

# How to find the flag. Navigation techniques for orienteering.



You can probably navigate quite well on a walk with an O.S. map. An orienteering map has much more detail, so navigation should be easier? Yes, if you are at walking speed. But the trick to orienteering, some would say its big attraction, is to navigate at speed. This is not necessarily flat-out, but at a comfortable speed you can maintain for, say, 40 mins. Navigation, even on areas you know well, becomes a different thing. Added to that is the fact that as you become tired and your brain goes into oxygen debt, you begin to make 'silly' mistakes. Mistakes that, when you get back home, you say "Why on earth did I do that?"

*In the diagrams that follow, but not the photos, the straight red line is the one printed on the map. The dashed red line is your route.*

*(v) indicates that there is a video on the web illustrating this technique. Details on p.9*

**Techniques 1 to 5** are ones that all orienteers should know and use.

**Techniques 6, 7 and 8** become relevant on Orange and Light Green courses.

**Techniques 9 to 14** will help you in Short Green upwards.

**Technique 15** is reassuring for anyone on harder courses, and **16 and 17** are mistakes that everyone on the harder courses can make.

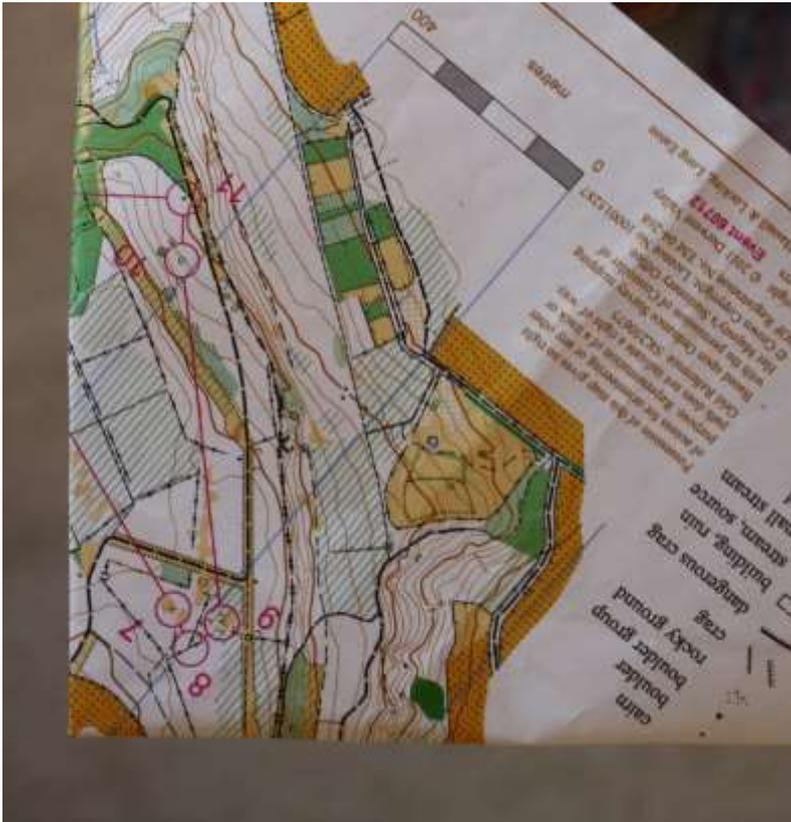
1. **Study the map.** Note particularly the Scale, usually 1:10,000 but you will find others. At 1:10,000, one cm on the map is equivalent to 100m on the ground. The Contour interval is usually 5m. Are there any unusual features on the key? You will sometimes get a chance to look at the map before you start, but even if you don't it is worth spending a minute on this.



- 2.

**2. Fold the map.** Once you have absorbed the map-data above, fold the map so that your

current leg ( only ) is visible plus a bit on either side of the red line. Refold as needed for each leg.



**Fig 2** shows the same map as Fig 1, but folded for leg 9 to 10.

Note printing now 'wrong way up' ( See 3 below )

*You will now see the advisability of carrying the loose (paper) control description sheet in some kind of holder. If you don't, you will be constantly unfolding and refolding the map to see the control descriptions printed there .*

**3. Set the map.**(v) This is what a SatNav does automatically. You aim to hold the map in front of you, so that what appears on the left of the 'red line' on the map will be to your left, and so on. A compass is a great help in setting the map. You will need to re-set the map for each leg, and sometimes during a leg. ( Think of a typical roughly circular course ).

(v) How to set the map, with standard baseplate compass: Hold the compass on the map, with the long edge along your route, and turn the map around until the north lines ( confusingly called "eastings" ) are parallel to the magnetic needle, and the red end of needle points to the north.

With a thumb compass setting the map is much easier and quicker, and your technique will



also include thumbing the map ( see Fig 4 below ).

*Fig 3a Using thumb compass, stage one. Lay the side of the base-plate along the route, but a little to the side of it, in the right direction that you want to go ( i.e. here, 1 to 2 ).*

*Then, keeping map and compass clamped together, turn the whole 'unit', and yourself, until the needle is parallel to the grid lines on the O-map, and the red end points to the north of the map. Ignore any figures and letters on the circular dial, and the red lines on the bottom of the dial.*

*In the photo above, this would involve turning you and the map approx 90 degrees, anti-clockwise. Travel now in the direction of the side of your compass ( orange in the photo ) which is also the direction of the red line on the map.*

- 4. Plan your route.** Before you start running, decide the best way of getting to the control. It will be a combination of 'fastest' and 'safest' ( = easiest navigation ). It will only rarely be along the red line itself. Try to avoid ( darker ) green areas. Maybe use a path or track that is parallel to the red line, where you can run fast, and minimise the chance of getting lost ( but beware over-running when going flat-out! ).



**Fig 4.** Plan the best route, 13 to 14. You're in a shallow re-entrant, in the brambles. Getting out of the brambles is first task ( then you can go faster ). So head

east to the path ( can't overshoot, as there is uncrossable fence east of the path ). Turn left ( NE ) on the path. Follow until path T-junction at corner of the fence. Now you have short stretch in the rough open, and only a compass bearing and pace-counting to help.

5. **'Thumbing' the map.** Put your thumb as near as possible to your current position, and keep updating it. This is to avoid you having a quick look and seeing instead another similar feature, another north-south path for example. But be aware that your thumb may hide a detail that could be important, so look under the thumb from time to time. Spot the difference below!

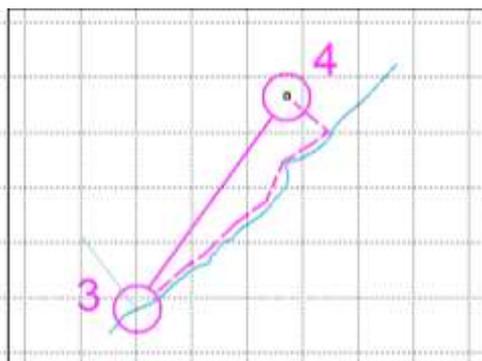


**Fig 5 ( left ), and Fig 6 ( below ).** Note how you move your thumb along the map, from no. 6 to no. 7, as you progress on the ground.



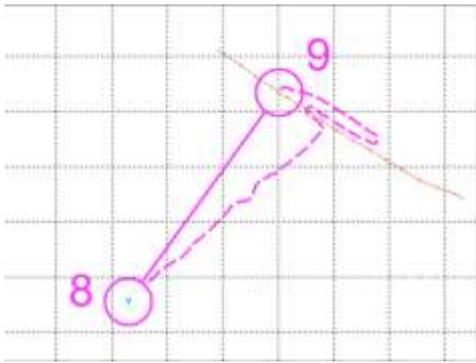
6. **Ticking-off / anticipating** features . As you travel along your planned route, tick off in your head the features on the map as you meet them –a path junction, a ruin on the left, a hill on the right, etc. This will turn into you anticipating them – “next, in about 200m, I’m expecting a small pond on the left”. If the feature doesn’t appear, either the map is wrong, or you are. 99% of the time, I’m afraid, it will be you!

7. **Hand-rails.** A hand-rail is a linear feature that goes to your control ( or close to it ), or is roughly parallel to the red line. Linear features could be paths, hedges, ditches, fences, streams or vegetation boundaries. Either follow the hand-rail, or keep it in sight.



**Fig 7** Using a stream as a handrail between 3 and 4. Note: it is best to have a mapped feature to tell you where to leave the hand-rail, ( the stream in



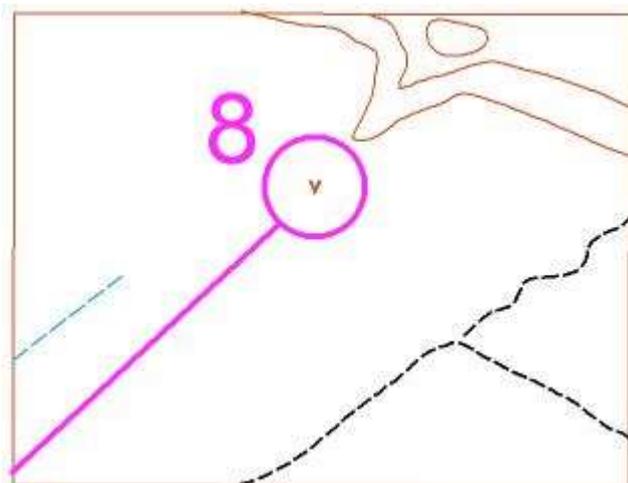


**11. Aiming-off.**(v) If you are running on a compass-bearing towards a control on or near a linear feature roughly at 90 degrees to your angle of approach, it is always a good idea to deliberately aim to one side ( at least 30m to the side ). This way, when you hit the linear feature, you already know which way to turn along it, and you should be able to maintain speed until you see the control. Without this technique, you arrive at the linear feature and don't know which way to turn. You try left for 15m, then turn back and try the opposite direction for 30m, if you still haven't found it, you go back to the original direction, but go a bit further... You can waste a lot of time this way. I know, I have!

**Fig 10**, without this technique.

*You can also use this technique on a mid-leg feature, say, going out of the forest towards a track when you need a path leading off the opposite side of the track. Don't head directly towards the path junction, but head deliberately to one side.*

**12. Attack Points.** (v) For advanced courses, where controls may be placed away from line features, and sometimes away from any features at all, it is a good idea to choose a nearby, easily found, definite feature ( path junction, big contour feature, and so on ) as an 'attack point'. You can run fast to this point, but may have only compass bearing and pace-counting from there on. Slowly is good now, with lots of looking round, as the paces tell you you're near ( they're never exact ).

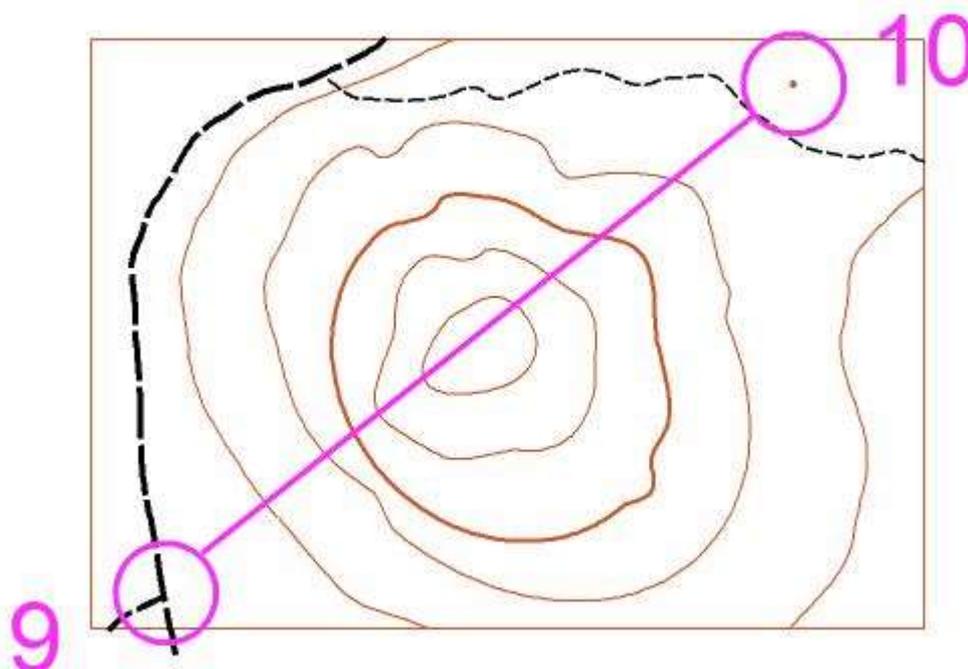


**Fig 11.** Three possible attack points. The path junction, and the ditch end are easy to find, but both are some way from the control. The spur to the north is much closer, so a better attack point, but would take longer to get to ( further along the path , then left on ridge, left down spur ). Your choice!

13. **Pace-counting.** We usually count double paces,( as our distances tend to be large-ish ), so each time your, say, left foot hits the ground. Try running at normal orienteering speed round a running track - get warmed up first - counting your double paces. Then do the maths. How many of your dps to 100m? Even more useful is to learn how many of your dps to one marked 'division' on the baseplate of your compass. ( One division on my compass base-plate is 40 of my dps on a 1:10,000 map ) Now you have a good measure to estimate when to look for a smaller path off a big one, or, with a control in the middle of nowhere, when you should start looking for the flag.

*Remember though that your pace length will be longer downhill, but shorter uphill, through thicker vegetation, and as you get tired.*

14. **Route-choice.** (v) Where possible, the planner will try to give you one or more long legs, sometimes across most of the map. This is to give you a route choice, and deserves extra thought. There is often a long path/track run on one side of the red line, sometimes one on each side, or you can go 'cross-country', along the red line as closely as you are able. Count any contours you have to cross, uphill, on each route. Look at the vegetation colours on the direct route. How much time might you lose navigating the red line? Are you navigating well today?



**Fig 12.** A route-choice leg

A favourite route choice is over or round: a largish hill with few paths on the direct route vs a much longer ( twice as long sometimes ) around the hill on paths/tracks.

Look at Fig. 12. The choice is up and over the hill ( 25m high ), with no paths. Or round by the track then path - longer, but flat and easy to navigate. A third choice, round the hill to the east, not many would choose – no path, and relatively uncertain navigation, especially at the end. Which would you choose? Would your choice be different if the hill was 10m higher? If

the steep side of the hill was on the way down? If the path route was 50% longer? If there was an indistinct path going over the hill?

- 15. Relocation.** We hope you won't need to do this often! If you decide you really don't know where you are, stop. Think. Can you get back to the last place you were certain you knew where you were? Might be the last control you visited. If you can, go back, try to work out what you've done wrong, try again. If you can't get to any certain point, you will need to *relocate*.

This involves going out of the woods in whichever direction is likeliest to get you to a place of certainty, but this can be a place you have not visited before. Say the map shows the only large stream on the map along one edge of the map. A compass bearing that would take you there from any part of the map will get you there and you may be able to find a feature, or a combination of features, which is marked on the map. In this example, it might be a tributary, a marsh, or a bridge that will then give you certainty. Or it may be that downhill in any direction will bring you to a path going round the hill. Relocation will cost you some time, but it is worth doing it well. You don't want to have to relocate twice!

- 16 Parallel error.** Occasionally on a map you will find a feature or set of features duplicated nearby. If they also have the same orientation, it can be very difficult to know you have made an error. Once this is recognised, it is relatively easy to correct. If the hedge, say, doesn't have a flag at the north end, then the hedge 40m to the west will do.

*Not often met in the East Midlands, but a potential problem at Cannock Chase with re-entrants and spurs, and in other complex-contoured areas in the Lake District or sand dune areas.*

- 17 Running off the map.** Not a navigation technique! But an error that can happen. Applies in large wooded areas or public open spaces, where only part is on 'today's' map.

It is possible, through lack of concentration, to go so far along a track ( esp down a slope ) that you are no longer on the area covered by the map! It usually happens when you are trying to go fast.

Can you go back the way you've come? Otherwise, the techniques in this booklet don't really help. If you can use a compass bearing to prove that you are off the map, you are part-way to safety. For example, if the map shows a road along the north side of the whole map, you could choose a north bearing. When you have covered the maximum possible north-south distance shown by your map, and found no road, you know what must have happened. Getting back onto your map may be a case of trial and error.

(v) **Get up to Speed videos**

These have been made by the SLOW club, but are available online for everyone. Most people think they are very good. There are currently nine titles:

<https://slow.org.uk/british-orienteeing/get-up-to-speed-videos/>

Beginners ( Think fast, Run hard, Go Orienteering )

Using the compass

Setting the map

Attack points

Aiming off

Large Contour features

Route Choice

Intricate contours

Simplification