



## Using a map and compass

### Grid references

British grid references are normally given as a combination of two letters and six or eight numbers, e.g. SS 818 351 (Brightworthy Barrows) or SS 8165 3612 (Landacre Bridge). The letters refer to the large grid square, which for Exmoor and the Quantocks will either be SS (roughly to the west of Dunster) or ST (to the east). The first set of figures are eastings, and give the position's location in a west to east direction. On large-scale maps the first two of these are usually shown in the top and bottom margins. The third figure is the number of tenths eastwards from the first two figures, so to locate SS 892 ..., find 89 in the margin and measure two-tenths eastwards (to the right). In an eight-figure reference, the fourth figure is the number of hundredths. The second set of figures are northings, shown in the left and right margins. The same principle applies, so the third figure gives the number of tenths northwards (towards the top of the page) from the figures in the margin.

- ▶ What is the grid reference for the stone circle on Withypool Hill?

### Magnetic north v. grid north

'North' as shown on a walking map is grid north. This is different from both true north (which can be ignored), and magnetic north as shown on a compass. Ordnance Survey maps indicate the difference between grid north and magnetic north, as well as how much it is expected to change annually. For instance, sheet OL9 Exmoor states that in the centre of the east sheet (roughly Wheddon Cross) magnetic north is  $0^{\circ}48'$  west of grid north in July 2015, changing by  $11'$  eastwards annually. In 2019 this gives  $0^{\circ}48'$  minus  $11 \times 4 = 0^{\circ}4'$  west, so negligible. A more accurate figure can be obtained from the British Geological Survey, [www.geomag.bgs.ac.uk/data\\_service/models\\_compass/gma\\_calc.html](http://www.geomag.bgs.ac.uk/data_service/models_compass/gma_calc.html). This gives  $0^{\circ}1'$  east for Brightworthy Barrows, again negligible (on foot it is very difficult to navigate to  $1^{\circ}$ , let alone  $1'$  i.e.  $1/60$  of a degree!). For the first time in 350 years,

magnetic north is now moving east of grid north in SW England. **But for all practical purposes you can ignore the difference for the next few years in this part of the country.**

### Setting a bearing from the map

This assumes that you know both your starting-point, and where you are aiming for on the map. Place the map on a flat surface, and line the base plate of the compass up with a line from your starting-point to your destination. Now turn the compass ring so that it lines up with the map grid, i.e. north is pointing to the top of the map. (Ignore the compass needle at this stage). Read off the direction that you need to walk in, e.g. a direct line from Landacre Gate to Brightworthy Barrows should read  $106^{\circ}$ . (As noted above, there's no need at present to compensate for the difference between grid and magnetic north).

- ▶ What is the bearing from the tumulus on Withypool Hill direct to Portford Bridge?

### Following a bearing on the ground

Taking the compass that you have set up in the step above, turn it so that the needle points to north on the compass ring. (Each time you use the compass, check that north points where you expect it to - compass needles can become remagnetised and point south). Hold it away from anything potentially magnetic such as a mobile phone, GPS or watch. Keeping the compass ring lined up with the needle, follow the direction on the back plate - so from Landacre Gate, the needle will be pointing to your left. If possible, find a feature in the distance that is directly where your bearing is pointing.

On the ground it can be difficult to follow a bearing exactly due to the landscape - for instance crossing Dillacombe is easier by detouring to the south. Where compass navigation is critical you will need to divide the route up into a series of bearings, or identify a point on the far side of the obstruction to return to, but it may be good enough to estimate how far you have deviated from your direct course. Don't ignore other means of navigation, for instance although you won't be able to see the trig point on Brightworthy Barrows until you are close to it, it is the highest point in the area so keep heading upwards!

### Finding your position

A compass can also be used to work out your position, if you can see features in the distance that you can identify on the map. Ideally it needs three points for accuracy (triangulation or 'three-point fix'), but two points approximately at right-angles to each other will give a rough position, and even one can be useful if you already have some information about where you are.

Point the arrow on the compass base plate at the feature you are using, and turn the ring to line up with the compass needle, making sure the (base plate) arrow is still pointing at the feature. Now place the compass on the map so that the north arrow on the ring is in line with the map grid, and the edge of the base plate on the feature that you can see. Draw a line back from the feature in the direction you are viewing from. Repeat this procedure for the next feature (it helps if this is at an approximate right angle from the first one; a second feature at  $180^{\circ}$  to the first one won't give you much additional information). Repeat again with a third feature, if possible. Your position is where the lines cross (if your lines give you a triangle, your most likely position is in the centre).

- ▶ Kitridge bears  $335^{\circ}$ , Brightworthy Barrows  $285^{\circ}$ , and the centre of Tudball's Splats  $232^{\circ}$ . Where am I?

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