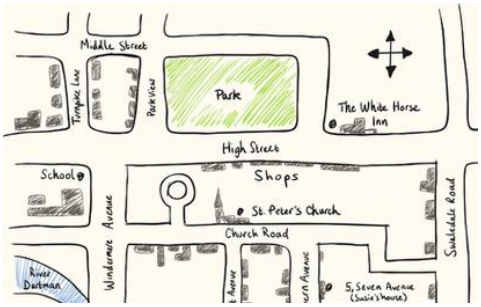
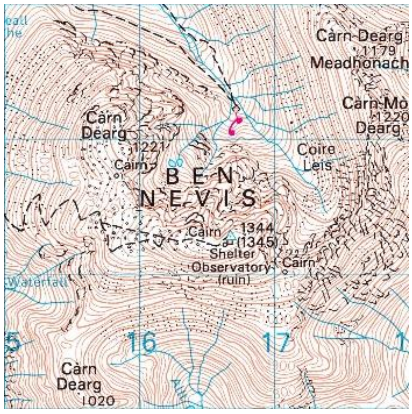
NAVIGATION: MAP READING

WHAT IS A MAP?

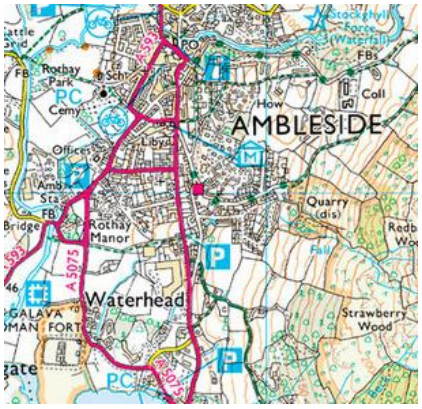
A map is simply a drawing or picture in 2D of a landscape or area of a country in 3D. It could be anything from a sketch map for a visitor, to a detailed map of a town centre or mountain range.



Example Sketch map drawn to an approximate scale.

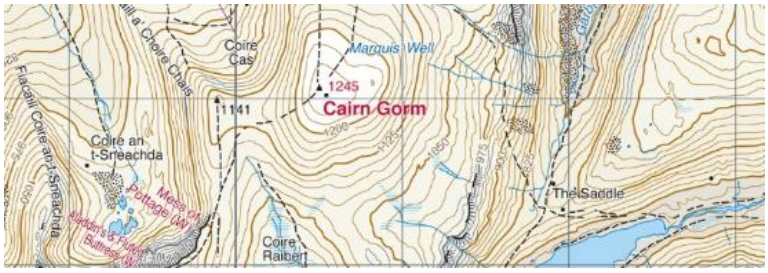


1:50 000 scale extract showing part of Ben Nevis (UK highest mountain).



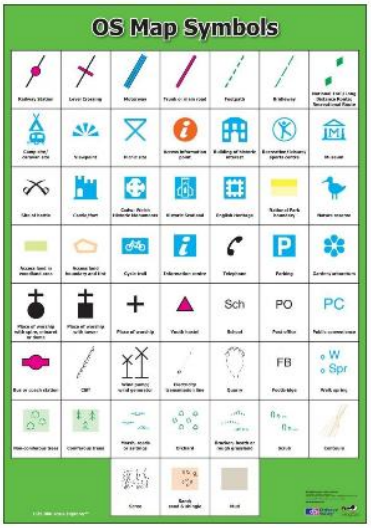
1:25 000 scale extract showing Ambleside, Lake District.

Using a map you can visualise in your mind what the place looks like that you are going to, and you can see what landmarks and features you will pass on the way to your destination. Maps mean you know what to expect, and they help you to know you are going in the right direction to arrive at your destination safely and quickly.



1:40 000 scale extract showing Cairngorm mountain

MAP SYMBOLS



When drawing a map, you will find that you have to label lots of things you draw, such as a shop or a church, so other people can tell what they are.

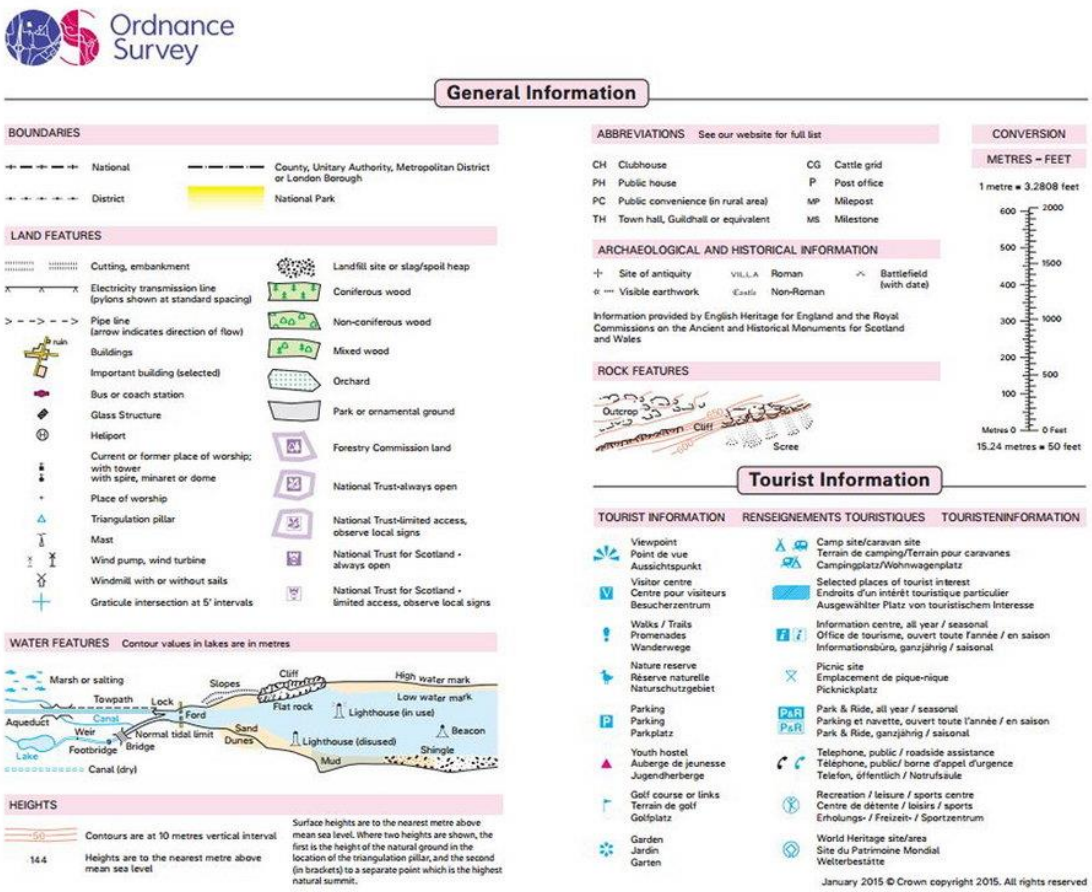
If Ordnance Survey had to do this on all maps there would be too much writing and it would be very confusing. The way we get around this problem is by using different shapes, colours and symbols to show all the roads, buildings and rivers and other interesting things in our landscape.

Maps may even show you things you never even knew were there! Maps usually have a key that explains the symbols and their meanings.

If you find a symbol on the map that you don't know, simply look it up in the key.

Above are just some examples of symbols found on a 1:25 000 or 1:50 000 scale map.

Below is an example of a Map Key for an OS Map.



MAP SCALE

The scale of a map shows how much you would have to enlarge your map to get the actual size of the piece of land you are looking at. For example, your map has a scale of 1:25 000, which means that every 1cm on the map represents 25 000 of those same units of measurement on the ground (for example, 25 000cm = 250 metres).

That might sound a bit complicated, but OS maps have been designed to make understanding scale easy. Look at the front of a 1:25 000 scale map and you will see that the scale has been written out for you like this:

- 4cm to 1km

This means that every 4cm on a map = 1km in real life. To make it even easier, the grid lines are exactly 4cm apart, so every square is 1km by 1km.
On a 1:50 000 Map 2cm =1km.

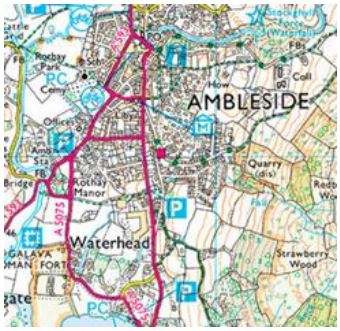
Maps are made at different scales for different purposes. The 1:25 000 scale map is very useful for walking, but if you use it in a car you will quickly drive off the edge! Take a look at the examples below:

1:50 000 scale Ordnance Survey map

-1cm = 500m

-2cm = 1km

-Good at showing the shape of the land, ideal for navigation when less clutter is required.



1:25 000 scale Ordnance Survey map

-1cm = 250m

-4cm= 1km

-Shows a lot of detail such as walls, streams and buildings.

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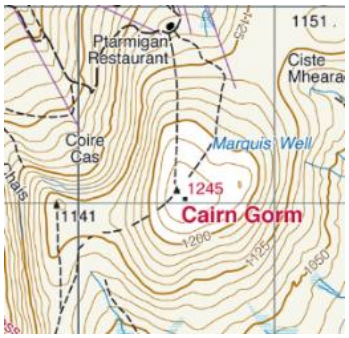


1:40 000 scale Harvey map

-1cm =400m

-2.5cm = 1km

-Specialised for mountain areas of the UK, it uses Shading & colours to interpret the shape of the land.

DIRECTION

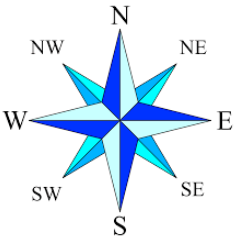
Just as it is important to know which is your left and your right hand, in map reading it is important to understand where north, east, south and west are. You can remember where the points of the compass are by using one of these rhymes:

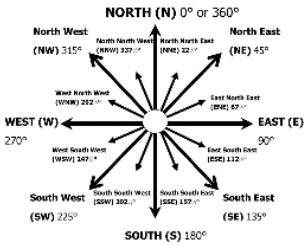
Naughty **E**lephants **S**quirt **W**ater

or

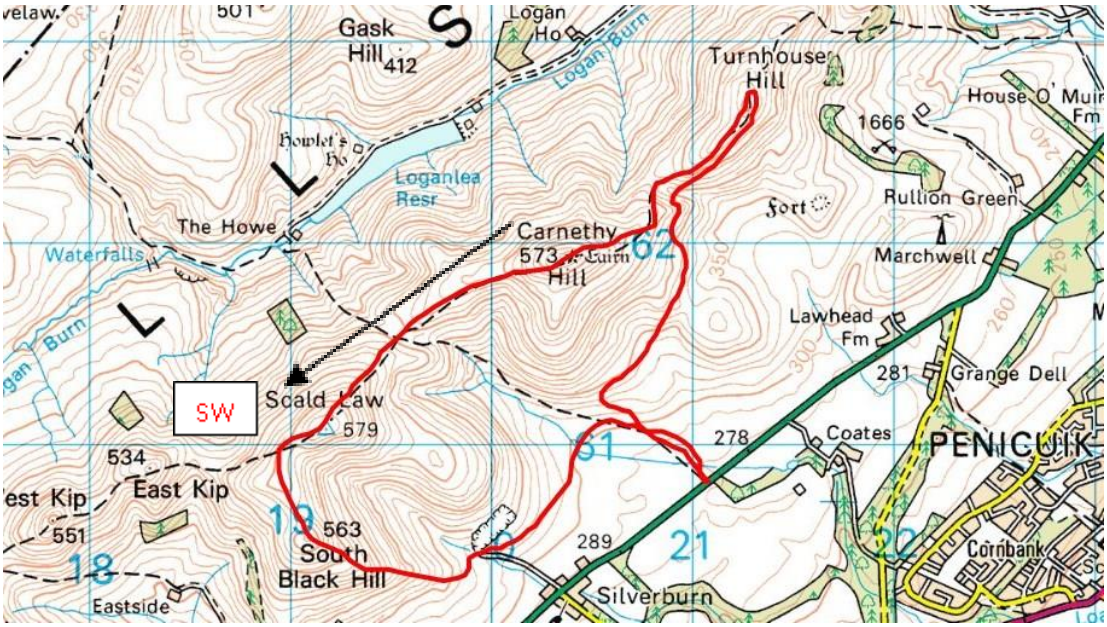
Nobody **E**ver **S**wallows **W**hales

If you are walking in a direction half way between two of the points of a compass, you can say you are heading north-east, south-east, south-west or north-west, depending on the direction.





Using the Map below, if you were travelling on the RED highlighted route on the section from CARNETHY HILL to SCALD LAW, you would be travelling South West (SW):

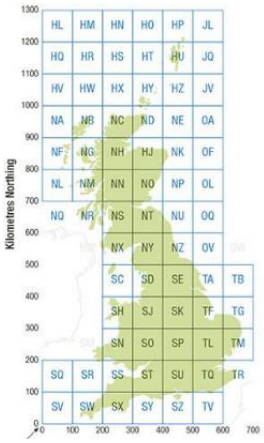


*Ordnance Survey maps are always printed so that NORTH is at the Top of the map sheet.

NATIONAL GRID

Great Britain is covered by grid squares measuring 100 kilometres across.

Each grid square is identified by two letters, as shown in diagram (right)

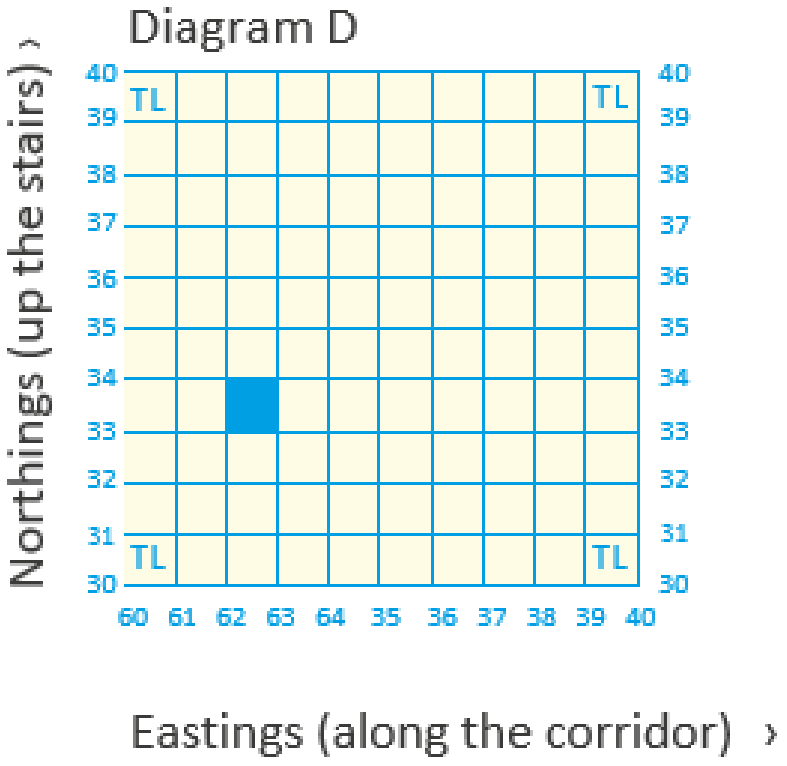


GRID REFERENCES

A FOUR-FIGURE GRID REFERENCE is a handy way of identifying any square on a map. Grid references are easy if you can remember that you always have to go **along the corridor** before you go **up the stairs**. To find the number of a square first use the eastings to go along the corridor until you come to the bottom left-hand corner of the square you want. Write this two-figure number down. Then use the northing to go up the stairs until you find the same corner. Put this two-figure number after your first one and you now have the four-figure grid reference, which looks like this example in diagram D:

D= 6233.

D= 62 33

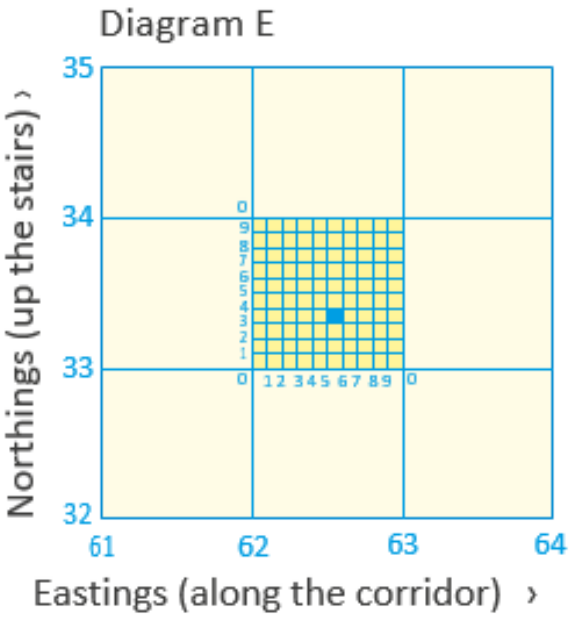


SIX-FIGURE GRID REFERENCES

If you want to pinpoint an exact place on a map, such as your own house, you will need to use a six-figure grid reference. First find the four-figure grid reference for the square and write it down with a space after each set of numbers, like this: 62_ 33_

Now imagine this square is divided up into 100 tiny squares with 10 squares along each side. Still remembering to go along the corridor and up the stairs, work out the extra numbers you need and put them into your four figure grid reference like this in diagram E:

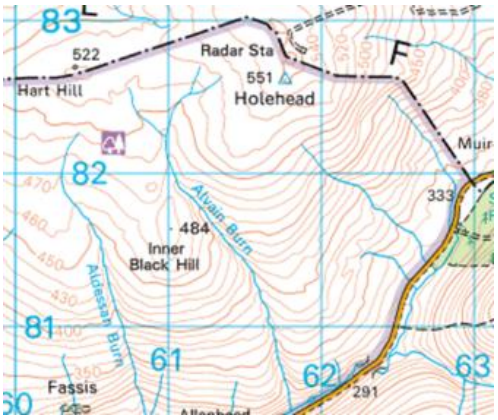
E= 625 333.



***Always remember: along the corridor,THEN up the stairs**

On this map we can find the 4 Figure Grid reference for the Grid with a hill top called Holehead.

- **4 Figure= 6182**



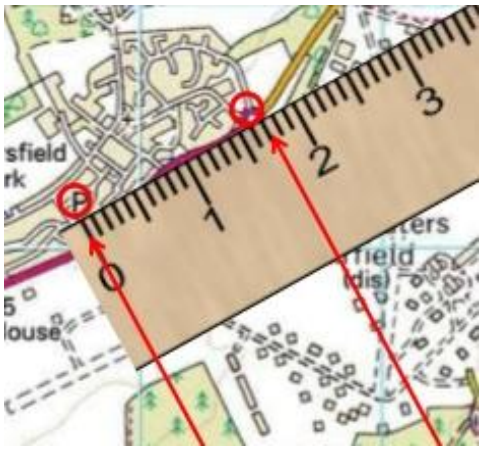
We can take a 6 Figure Grid Reference for the actual hilltop which has a spot height of 551 metres above sea level.

- Holehead **6 Figure Grid= 618 826**

MEASURING DISTANCE ON A MAP

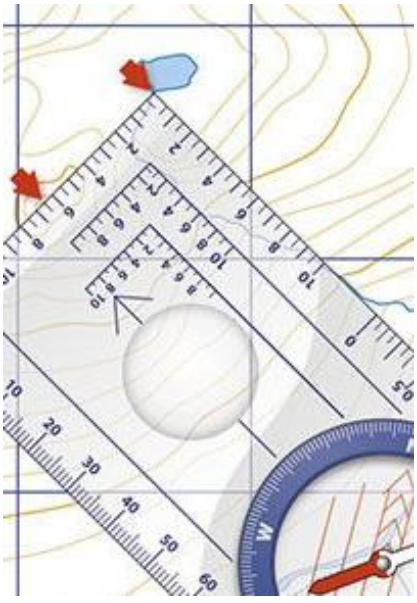
It is always important to know how far you have to travel and how long it is going to take you. By measuring a distance on your map, you can work out how far that is in reality. You can measure this distance either in a straight line (as the crow flies) or following a winding route such as a country lane. To get this information from a map is very easy.

If measuring a straight line:



You could use a Ruler to measure in Centimetres.

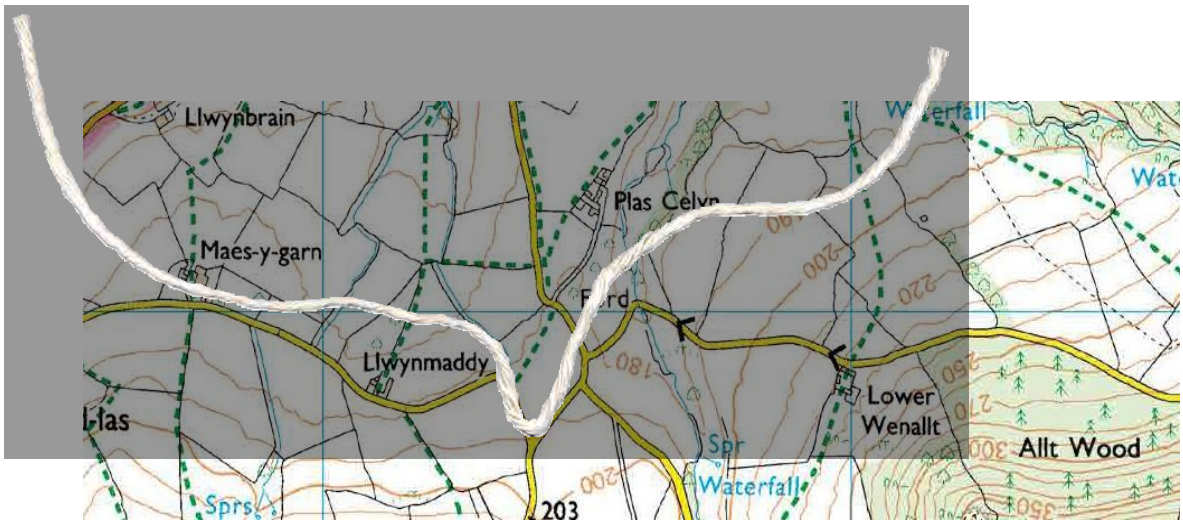
Or the measurements on the edge of the Compass:



Its very seldom that your route will take you in a straight line, therefore we need a method to measure the Distance of our Route when going around a track etc with bends.

Measuring around bends:

You can measure between two points by using a piece of thin string. If you are measuring the distance in a straight line, then simply stretch the string between the two points. If you are following a road or track that's not straight, bend the string to follow the exact shape until you reach the second point.

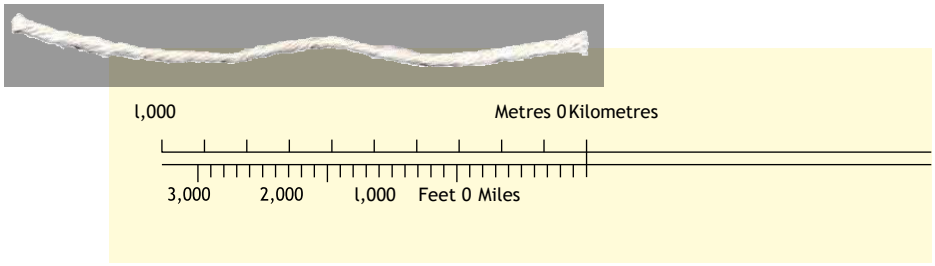


Measuring distance using string

Now that you have a distance in centimetres marked on your string you can find out the real distance. You can do this in a couple of ways:

By eye

Place string against the scale bar on the map. This is usually at the foot of the map sheet.



By measuring

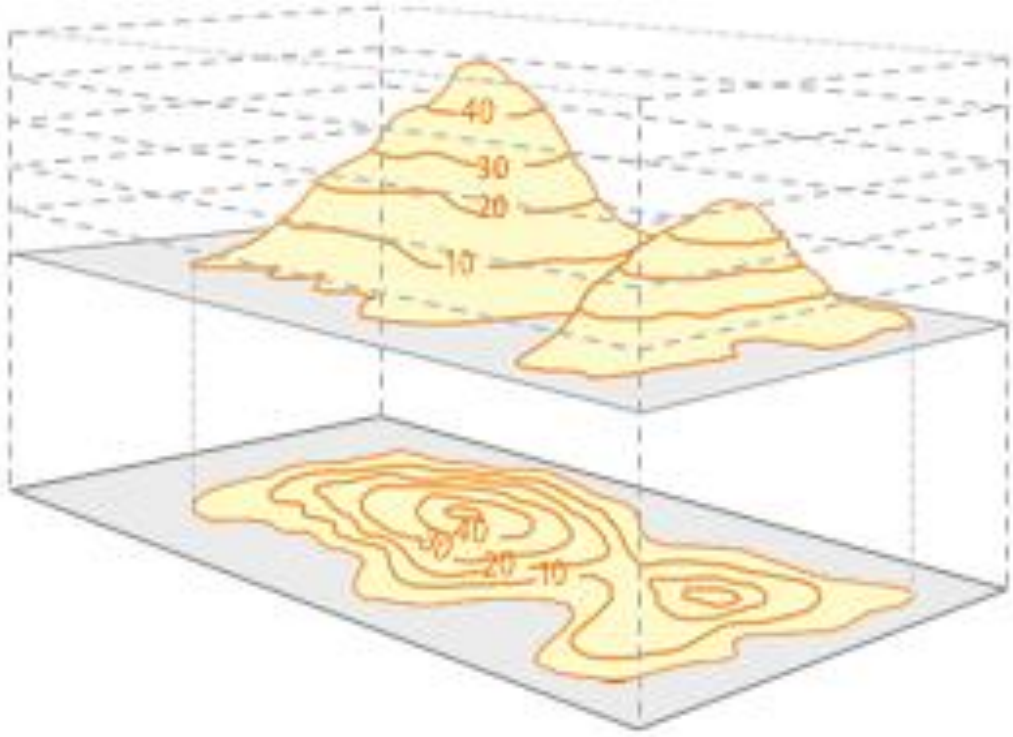
Measure your distance on your string with a ruler. Suppose your string is 10cms long. On a 1:25 000 map 4cm = 1km, so the answer is 2.5km.

(Most people walk at 3km per hour, so it will take 20 minutes to walk in a straight line across a 1km grid square).

***Remember that the grid lines on a map are 1km apart. A quick way of estimating distance is to count each square you cross in a straight line. If going diagonally the distance across the grid square is about 1½km.**

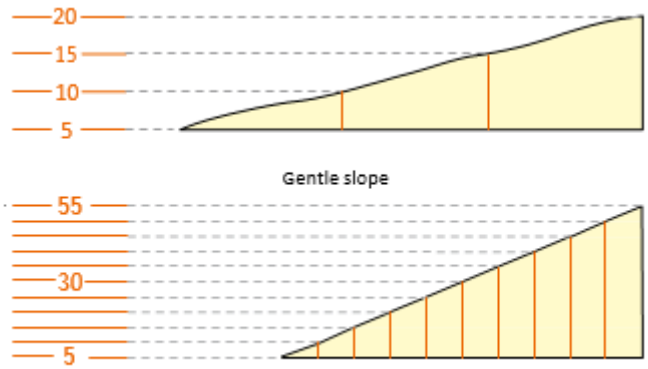
CONTOUR LINES

The ability to understand the shape of the ground from a map is a useful skill to learn, particularly in mountainous landscapes. The height and shape of the ground is shown on 1:50 000 scale maps by brown contour lines. A contour is a line drawn on a map that joins points of equal height above sea level. For 1:50 000 scale maps the interval between contours is usually 10 metres in the mountains, although some maps are 5 metres or 15 metres.



The above diagram shows the link between the shape of a hill and the contours representing it on a map. Another way of thinking about contour lines is as a tide mark left by the sea as the tide goes out, leaving a line every 10 metres.

Remember contour numbering reads up hill – in other words the top of the number is uphill and the bottom is downhill. Also remember the closer contour lines are together, the steeper the slope. The examples below illustrate this:



Gentle slope

Steep slope