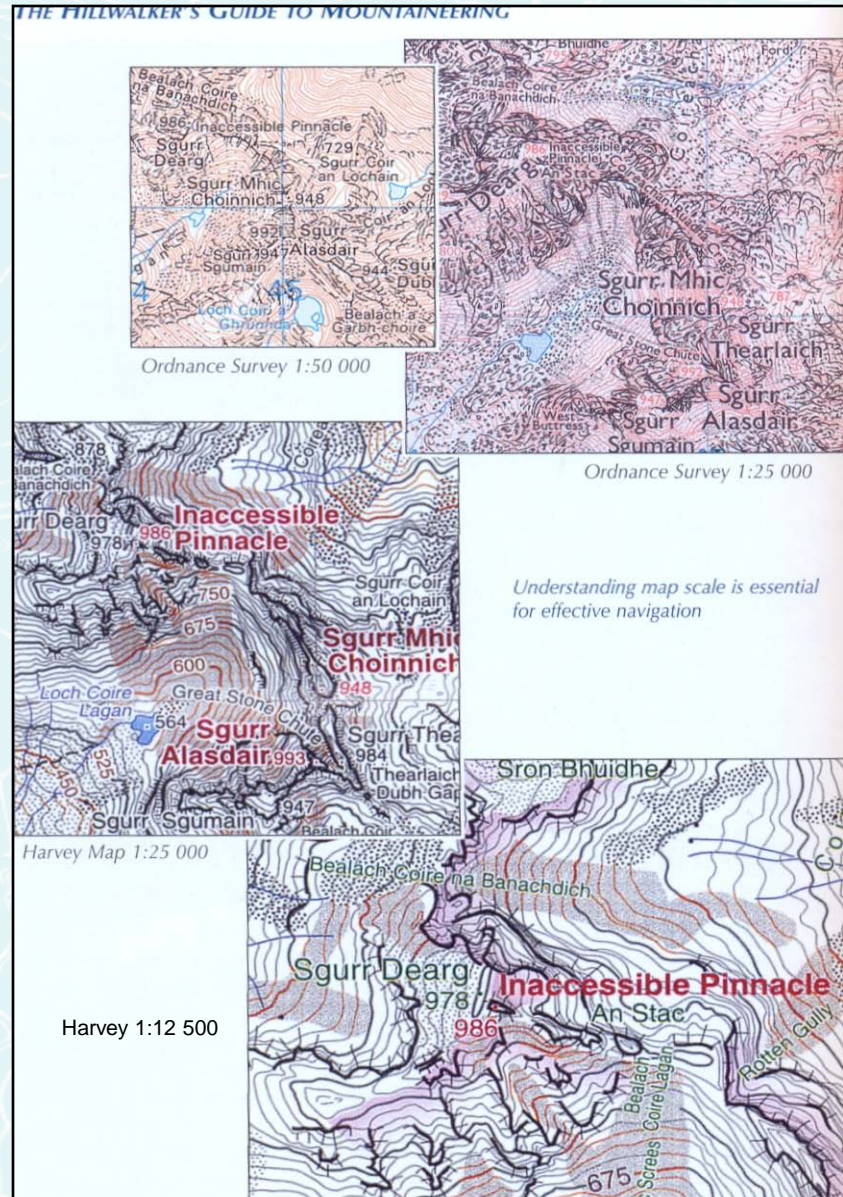
- Mountain navigation using hill maps
- OS 1:25,000 and 1:50,000
- Harvey's



Map scale!

Does it make a difference?

Understanding map scale or knowing how to use scale when feature navigating is the key to map reading accurately.



Adby T and Johnston S
(2003) The Hillwalker's
Guide to
Mountaineering. Page
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Map Legend

- Symbols side or bottom of the map
- No need to learn them all
- But know the ones that will affect your travel in the mountains
- What are the key features



"—COULD HAVE SWORN IT WAS A CLIFF
—MUST HAVE BEEN AN OUTCROP!"

Cliff P (2002) Mountain
Navigation

HEIGHTS

1 metre = 3.2808 feet



Contours are at 10 metres
vertical interval

144

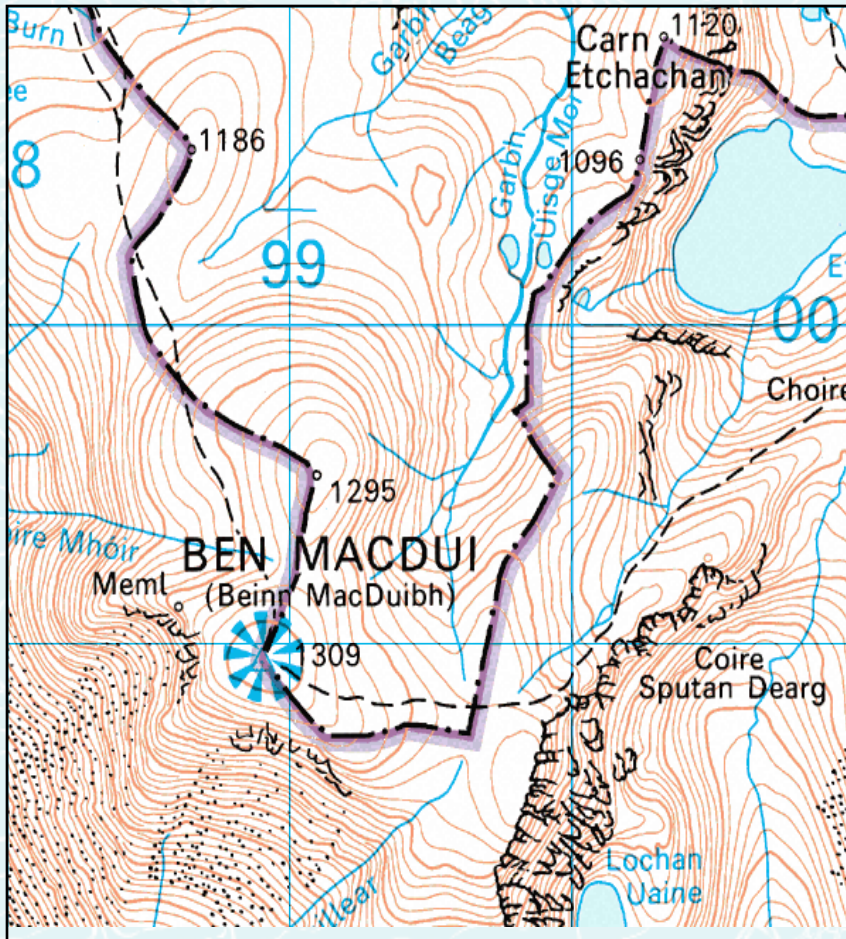
Heights are to the nearest
metre above mean sea level

Heights shown close to a triangulation pillar
refer to the ground at the base of the pillar
and not necessarily to the summit.

ROCK FEATURES

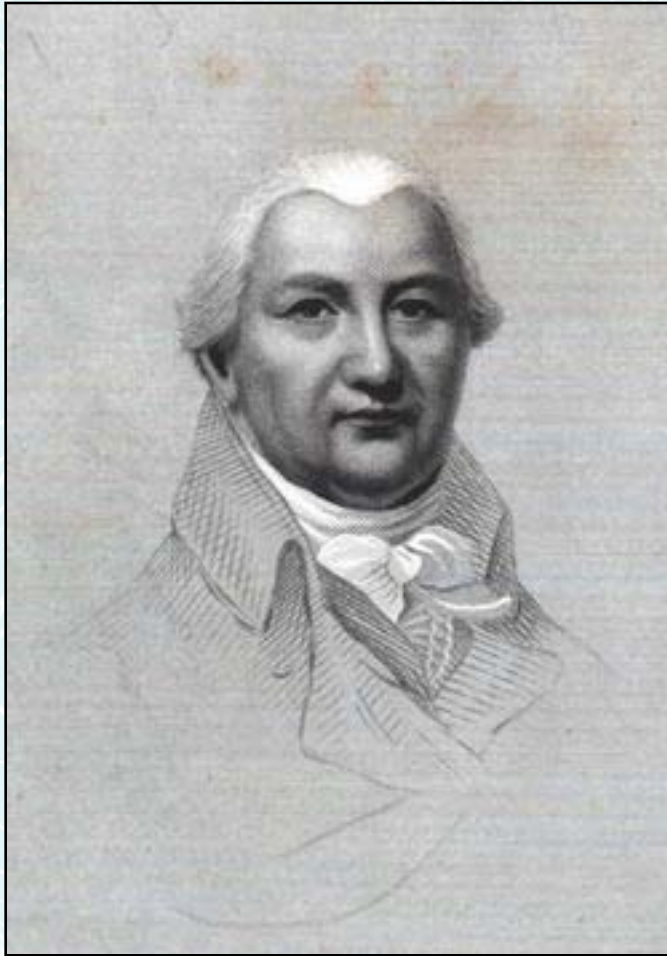


Topography



- Look at the map and picture the ground in your mind
- Pictorial image created by features and by **contour lines**
- High mountain areas and low mountain areas

Contour Lines and Schiehallion

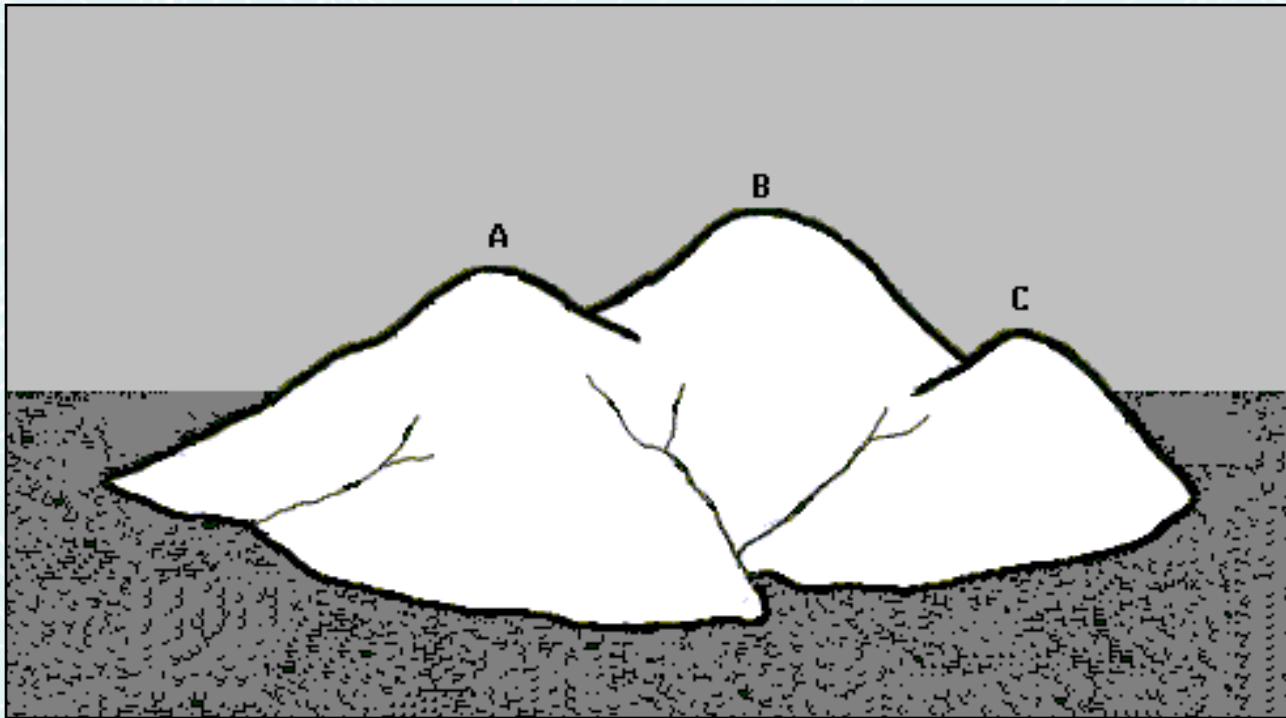


- Nevil Maskelyne (1732-1811)
 - ‘The Schiehallion Experiment’
 - Density and mass of the earth using a plumb line
- Charles Hutton (1737-1823)
 - 1777 volume of a mountain
 - Density of the earth (4.5x water)

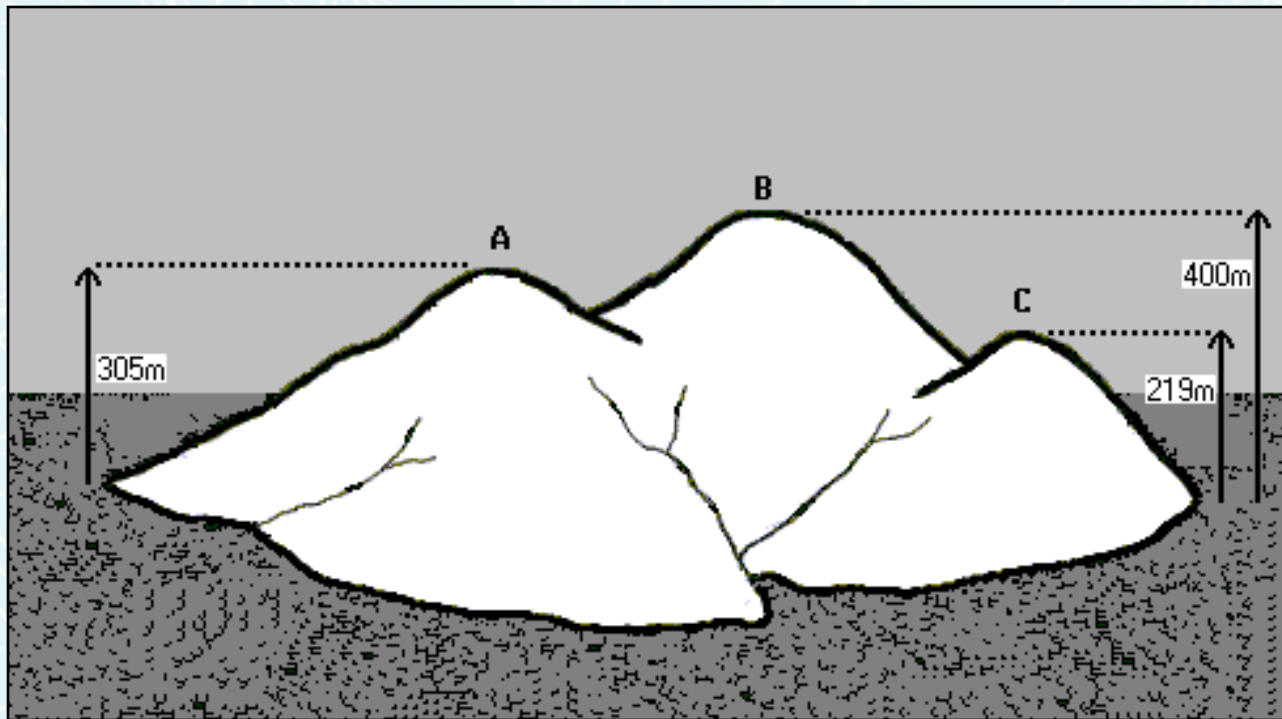
Schiehallion



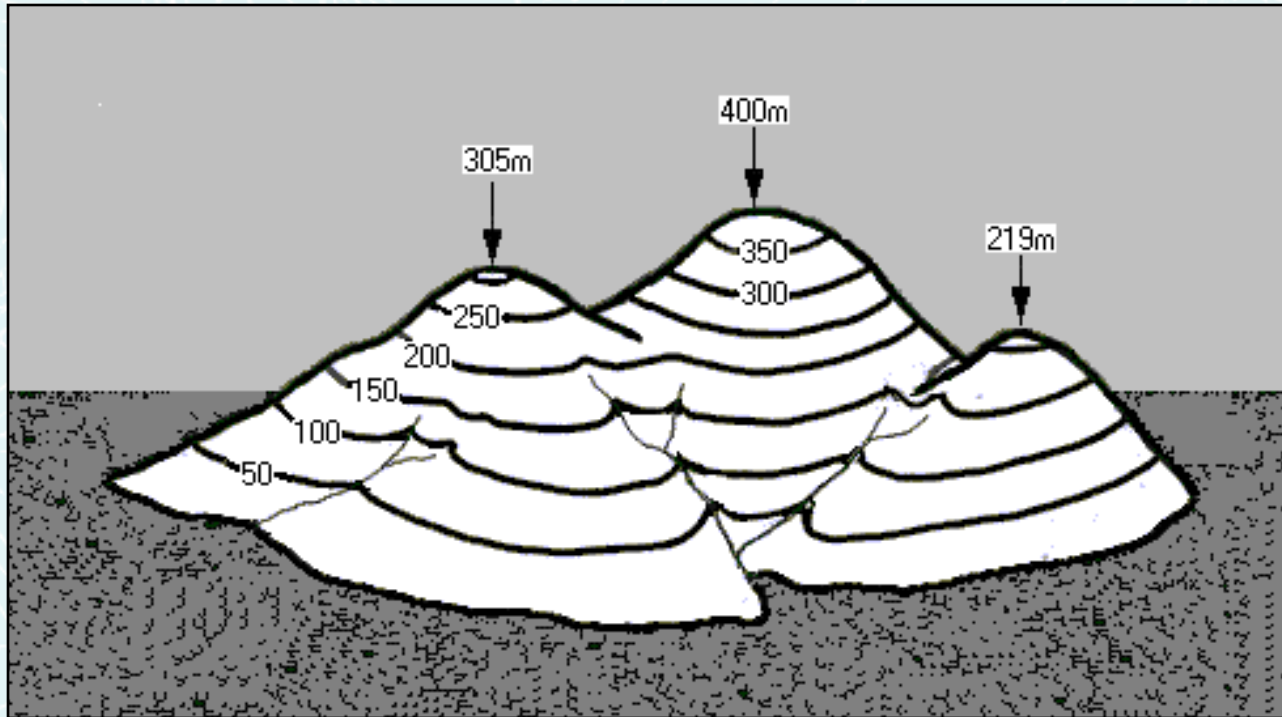
Map Interpretation – contours



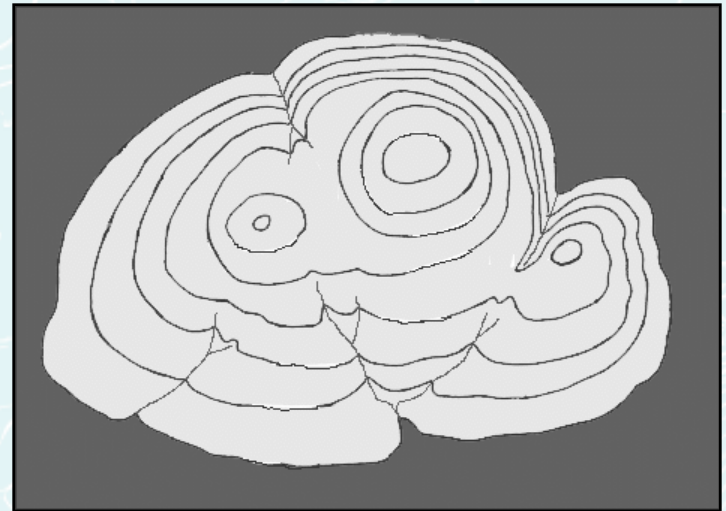
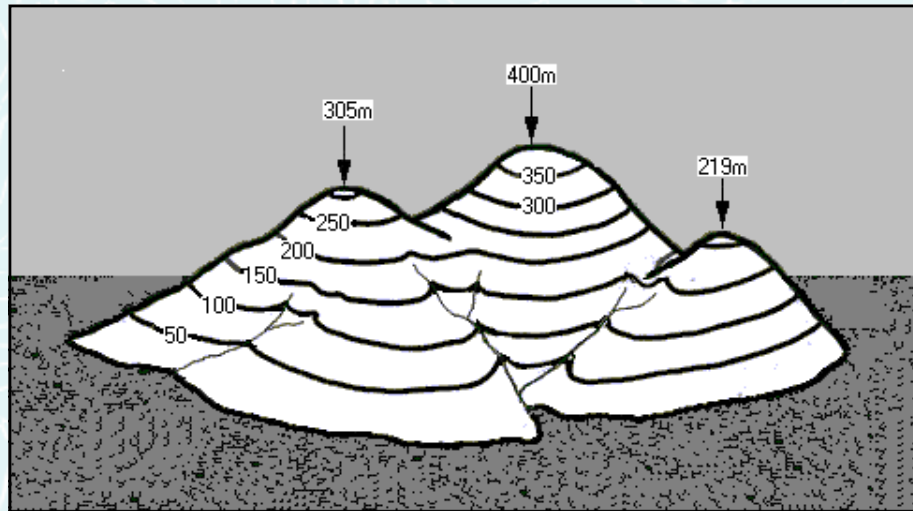
Map Interpretation – contours



Map Interpretation – contours



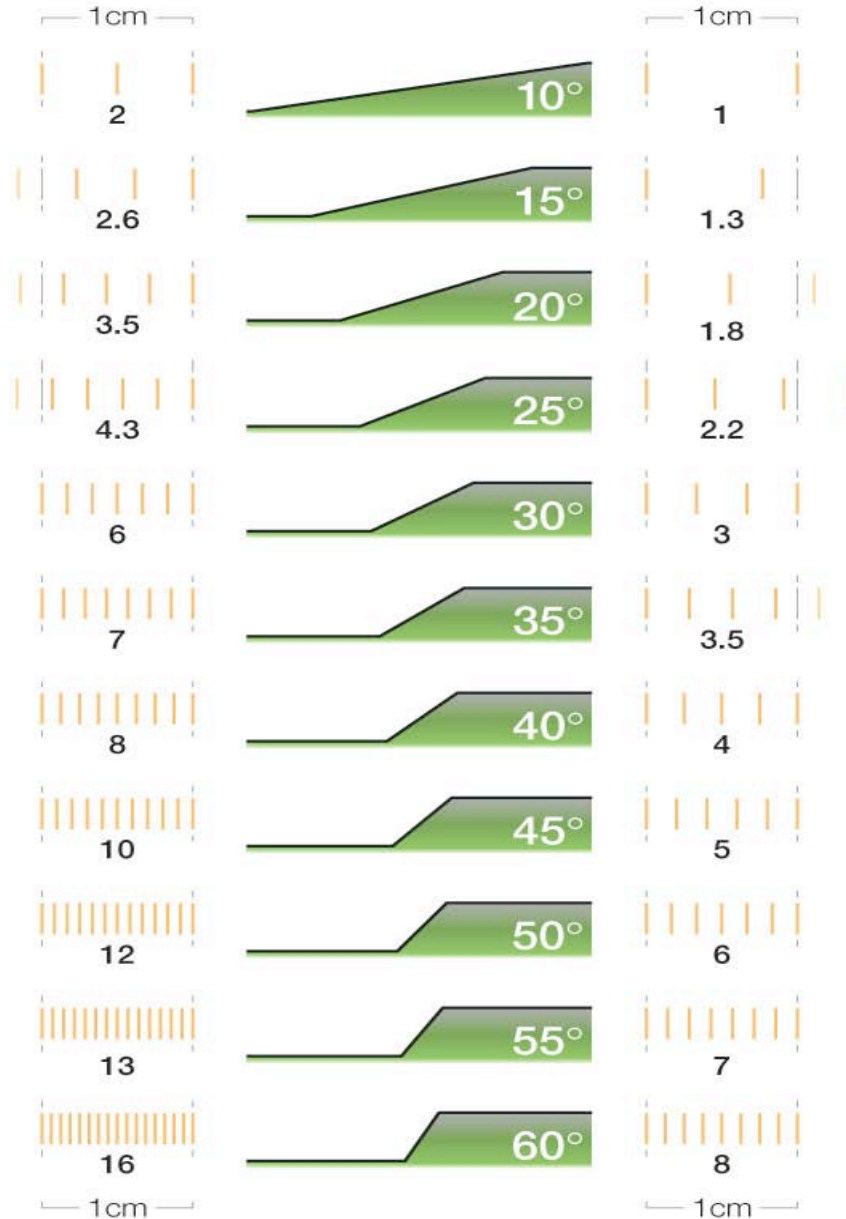
Map Interpretation – contours



1:50,000
Thick contour lines
per 1cm on map

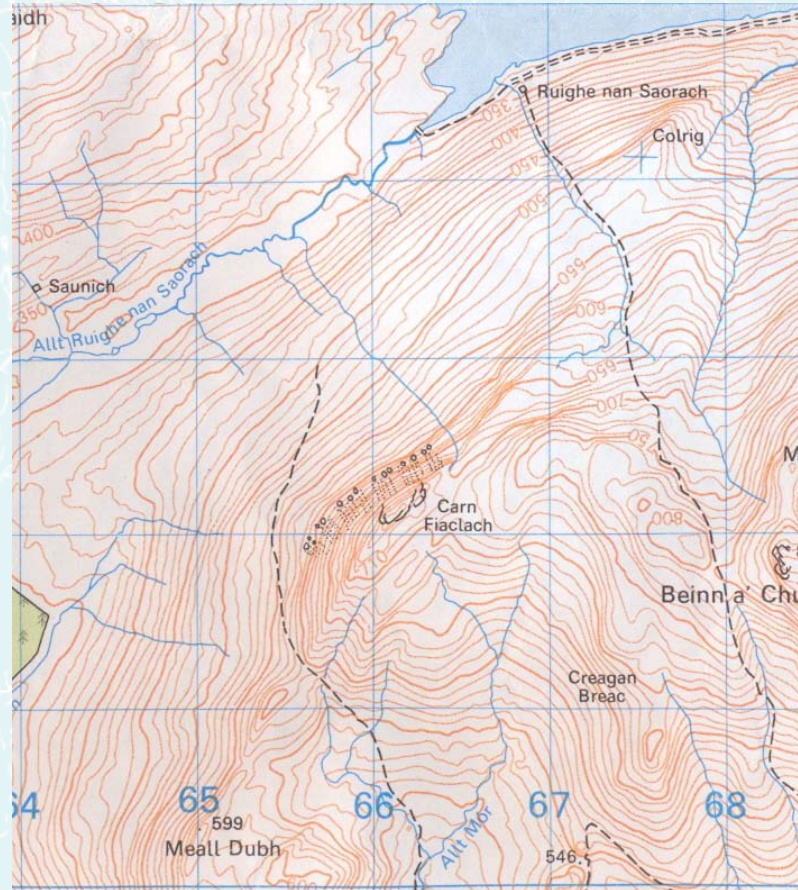
**Slope
Angle**

1:25,000
Thick contour lines
per 1cm on map

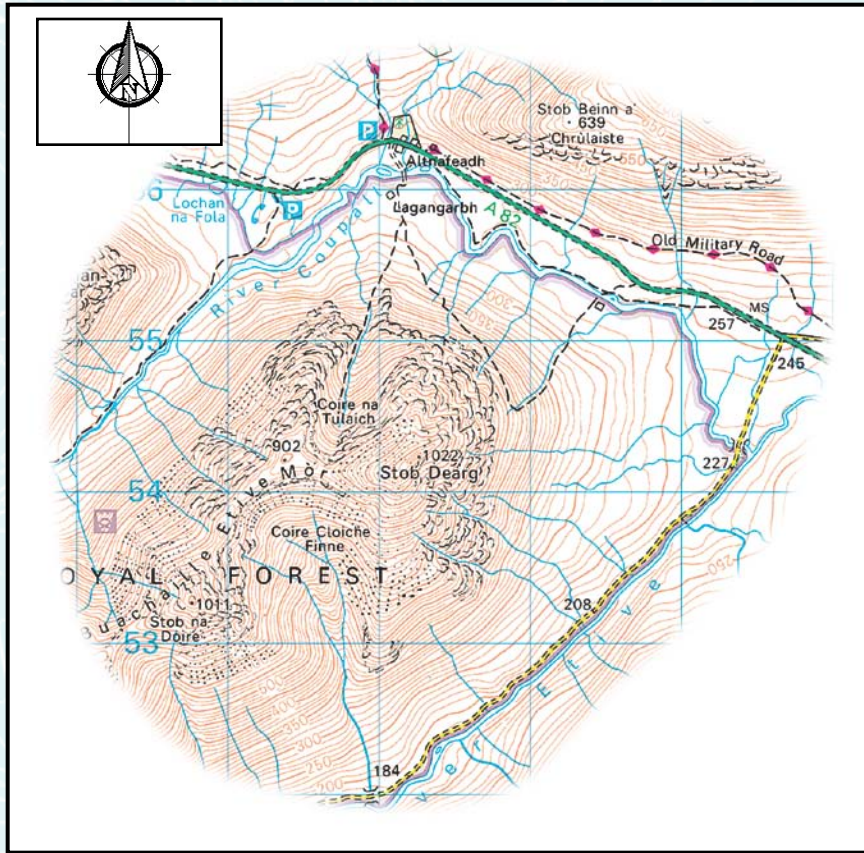


Long. S
Hillwalking, MLTUK
Page 18

Map Interpretation – topography



Map Setting



Matching north on
the ground to north
on the map

Matching what you
are seeing in front of
you to its
representation on
the map

Set by landmarks
Set by compass

Grid References

To use a Romer to measure the grid reference, place the corner of the relevant Romer on the point as shown below. Then read off the figures as indicated by the arrows – in this case the reading is **414 512**.

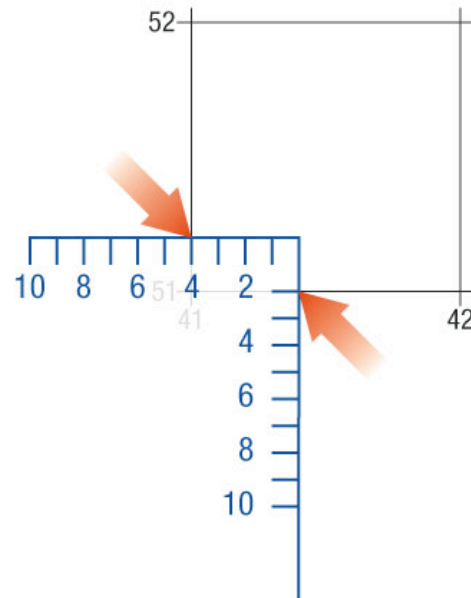
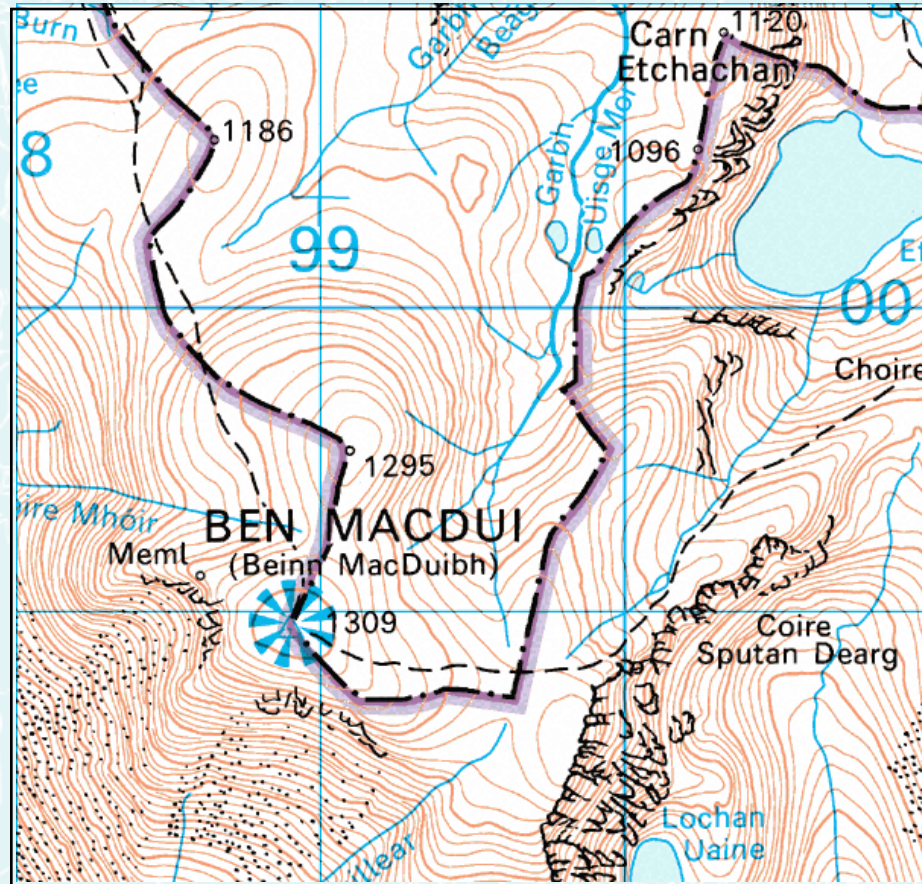
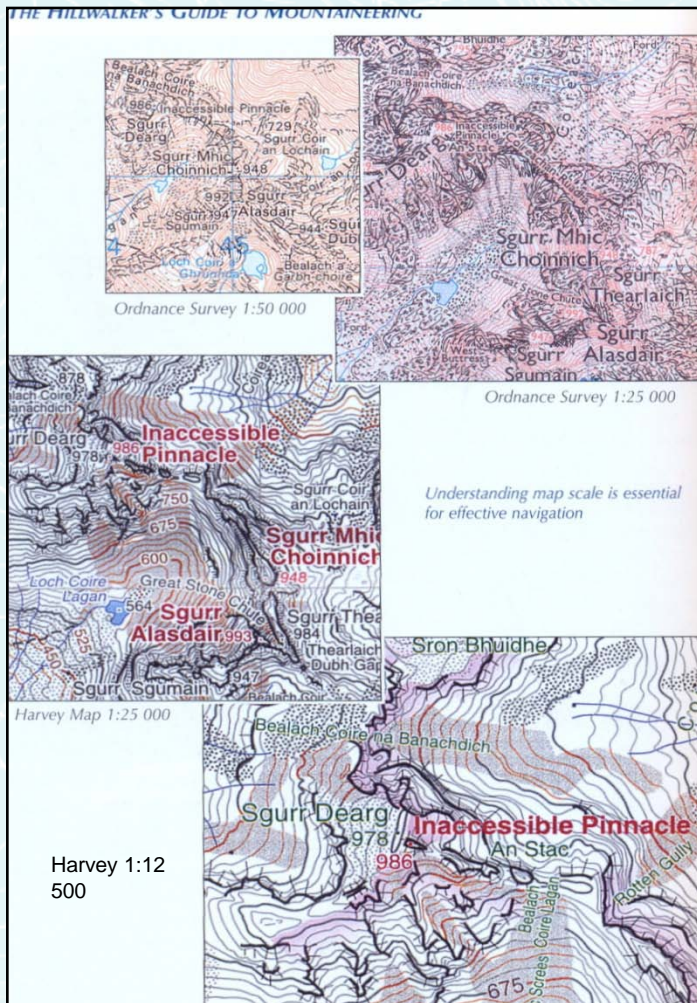


Illustration from 'Hill Walking' © MLTUK/ VG 2003

Map Interpretation – Distance and Scale



Chose the Right Scale



- 1:50000 advantages
 - Larger land mass coverage
 - Clearer overall picture (uncomplicated contours)
 - Fewer marked features (focus on the important ones)
- 1:25000 advantages
 - Enhanced feature detail in less complicated land masses (streams, walls, lochans)
- 1:12500
 - Very good contour information especially in steep, precipitous terrain (Cuillin)

Essential Navigation Equipment ?



- powers of observation
- feet
- other team members

The Compass

base plate

magnifying glass

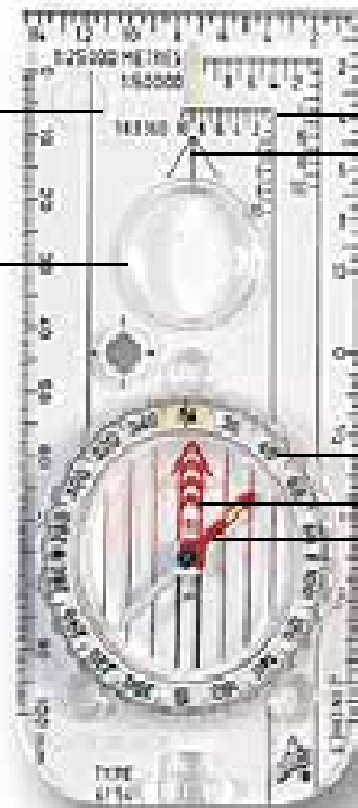
scales

direction of travel arrow

compass housing

orienteeing arrow

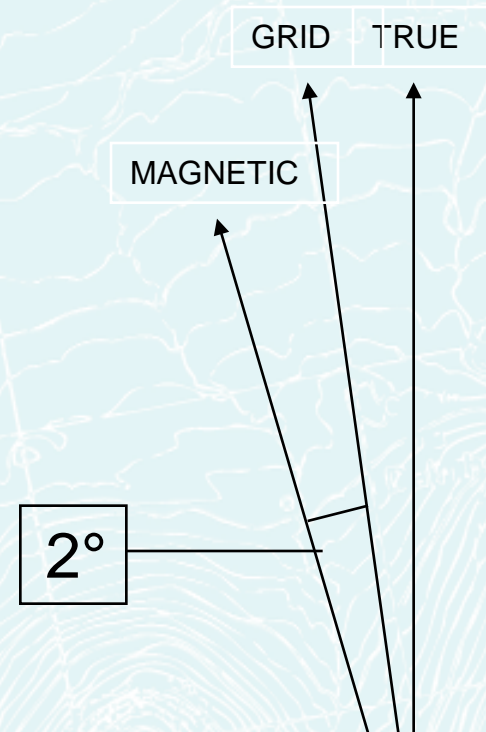
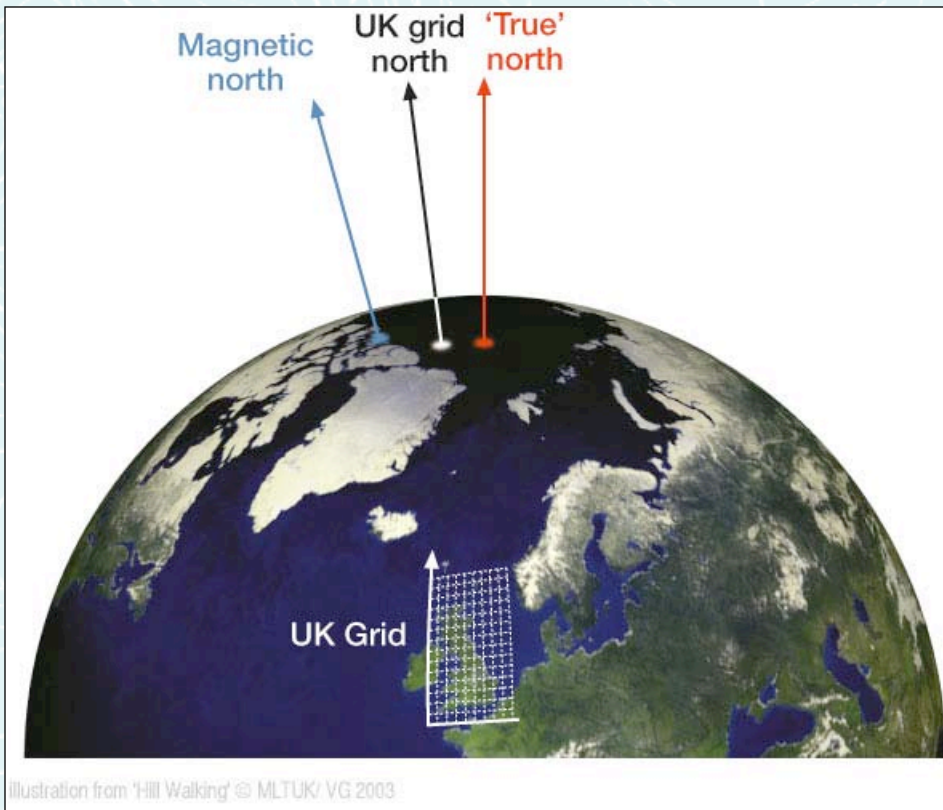
flotation needle



Using Compass Bearings

- a way to travel accurately in the intended direction
- particularly useful in poor visibility or where the terrain is featureless
- the direction of travel is calculated in relation to north
- bearings can also be used to pinpoint your position

Magnetic Variation



Useful Map Reading Links

- <http://www.mountaineering-scotland.org.uk/leaflets/getlost.html>
- [http://leisure.ordnancesurvey.co.uk/leisure/tscontent/editorial/mapfacts/leaflets/map reading made easy.pdf](http://leisure.ordnancesurvey.co.uk/leisure/tscontent/editorial/mapfacts/leaflets/map%20reading%20made%20easy.pdf)