Activity Pack 1: Introduction to Navigation

How to set a bearing

In case you missed our instructions for how to set or find a bearing in the video, or if you just want a reminder, here's how to do it.

Topics covered: angles, geometry, shapes, map reading, co-ordinates

Setting a bearing:

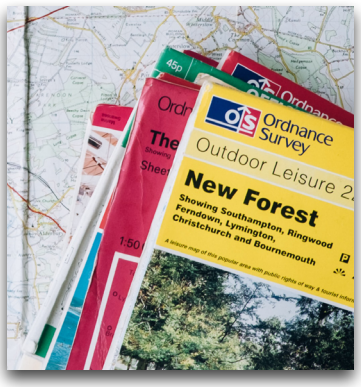
When you know which compass direction you want to go in, but you're not sure which way that is, e.g. I want to go east, but I'm not sure which direction east is in.

1. Begin by holding the compass flat in your hand so the needle is free to spin.
2. Wait for it to settle in one direction; this will be north.
3. Rotate the top ring so that the letter N lines up with the red end of the needle.
4. Now you can find the direction you want to go on the top ring (e.g. east) and rotate the back plate so that the big arrow is pointing that way.
5. You can follow this arrow now.

Tip: To make sure you're still going the right way, make sure the N on the top plate and the needle align. The arrow will still point the way you need to go

Finding a bearing:

When you know which direction something is, but you don't know if it's N/E/S/W or its number bearing, e.g. you can see the peak of a hill in the distance but you're not sure what bearing it's on.



1. Begin by holding the compass flat in your hand so the needle is free to spin.
2. Wait for it to settle in one direction; this will be north.
3. Point the back plate with the arrow on it at the object you want a bearing for.
4. Rotate the top ring so that the letter N lines up with the red end of the needle.
5. Where the arrow on the back plate goes under the top ring, it will cross a letter (N, S, E, W) or a number (e.g. 45°)
6. This is the bearing that the object is on relative to your position.

This could be useful in a number of ways, particularly if you are stranded and don't know exactly where you are. For example, you could say to the emergency services "I can see from my map that St Mary's Tower is 37° NE of me" and this would help narrow down where they need to look for you!

Indoor Activities

Co-ordinates treasure hunt

Find the following co-ordinates on map 1. What is located there? Fill in the sheet!

Co-ordinates:

1. 264, 686 _____
2. 283, 725 _____
3. 213, 739 _____
4. 180, 700 _____
5. 251, 735 _____
6. 176, 741 _____
7. 213, 708 _____
8. 305, 745 _____
9. 206, 738 _____
10. 162, 702 _____

You will need:

- Print out of map 1
- Ruler

Remember, co-ordinates are read as 'along the corridor and up the stairs' (across and then up)

Map Puzzle

Plot the starting point, then follow the bearing and distance instructions and see what you draw with them*.

Don't forget to align your map with North, otherwise your bearings won't be right!

Make sure you're converting km into mm using the scale. To do this:

- Measure with a ruler the length, in mm, of one side of a grid square.
- To go from km into mm, multiply the length of a grid square in mm by the number of km.

e.g. 1 square = 38mm, so 1.25km will measure 47.5mm on this map (38 x 1.25 = 47.5)

Easier version:

Starting point 508, 573

Compass Direction	Bearing	Distance (km)
E	90°	1.25
S	180°	0.7
E	90°	0.7
SW	225°	1.6
W	270°	2.1
NW	315°	1.2
E	90°	1.8
N	0°	0.6

*Hint for shapes: modes of transport

Harder version:
Starting point 571, 571

Bearing	Distance (km)
135°	0.35
180°	1.07
300°	0.46
180°	0.39
150°	0.61
296°	0.54
198°	0.57
338°	0.57
240°	0.43
26°	0.57
0°	0.35
230°	0.61
0°	1.21
45°	0.61
0°	1.71
40°	0.79
145°	0.79
180°	1.82

For Educators:
This map puzzle activity can be done on any map! Just select a starting co-ordinate that works for the map you have!

Outdoor Activities

For Educators:
Please test out these instructions before participants set off to check for hazards and that you have enough space!

Closed course

Give directions using a compass direction and a distance
e.g. South 15 steps, or 130deg 2m

The direction sheet should lead you back to your starting point.

It's similar to the map puzzle above, except you get to follow the instructions yourself!

Equipment needed:

- Compass
- Cones/bean bags as markers
- Tape measure (optional)

Some example instructions:

Easier:
1. Take 5 steps South.
2. Take 10 steps East.
3. Take 20 steps North.
4. Take 15 steps West.
5. Take 15 steps South.
6. Take 5 steps East.

Harder:
1. Take a bearing of 180 degrees, then take 20 steps in that direction.
2. Take a bearing of 45 degrees, then take 28 steps in that direction.
3. Take a bearing of 315 degrees, then take 28 steps in that direction.
4. Take a bearing of 225 degrees, then take 28 steps in that direction.
5. Take a bearing of 90 degrees, then take 28 steps in that direction.

Trail swap game

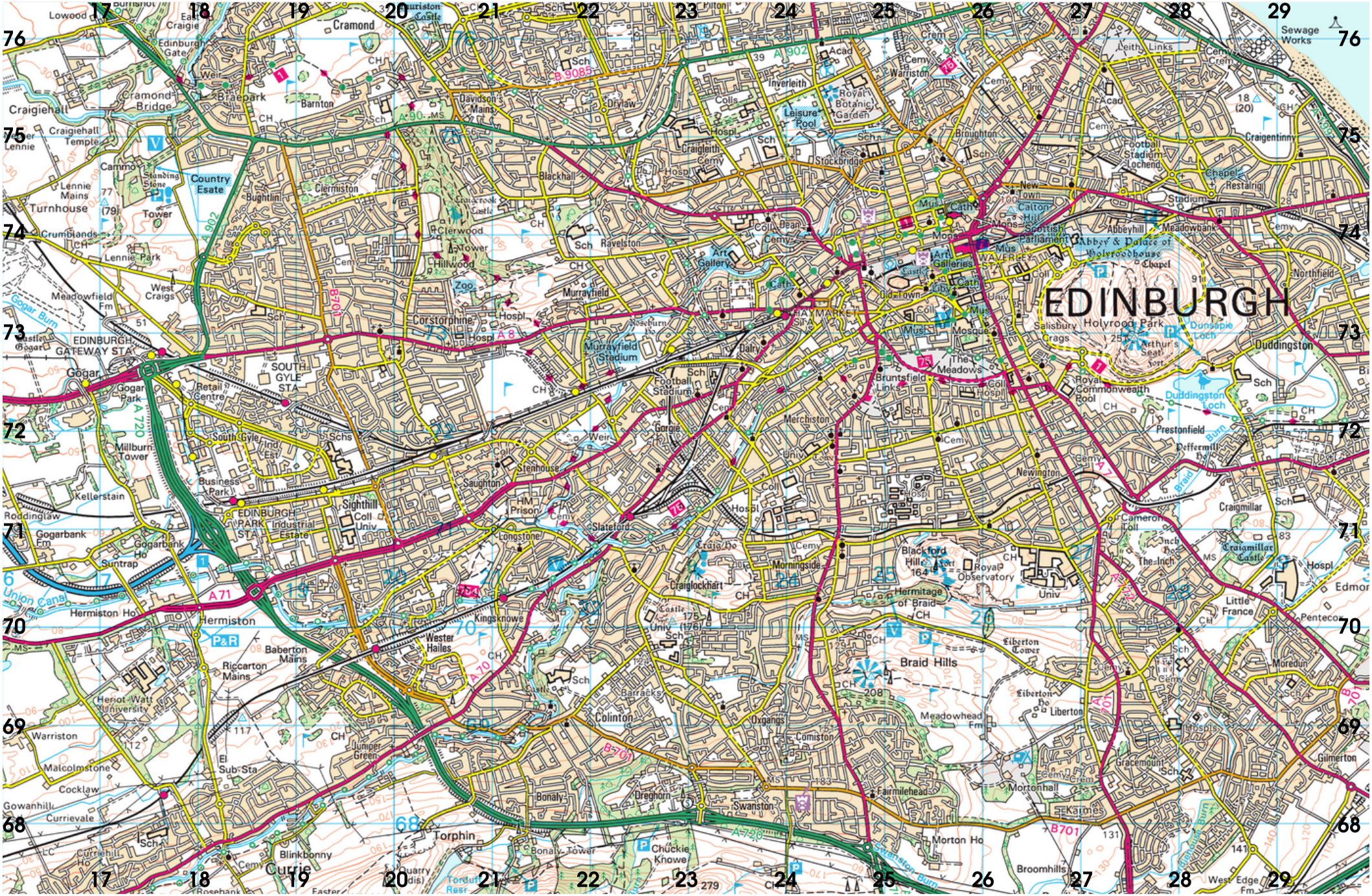
Equipment needed:
- Compass
- Cones/bean bags/markers
- Tape measure (optional)

Instructions:
1. Split into teams of 2-3.
2. Start off far apart from other groups (you want the routes to be a secret until you hand them over).
3. Place a starting marker.
4. Teams write a series of instructions in either N/E/S/W or degree direction, and either steps or distances in metres.
5. Place a second marker where you end up.
6. Now swap instructions between teams and test out each others' instructions to see how accurate and easy to follow they are!

Additional Resources:

https://www.ordnancesurvey.co.uk/education/teacher-resources
https://getoutside.ordnancesurvey.co.uk/
https://www.mathswithmum.com/find-coordinates-point-maths/
https://www.bbc.co.uk/bitesize/topics/z27gf82/articles/zdvjjhv
https://www.ordnancesurvey.co.uk/mapzone/

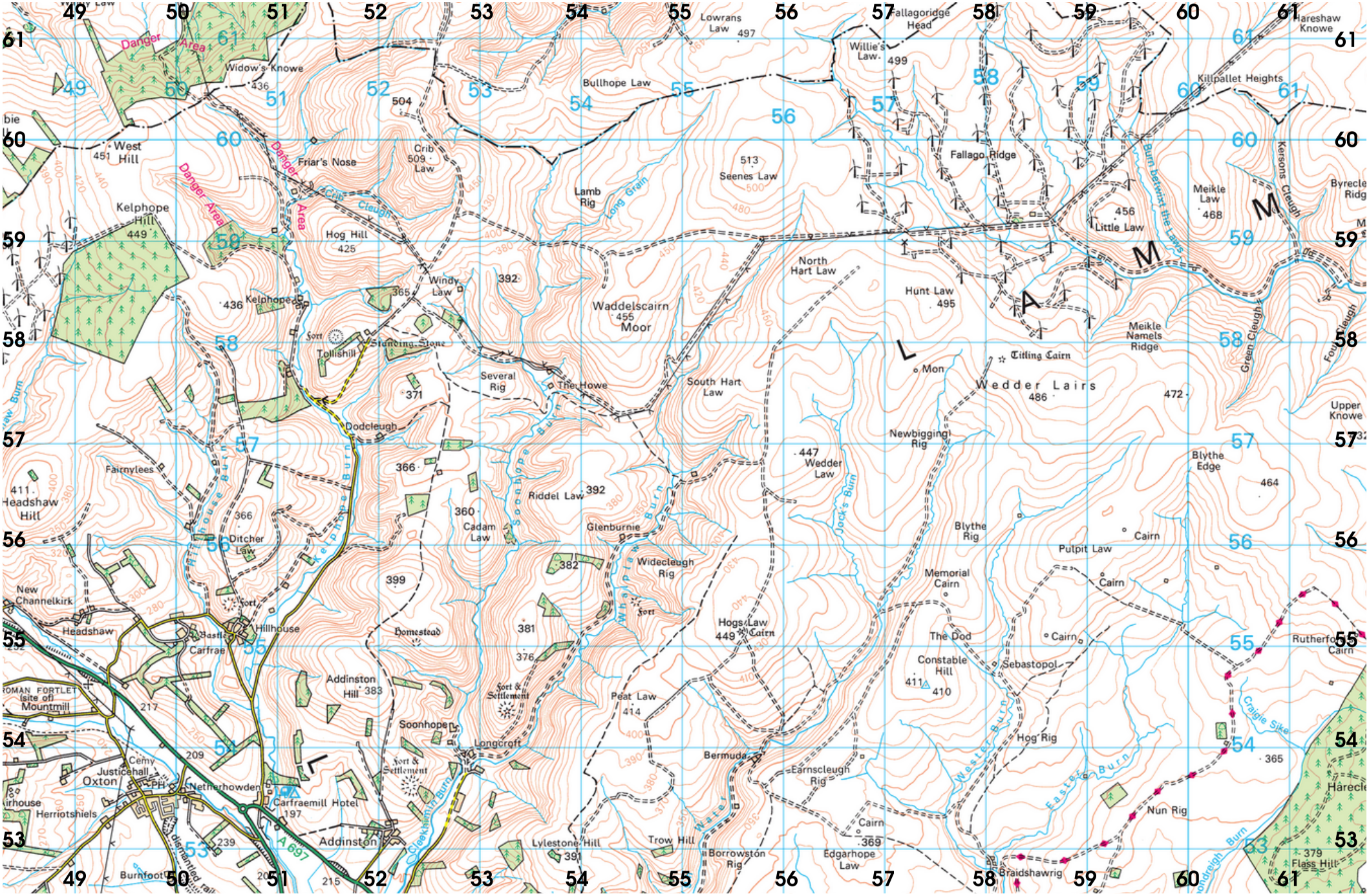
Map 1



1 square = 1km

Map from Ordnance Survey

Map 2



1 square = 1km

Map from Ordnance Survey