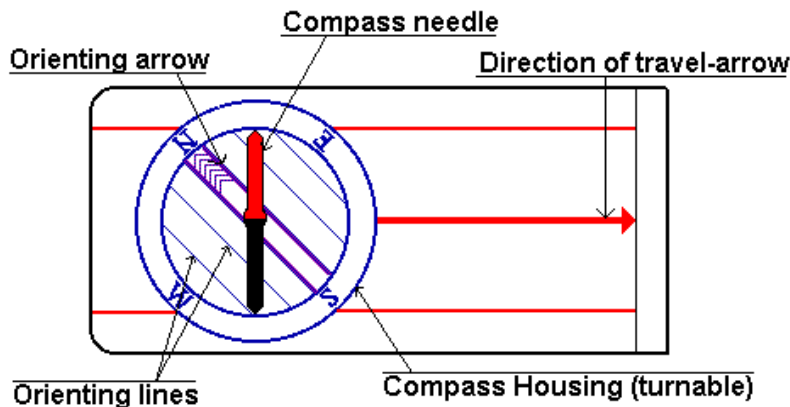


HOW TO USE A COMPASS

Parts of an Orienteering Compass



The most important part of the compass is the compass needle and the most important thing to know is that when the compass is held flat so that the needle is free to spin on its pivot, the red end will always point north.

Points on a compass

The compass is marked in degrees ($^{\circ}$), going clockwise from 0° to 360° . The four major points of the compass are marked - North (0°), East (90°), South (180°) and West (270°). Intermediate bearings, such as SE (south-east), are usually not marked but can be deduced from their name. So

SE is mid-way between south and east, or bearing 135° .

Using a compass to set a bearing

Let's use as an example that you want to go northwest. Northwest is mid-way between north and west, or a bearing of 315° . Rotate the compass housing so that northwest aligns with the *direction of travel-arrow*, as shown.

Hold the compass in the palm of your hand. You will have to hold it quite flat, so that the compass needle can turn. Now turn the compass housing until the compass needle is aligned with the lines inside the compass housing, i.e. it covers the orienting arrow.

Hint: It is a good idea to hold the compass in front of you at, say, waist height. Make sure that when you rotate you rotate all of your body and your compass as a fixed item. Rotating only the compass or only some of your body is likely to create errors in your compass work.

It is *extremely* important that the red, north part of the compass needle points at north in the compass housing. If south points at north, you are heading off in exactly the opposite direction

A second problem might be local magnetic attractions. If you are near iron it might disturb the arrow. Even a staple in your map might be a problem.

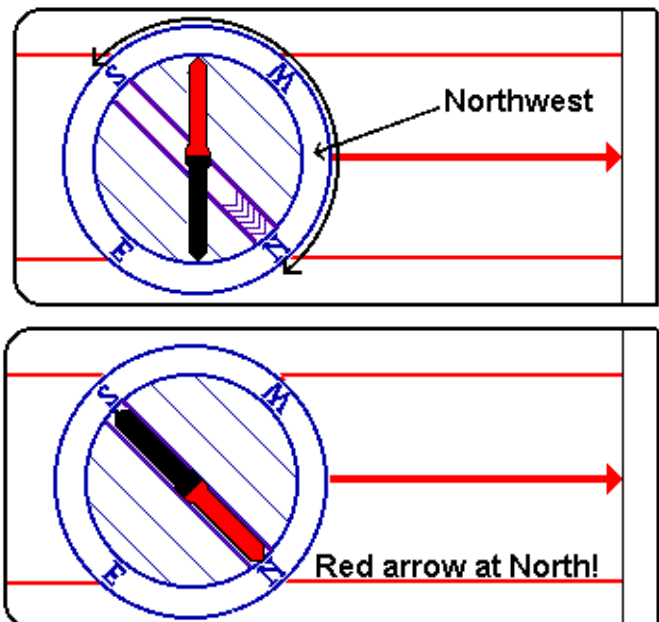
Moving on a bearing.

Now that you have determined your necessary bearing, you need to make sure you maintain an accurate bearing. First, you should find a suitable target in the terrain (e.g., a tree, boulder or a bush) towards which the direction arrows point. Walk towards the chosen object without looking at your compass. When you reach your target, find a new object that is aligned with your bearing, and repeat the process.

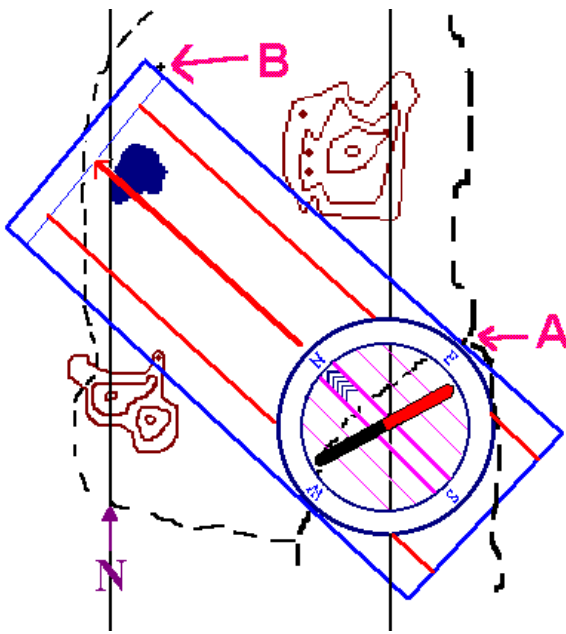
Hint: The sun is roughly in the North, so if you think you are heading south and have the sun in your face, it should ring a bell.

Using the compass in interaction with a map

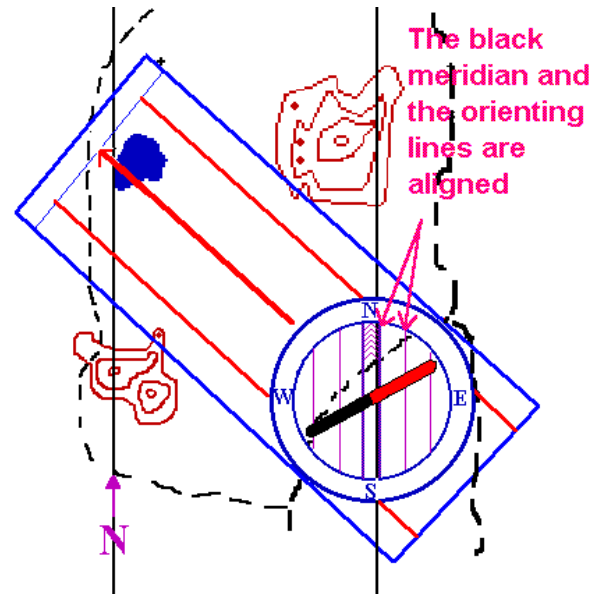
As an example, you want to go from Point A to Point B. Place the compass flat on the map so that the edge (either side) lines up with both points. You may have to improvise if the points are further apart than the length of the edge of the compass.



Hint: Time to **be careful** again! The direction arrow, must point *from A to B*, otherwise you will walk off in the exact opposite direction of what you want.



Keep the compass steady on the map. You are now going to align the *orienting lines* and the *orienting arrow* with the meridian lines of the map, i.e. the lines on the map going north. While you have the edge of the compass carefully aligned from A to B, turn the *compass housing* so that the orienting lines in the compass housing are aligned with the meridian lines on the map. During this process, you don't mind what happens to the compass needle.



Hint: There are a number of serious mistakes that can be made here. (a) **Be absolutely certain** that you know where north is on the map, and be sure that the orienting arrow is pointing towards the north on the map. Normally, north will be up on the map. The possible mistake is to let the orienting arrow point towards the south on the map. (b) Keep an eye on the edge of the compass. Make sure it remains aligned along the line from A to B.

When you are sure you have the compass housing right, you may take the compass away from the map. Now, you can read the bearing off the housing, from where the housing meets the direction arrow and you can move on that bearing, as outlined above.

Hint: Be sure that the housing doesn't turn before you reach your target.

Magnetic Declination

It is important to understand the difference between magnetic and geographic poles. The compass points towards the *magnetic* northpole, the map points towards the *geographic* northpole, and they are not the same place. The difference between the two is the Magnetic Declination. The magnetic declination varies from place to place and can vary over time in the same place. It is usually shown on the map.

To be strictly accurate you must adjust your bearing to take magnetic declination into account. Over short distances adjustments are not necessary, but over a distance of 1 km a 9° magnetic declination would create an error of 150 metres.

The magnetic declination must be added or subtracted from your bearing.

A declination to the **east is a positive** declination and one to the **west is a negative**. You **subtract** a positive to get it back to zero, and you **add a negative**. You do the opposite if you are going from bearing to map.

You can determine the declination by map inspection, using the grid azimuth from your location to a know, visible, distant point. The further away, the more accurate it gets. This means you have to know where you are, and be pretty sure about one other feature in the terrain. Sight on that distant point with the compass and note the magnetic azimuth. You do that by turning the compass housing so that it is aligned with the needle. You may now read the number from the housing where it meets the base of the direction of travel-arrow. Compare the two azimuths. The difference is the declination. Update as necessary. You shouldn't need to do this very often, unless you travel in a terrain with lots of mineral deposits.