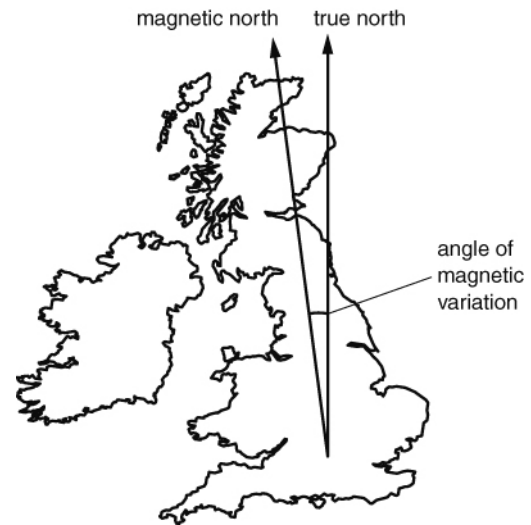
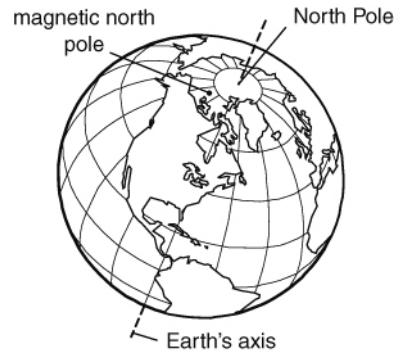


Maps are usually drawn with true north at the top. True north is the direction that points towards the geographic North Pole. However, a compass needle does not point in the same direction as north on the map. It points to the north magnetic pole. We say that the compass points to magnetic north. The angle between magnetic north and true north is called the magnetic variation. The north magnetic pole moves around by about 15 km every year. This changes the magnetic variation in the UK by about 0.2° every year.

Walkers and mountaineers use maps and compasses to help them to find their way in the countryside. Compasses are particularly useful at night or in bad weather when cloud or rain makes it difficult to see very far. You can use the map and compass to work out which direction you need to go, then follow the compass to make sure you are walking in the correct direction. You need to adjust the reading on your compass to allow for magnetic variation.

Orienteering is a sport in which runners have to find their way from point to point as fast as possible. Orienteers use special maps, which are printed with magnetic north (rather than true north) at the top.



- 1 What is the difference between true north and magnetic north?
- 2 Why don't compass needles point to true north?
- 3 What does magnetic variation mean?
- 4 **a** How can using a map and compass help walkers find their way at night?
b What would happen if walkers did not adjust their compass readings to account for magnetic variation?
- 5 **a** What is special about orienteering maps?
b Why do you think orienteering maps are printed this way?



I can...

- explain the difference between true north and magnetic north
- explain how maps and compasses can be used together for navigation.