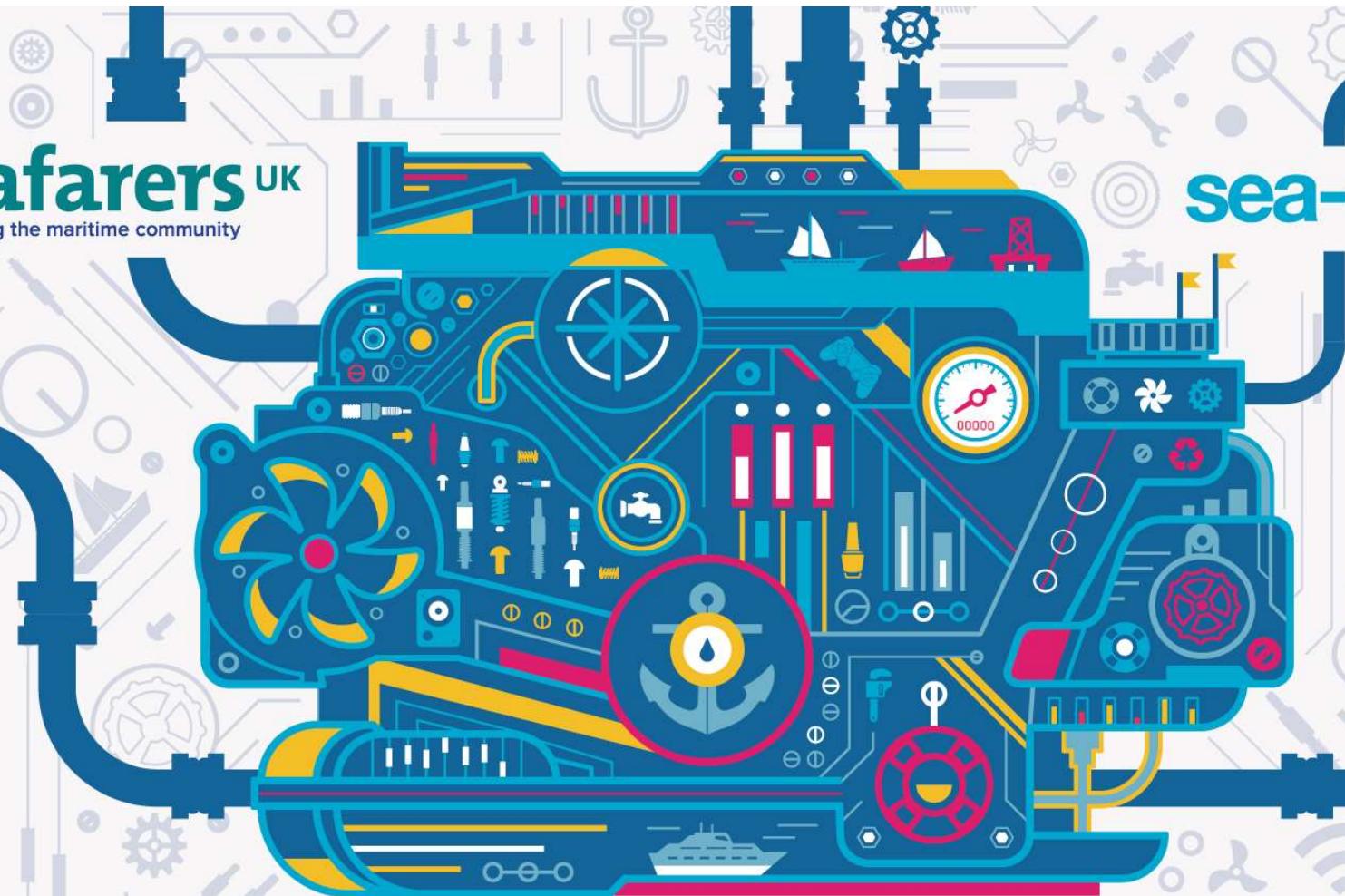




[sea-cadets.org](http://sea-cadets.org)



## STEM SKILL: MARVELLOUS MAPS

# Marvellous Maps & The Skills You'll Need

## Introduction:

*Why do we need paper maps when we have SAT-nav. and smartphones?*

Although these devices are really efficient to get from A to B, they can only give you so much information. When looking on these devices, you only have a small screen to see the map, so it's much harder to get an overview of what a place is actually like in terms of its geographical characteristic.

Ordnance Survey maps, or OS maps, are a very common in the United Kingdom. They are recognisable from their symbols, shapes and colours to show all the roads, buildings, rivers and other features of a landscape; including orange contour lines to show height/depth.

Here are a number of activities that will give you the skills needed to navigate around OS maps.

## Equipment (overall):

- Pencil and ruler
- Compass
- Any OS map (preferably paper)
- Any paper (can be scrap)
- Yarn / string



# Beyond the Map

## Activity 1 – Get to know OS map

1) Look at the boxes to the right.

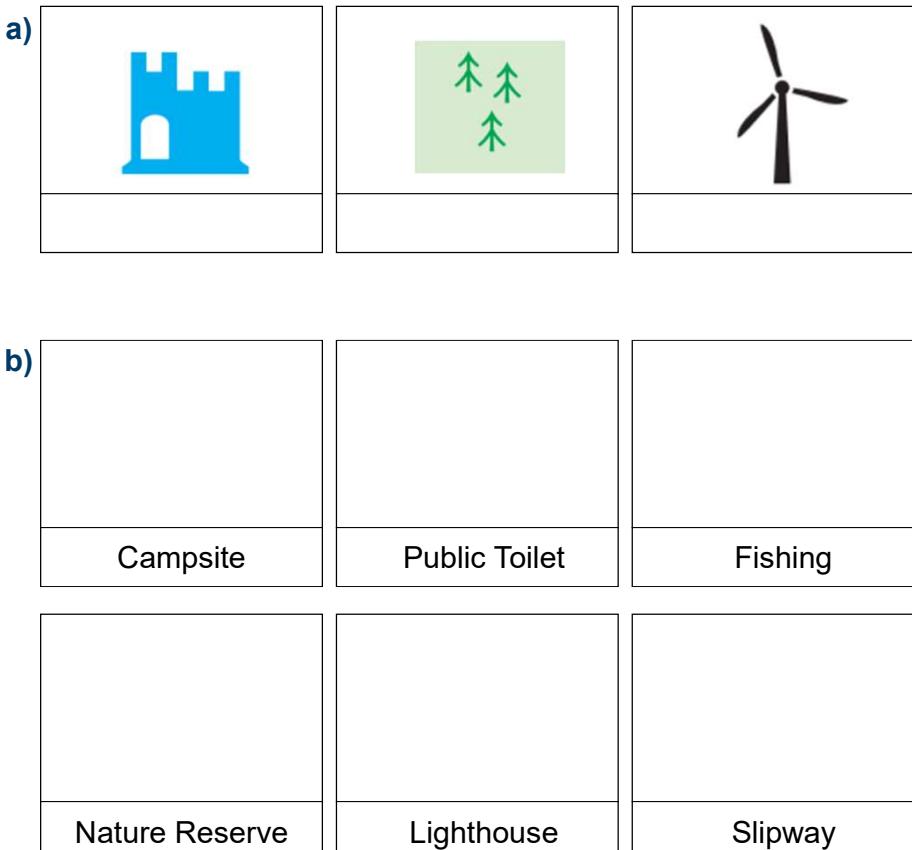
- Write what you think the symbols represent.
- Draw pictures in the blank boxes of how you think the symbols may appear on the OS map.

*Check your answers – using the OS map key in the inner flaps.*

2) Open up an OS map and spend some time looking at the whole map.

- Choose a small area to focus your attention (1-4 grid squares), using the key list 10 features found in that location. *Human (man-made) or physical (natural).*

**Challenge)** Choose 1 grid square, describe this like it is a person. *For example, if there is a lake they could be into water sports, or if there is a hospital they like to look after other etc.*



# Locating things on maps!

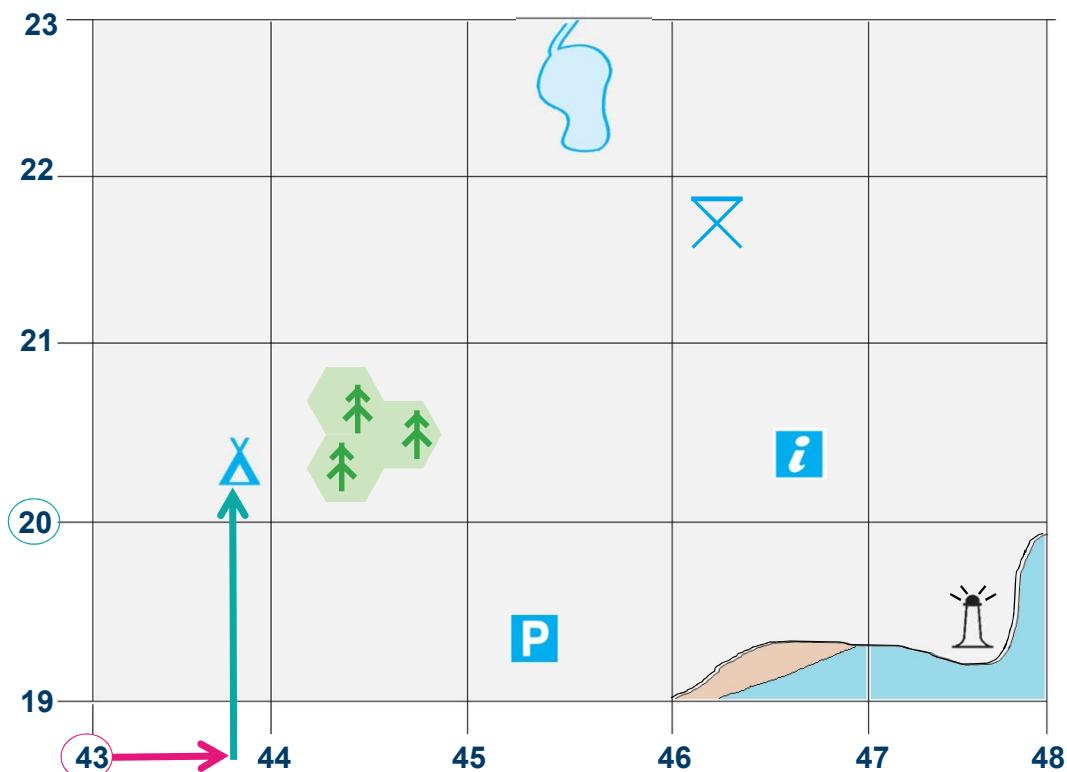
## Activity 2 – Four Figure Grid References:

OS maps have light blue lines that make a grid; the vertical lines (up) are known as Grid North and each grid square is 2cm apart that represents 1km on the ground.

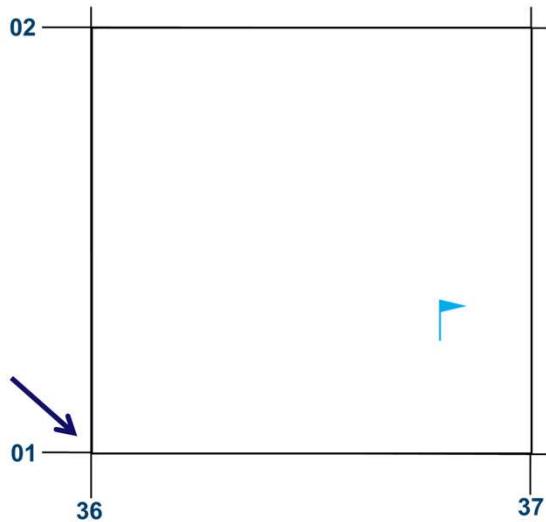
We read and write grid reference from the horizontal line (called ‘eastings’) then the vertical line (called ‘nothings’), along the corridor, up the stairs – watch the video for an example.

- 1) Find the 4 figure grid reference for the following locations, *the campsite has been done as an example*:

- |                  |                       |
|------------------|-----------------------|
| a) Campsite 4320 | b) Coniferous Wood    |
| c) Lighthouse    | d) Information Centre |
| e) Sand          | f) Parking            |
| g) Picnic Area   | h) Lake               |

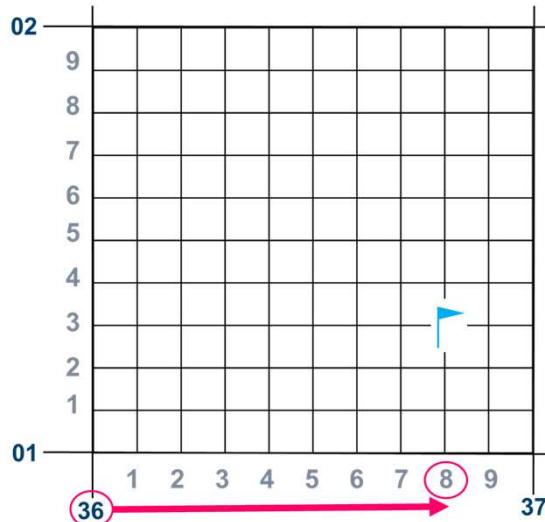


### Activity 3 – 6 Figure Grid References:



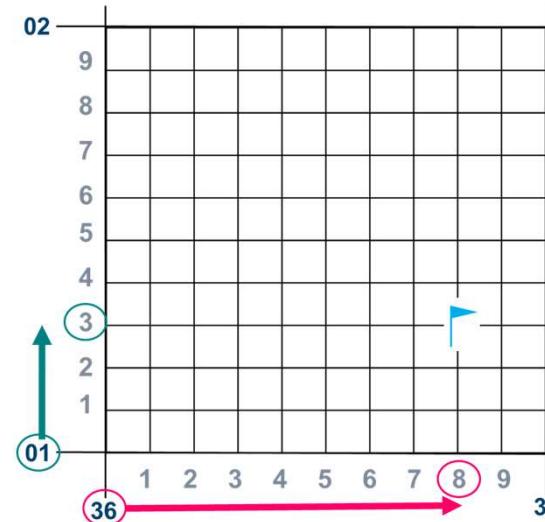
1. Start with the 4-figure grid reference and write them down leaving a gap for a number after each.

*For the golf course the 4-figure grid square is 36\_01\_.*



2. Imagine the grid square is split into one hundred smaller squares (10x10). Count along the corridor to get your third number.

*So far the golf course is 36801\_.*



3. For the 6<sup>th</sup> and final number, count up the stairs.

*Therefore the golf course is 368013*

### Activity 3 – 6 Figure Grid References:

1) Find the 6 figure grid reference for the following locations:

a) Nature Reserve 365016

b) Telephone \_\_\_\_\_

c) Coniferous Wood \_\_\_\_\_

d) View Point \_\_\_\_\_

e) Campsite \_\_\_\_\_

2) Draw these symbols in their 6 figure grid reference location:

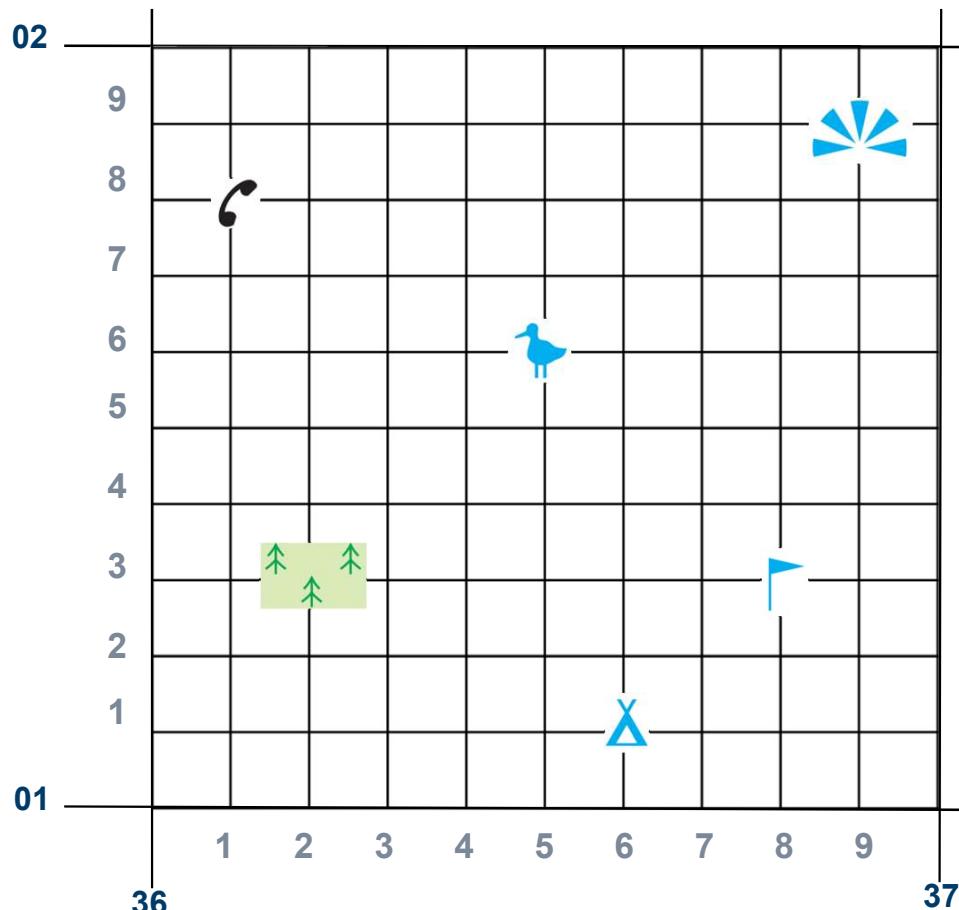
a) 368013 Golf Course

b) 364014 Picnic site

c) 367012 Lake

d) 363017 Coniferous Wood

e) 360019 Walks / trails



# Navigating around maps!

## Activity 4 – Using Your Compass

To navigate use a compass to orientate your map to match the compass . Make your own at [www.sea-cadets.org/be-an-engineer](http://www.sea-cadets.org/be-an-engineer).

- 1) Put your compass in the middle of your OS map, having your north arrow pointing towards the top inline with the northings (vertical blue lines).

Follow the sequence below and see where your journey takes you...

**Start** in a grid box at the top of your compass.

- |   |                                 |
|---|---------------------------------|
| i) Go north 7km ( <i>remember 1 km is 1 grid square</i> ) |                                 |
| ii) East for 4 km   | iii) South 1 km                 |
| iv) East 5 km   | v) North 3 km                   |
| vi) West 15 km  | vii) South 8 km                 |
| viii) East 5 km   | ix) North 2 km                  |
| x) West 1 km  | <b>Where have you ended up?</b> |

- 2) Create your own route that goes through a forest, urban area (town) and water, like a river, lake or sea.



# Measuring Distance and Using Scale

## Activity 5 – Measuring distance and using scale

The OS grid squares can be used as an easy way to measure the ‘crow flies’ distance between two points. To find the distance by road/path string or paper can be used. Scale is what makes map drawing possible, takes real life things and reduces them in size many times so they can be shown on a map. A map scale of 1:25 000 means that every 1cm on the map is the same as 25 000cm or 250m or 0.25km in real life. Thus, a scale of 1:50 000 means 1cm on the map is the same as 50 000cm or 500m or 0.5km.

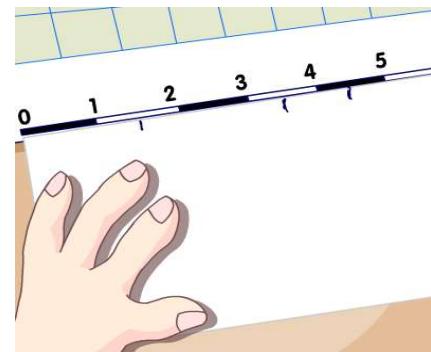
### Measuring distance the paper way



**Step 1.** Place the corner of a straight edge of paper on your starting point. Pivot the paper until the straight edge follows the route you want to take.



**Step 2.** Every time the road moves away from this straight edge, make a mark on the paper and pivot until it is back on track. Repeat until you reach your destination.

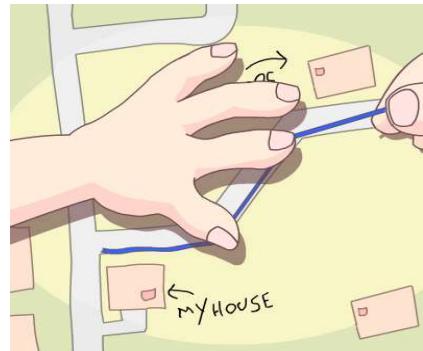


**Step 3.** Place the paper along the scale bar. You should have a series of marks, the last one will show the total distance you have travelled. *Alternatively convert your measurement.*

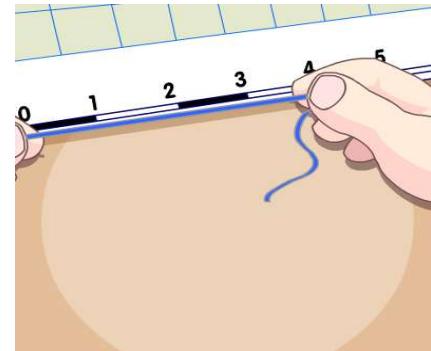
### Measuring distance the string way



**Step 1.** Place end of string at your starting point ('my house') and carefully lay the string along the roads or paths you will follow.



**Step 2.** Follow the curves as closely as you can. When you get to your ending point ('shops'), mark this point on the string with your pen.



**Step 3.** Place the string along the scale bar and read what distance you will have travelled, from the end of the string to where you have marked it.

**1)** Have a go at using the paper way of measuring distances on your OS map.

- From a 'Viewpoint' or 'Nature reserve' or 'Picnic site' to 'Parking'.
- From a 'Bus or coach station' to a 'Place of worship' or 'School'.

**2)** Have a go at using the string way of measuring distances on your OS map.

- From a 'School' to a 'Farm'.
- From a 'Train station' to woodlands (non-coniferous or coniferous or mixed).

# Marvellous Maps

## ★ Stretch & Challenge Activities – Using everything you have learnt ★

- Create a OS Handy Map:
  - Draw around your hand.
  - Create an imaginary town or city
  - Add on forests, rivers, lakes, beaches etc.
  - Make sure you have a key, north arrow and colour!
- Make a detailed map of your house, school or local area:
  - Square paper will help with scale
  - Create your own symbols, or use the OS symbols
  - Include a key
  - Make a route for friends / family to follow; who can do it the fastest?

