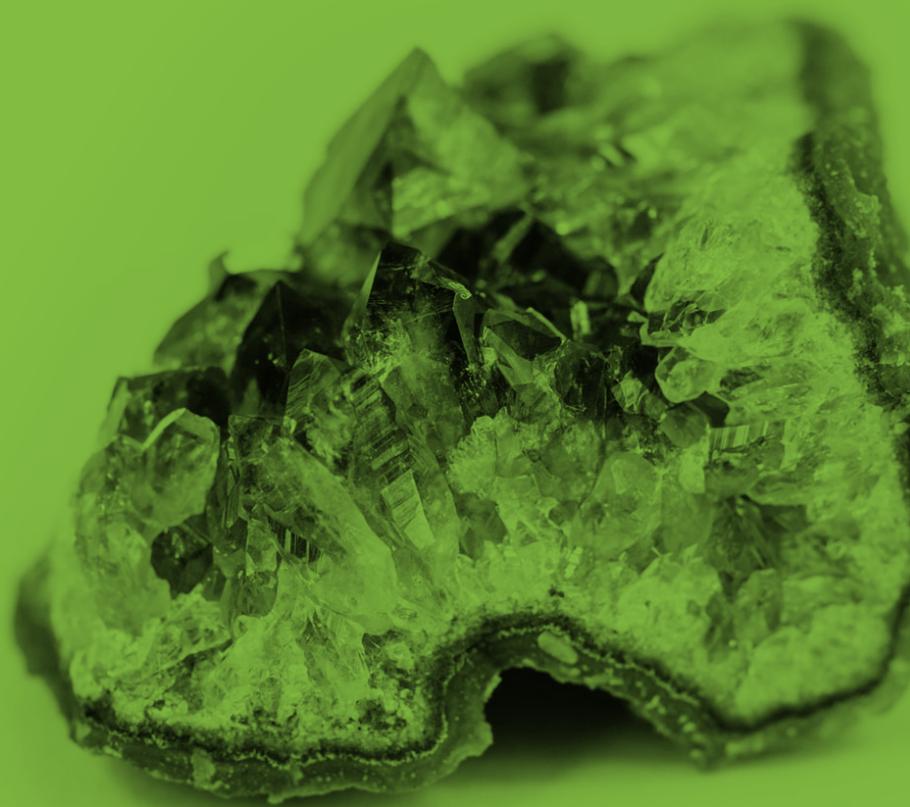


GCSE (9-1)

WJEC Eduqas GCSE (9-1) in
GEOLOGY

Practical Guidance Sheet 10



GCSE Geology Practical Guidance Sheet 10

Title: Location of geological features in the field using traditional navigation and basic field survey skills and with the use of GPS

Specification reference: Appendix B. The requirement to have knowledge and understanding of the location of geological features in the field using traditional navigation and basic field survey skills and with the use of GPS is stated in Appendix B.

Aim: To locate geological features in the field using traditional navigation and basic field survey skills and with the use of GPS.

Apparatus:

Simple base map of field area
Compass
Smart phone
Pencil

Method (traditional navigation and basic field survey skills):

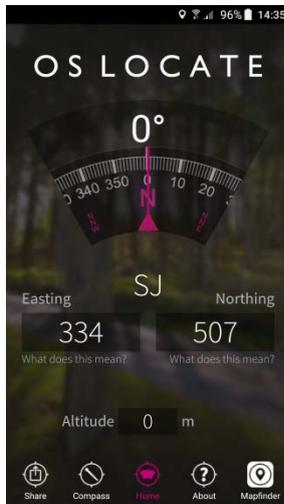
1. Determine the distance of a geological feature from prominent landmark e.g, a headland, river or bridge by measurement or by pacing. (This can only be undertaken if learners have calculated their typical stride length prior to fieldwork).
2. Determine the direction of a geological feature from prominent landmarks by taking bearings using a compass as follows:
 - Standing at the geological feature, point the direction of travel arrow of the compass (the long dimension of the compass) at the landmark
 - Turn the compass dial until the North arrow in the base plate of the dial lies under the red "hovering North arrow"
 - Place the compass on the map so that the orienting lines within the base of the compass dial are parallel to the map's North-South lines (meridians)
 - Move the compass across the map so that the top corner of one long edge ends at the landmark, keeping it aligned with the map's meridian
 - Draw a faint line on the map along the edge of the compass from the landmark. The geological feature is somewhere along this line
 - If a bearing is taken to a second landmark, and the process repeated, the geological feature should be at the point where the two faint lines meet on the map.
3. Locate the geological feature onto the base map using approximate distances and bearings from prominent landscape features.

Information on how to take a bearing can be found at:

<https://www.youtube.com/watch?v=BADUq3Magbo>

Method (using GPS):

Smartphones have a built in GPS facility. This can be used to locate geological features and describe their location in terms of a six-figure grid reference.



There are a number of Apps available for Android and Apple and are free. One of which is available at the following link:
<https://www.ordnancesurvey.co.uk/shop/os-locate>

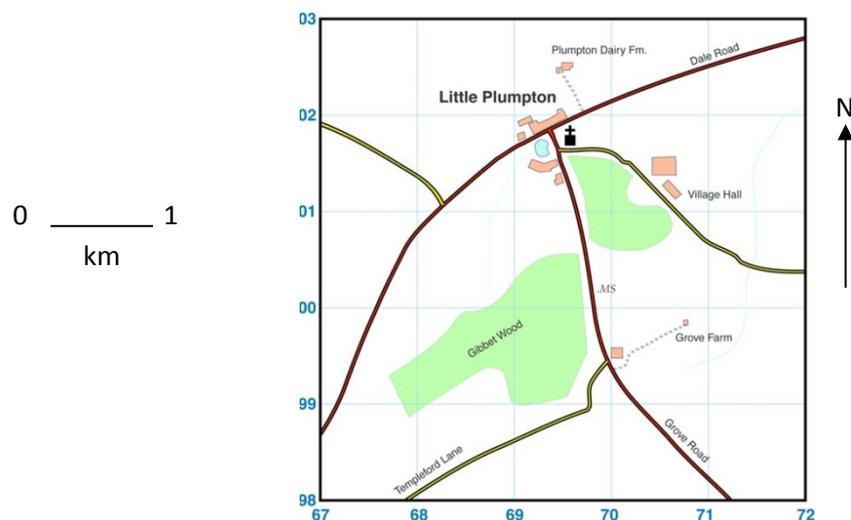
Learners may wish to use a Smartphone to locate **EarthCaches**. An **EarthCache** is a special geological location people can visit to learn about a unique feature of the Earth. **EarthCache** pages include a set of educational notes along with coordinates.

Ordnance Survey app, OS Locate www.ordnancesurvey.co.uk

Learners need to be able to locate a geological feature using a six-figure grid reference onto a base map. The method for this is outlined below.

Method:

1. Check that the map has grid lines running up and down the map (These lines are Eastings and increase in number the further to the right or East, assuming that North is orientated up the map).
2. Check that the map has grid lines running across the map (These lines are Northings and increase in number the further up the map, or North, assuming that North is orientated up the map).
3. The numbers along the bottom of the map are read first (the Eastings) and the numbers up the side of the map are read second (the Northings).
4. To locate a geological feature within a grid square, a six-figure reference is used e.g. the grid reference 698002 is found $\frac{8}{10}$ of the way across and $\frac{2}{10}$ of the way up the grid square 6900. The geological feature is adjacent to the Mile Stone MS.
5. The six-figure grid reference for geological features should be recorded in a field notebook and on any field sketches of the features.



Wikimedia Creative Commons
<http://bit.ly/2j7EIUC>

Analysis:

None required.

Teacher/Technician notes:

Simple base maps of field areas should be produced by the teacher prior to fieldwork activity.

These can be simple hand drawn maps, or derived from OS maps (or electronic versions) but all should have a scale and orientation.



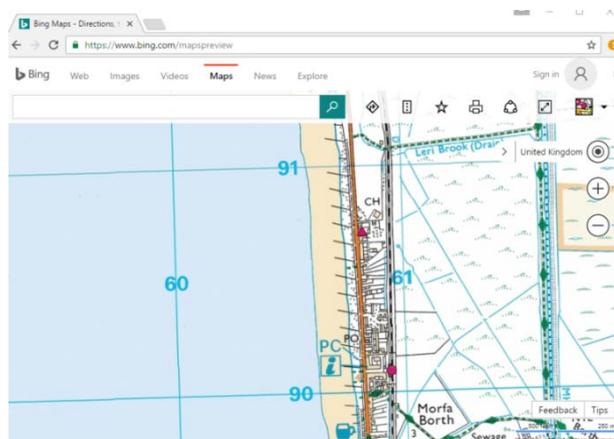
Maps can be derived from looking at map views online (or satellite views) or from traditional paper maps.

Electronic maps are available from Google Earth and Google Maps and Bing Maps. Although the more useful maps have OS map data (e.g. contour lines).

Bing <https://www.bing.com/mapspreview>

Ordnance Survey view should be selected (tool bar on the top right hand side), scale appears in the bottom right hand corner, and grid lines give orientation. Note that the grid lines often appear at an angle.

“Screen shots” or use of the “snipping tool” can give good base maps.



Microsoft bing maps www.bing.com/mapspreview

It may be necessary to number the grid lines if they are not prominently labelled on the selected section.

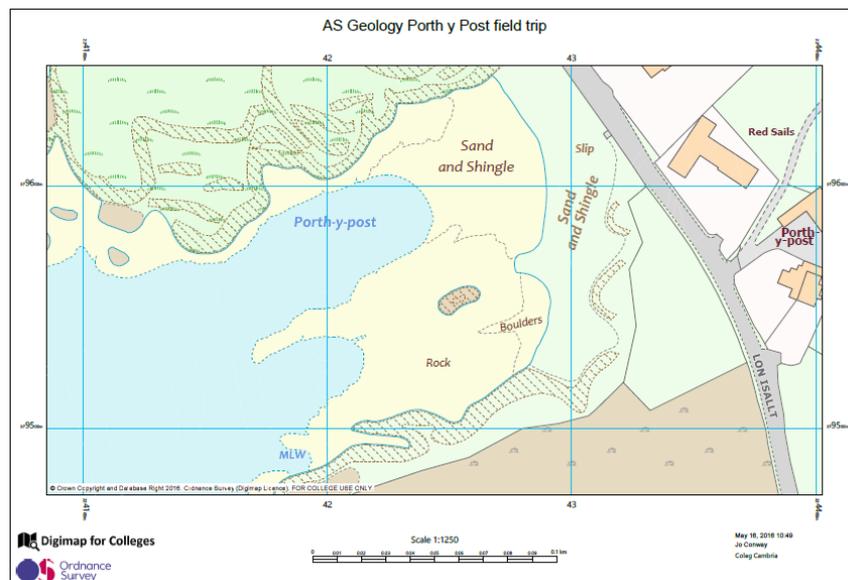
Many FE colleges have subscribed to the Edina program and have access to Digimap. <http://digimapforcolleges.edina.ac.uk/> However this is usually only available within your college.



Digimap for Colleges <http://digimapforcolleges.edina.ac.uk/>

Digimap is a range of Ordnance Survey digital maps, covering the whole of GB. Included are the most detailed maps OS make which show building outlines. These maps are suited to being used for local area studies, studying land use on the high street, locating businesses or planning a new construction site. They are digital versions of traditional OS maps that are commonly used for hill walking and outdoor activities, as well as street-level, road-atlas style and regional maps.

The maps are complemented by a range of tools that allow you to enhance the maps. Measurement tools, Annotation Tools (you can use to add points), Save (save any maps that you create to come back to later) and Print (to create printable PDF or JPG maps. Printable maps can be printed to make hard copies, saved to a computer drive).



Digimap for Colleges <http://digimapforcolleges.edina.ac.uk/>

Grid lines are parallel with the edge of the paper/box that the map appears in and scale bars are very sharp and easily used for distances.

“Screen shots” are useful for showing maps at alternative scales.