25 Geographical skills

25.1

Cartographic skills

In this unit you will find out how to use and interpret the information on different kinds of maps and photos.

Atlas maps

Latitude and longitude

Any place on the Earth's surface can be located by its latitude and longitude (map A).

- Lines of latitude run parallel to the Equator. This divides the world into the northern and southern hemispheres. Latitude increases north and south of the Equator to reach 90° at the north and south poles.
- Lines of longitude run between the north and south poles. The Prime Meridian, 0° longitude, passes through Greenwich in London. Values are given east and west of this line.

Using atlas maps

Atlas maps are useful sources of information for geographers.

- Basic maps of countries and regions of the world show physical relief, settlements and political information.
- Thematic maps show factors like climate, vegetation, population, tourism and tectonics.
- Maps can show global issues such as pollution, global warming, desertification and poverty.
- Atlases also include tables of statistics and useful data.

Different thematic maps can be used to find links between patterns, such as those between physical and human factors.



Remember!

Both latitude and longitude are measured in degrees (using the symbol °). Each degree is subdivided into 60 minutes (using the symbol ') So, '30 minutes' (30') equates to half a degree.

The location of a place is expressed as follows:

Manchester: 53° 30' N 2° 15' W

On map A, Mumbai is located at 18° 56' N 72° 51' E

You will make use of a range of atlas resources while studying Geography and you may be asked about an atlas map in your exam. You may be asked to identify patterns or distribution on maps, so make sure you practise these skills.

- A *pattern* means there is some regularity or connection between things, for example population concentrated along the coast or industry concentrated along a river valley. Terms such as radial (spreading outwards from a central point) or linear can be used to describe a pattern. For example, earthquakes tend to form a linear pattern in the North Atlantic by following the North American-Eurasian plate margin.
- Distribution is a term used more broadly to describe where things are. There may or may not be a regular pattern. For example, the distribution of population in Kenya shows that most people live in the highlands where the climate is less extreme and soils are good for farming. Fewer people live on the lower ground in eastern Kenya because it is very hot and dry.

Atlas maps include a range of physical and human features such as:

- population distribution
- population movements
- transport networks
- settlement layout
- relief
- drainage.

Practice identifying and describing these features on an atlas map. You may be asked to make use of two different maps to consider links and inter-relationships between physical and human factors, for example between population distribution and relief in Kenya.

Geographical skills

Ordnance Survey maps

You need to be confident using OS maps at a range of different scales, including 1:50000 and 1:25000. You should be able to identify and describe both physical and human features and to use key mapwork skills.

Four-figure and six-figure grid references

drawn on them. The lines that run up and down and

increase in value from left to right (west to east) are

called eastings. Those that run across the map, and

increase in value from bottom to top (south to north),

Ordnance Survey maps have numbered gridlines





To locate a point rather than a square, each square is split into tenths to give a six-figure reference. Look at diagram **B** and notice that point X is at grid reference 355762. Notice how the eastings value is represented by the three digits 355 and the northings value is represented by the digits 762. It is the third digit of each set that gives the 'tenths' value. Thus the eastings value is 35 and 5/10 ths and the northings value is 76 and 2/10 ths.

To locate a grid square on a map, we use a fourfigure reference:

- the first two digits refer to the easting value
- the second two digits give the northing value.

Remember to give the eastings value first and then the northings. Think of the phrase 'along the corridor and up the stairs'!

For example: The four-figure reference for grid square A on diagram **B** is 3478; grid square A is the square after the values 34 and 78.

Scale

OS maps are drawn to scale. This means they are an accurate representation of the real world, but reduced to fit onto a sheet of paper! Scale can be shown using a ratio or a linear scale.

- ◆ A scale of 1:25000 means that 1 unit on the map equals 25000 units on the ground.
- ◆ 1:50000 means that 1 unit on the map equals 50000 units on the ground.

Distance

Distance can be measured as a 'straight-line' or 'curved' distance (for example, along a road or a river). You need to be able to measure both straight and curved distances.

Straight-line distance

Every map has a scale, usually in the form of a linear scale - a straight line with distances written alongside. To calculate a straightline distance, simply measure the distance on the map between any two points, using a ruler or the straight edge of a piece of paper. Then line up your ruler or paper alongside the linear scale to find out the actual distance on the ground in kilometres (diagram C).

Curved distance

A curved distance takes longer to work out. Use the straight edge of a piece of paper to mark off sections of the curved line, converting the curved distance into a straight-line distance (diagram C).

Straight-line distance

1 Use a ruler to measure the distance between two places on the map, in centimetres.



2 Measure out the distance on the map's linear scale to discover the distance on the ground in kilometres.



Remember!

On a 1:25000 map, 1 cm equals 25000 cm on the ground, or 250 metres. 1 km on the ground equals 4 cm on the map.

On a 1:50000 map, 1 cm on the map represents 0.5 km and 2 cm equals 1 km.

The distance between gridlines on any OS map is 1 km. On a 1:25000 map the gridlines are 4 cm apart. On a 1:50000 map they are just 2 cm apart.

C Measuring distance



3 Place the edge of the marked paper alongside the linear scale on the map and convert the total length to kilometres. Remember to always give the units when writing your answer!



Compass directions

On most maps the direction 'north' is straight up - but not always! You should always check this in the key when using maps and diagrams, and make sure you understand the eight points of the compass (diagram **D**). Always use compass directions carefully and precisely, for example, 'Settlement X is to the north-west of Settlement Y'.

Identifying and describing landscape and relief features

Contour patterns on maps can be used to identify basic physical features, such as river valleys, ridges and plateaus (diagram E). Having identified these features, you need to be able to describe them by referring to size, shape, height and orientation (direction).

Example

'The ridge is about 2km wide, is orientated roughly north-south and rises to a maximum height of 232m at GR 376490. It has a steep eastern side and gentle western side.'



E Using contours to identify basic landscape features

Contours, spot heights and gradient

The height of the land is indicated by:

- contours lines on the map (usually brown) joining points of equal height above sea level
- spot heights usually indicated by black dots with a height above sea level written alongside.

Geographical skills





The eight points of the compass

Skills in context

You can find out more about identifying and describing relief features in Chapters 9–12. Turn to page 330 to see how cross-sections can be used to identify physical features.



Skills in context

Interpreting cross-sections and transects of physical and human landscapes:

You can find out about how to interpret cross-sections and transects in Chapters 9-15.

Geographical skills

The closer the contours, the steeper the gradient of the slope. Gradient can be calculated by measuring the change in height over a known distance:

- **1** Measure distance and height change using the same units (e.g. metres).
- 2 Divide the height change by the distance.
- **3** Express gradient as a percentage or ratio.

Example

Height change (H) of 20m over a distance (D) of 100m:

- H/D = 20m/100m = 0.2
- Ratio is 20% (or 1:5).

Numerical and statistical information

OS maps contain numerical and statistical information ranging from road numbers to values of height on contours and alongside spot heights. Grid references also provide numerical detail when locating a place. Be sure to use this information to add extra depth and detail to your map interpretation.

Drawing cross-sections

A cross-section is an imaginary 'slice' through a landscape. It helps to visualise what a landscape actually looks like. Make sure you can identify and label the main physical features of a landscape, for example, steep and gentle slopes, ridge, escarpment and valley. Drawing a cross-section is an important skill for a geographer. You need a piece of paper, a sharp pencil, a ruler and an eraser (diagram F). When you complete your section, check that you have:

- copied height values accurately
- made your vertical scale as realistic as possible (don't exaggerate it so much that you create a totally unreal landscape!)
- completed the section to both vertical axes by carrying on the trend of the landscape
- labelled any features
- labelled axes and given grid references for each end of your section
- given your section a title.



- Place the straight edge of a piece of paper along the chosen line of section.
- Mark the start and finish of your section.
- Mark contours and features, e.g. rivers.





F How to draw a cross-section

Interpreting physical and human features

Relief

Relief is the geographical term used to describe the height of the land and the different landscape features created by changes in height. When describing relief it is important to refer to simple landforms such as river valleys, hills and ridges. You should use adjectives to develop your description, for example: 'There is a steep river valley with asymmetrical (not the same on each side) valley sides'. To give a good answer you should comment on certain features:

- The height of the land, using actual figures taken from contours or spot heights to support your points. Using words like 'high' and 'low' is meaningless without using actual figures.
- ◆ The slope of the land. Is the land flat, or sloping? Which way do the slopes face? Are the slopes gentle or steep? Are there exposed, bare cliffs? Remember to give precise information such as grid references and compass directions.
- Features such as valleys or ridges. Refer to names and grid references.

Drainage

Drainage is the presence (or absence) and flow of water. When describing the drainage of an area, you should comment on:

- The presence or absence of rivers. Which way are they flowing? (Hint: look at the contours.) Are the rivers single or multichannelled? Give names of the rivers, and use distances, heights and directions to add depth to your description.
- Drainage density the total length of rivers in an area, usually expressed as 'km per km²'. High drainage densities are typically found on impermeable rocks, whereas low densities suggest permeable rocks.
- The pattern of rivers (diagram G).
- The influence of people on drainage channels, for example straightening channels or building embankments. Straight channels are rare in nature and usually indicate human intervention.
- Evidence of underground drainage, in the form of springs or wells.
- The presence of lakes, either artificial or man-made.

Settlement

When describing patterns and types of settlement (diagram H) you should understand the following geographical terms:

- Dispersed settlements low-density settlements spread out over a large area and typical of rural agricultural regions.
- Nucleated settlements high-density settlements, tightly packed and often focused on a central point such as a major road intersection. The settlement typically spreads out in all directions.



alongside a road, railway or canal. 'Linear' means

'line', so a linear settlement tends to be long and

Linear settlements – these typically extend



H Settlement types





Communication

Communication networks include many kinds of transport, such as:

- roads (of various types)
- railways and footpaths
- ferries (river and cross-Channel)
 airports
- cycleways.

You should be able to describe these networks, giving locational details such as length and orientation or compass direction and referring to patterns and density. For example, roads may radiate out from a settlement or form a series of concentric ring roads and by-passes around it.

Communication networks frequently reflect the relief of an area.

- Major transport arteries such as roads, canals and railways tend to follow flat, low ground, which explains why they are often located in river valleys.
- Footpaths often follow river valleys, as well as linking settlements and following ridge-lines or escarpments. Look out for named footpaths, such as the Pennine Way, and remember to refer to them by name when answering a question.

Land use

Land use refers to the way in which land is used or has been modified or managed by people. In writing a good answer about land use you should always refer to the map key and try to give specific examples from the map to support your statements. A typical land use map may contain information about the following land uses:

- different types of woodland (for example, coniferous or nonconiferous)
- coastal deposits (mud, sand or shingle)
- vegetation (for example, scrub, bracken or marsh)
- urban areas (be prepared to describe settlement patterns)
- fields (often just shown white on maps)
- quarries
- industrial areas
- tourist sites
- recreation areas.

Indeed, land use includes all aspects of the Earth's surface! When describing land use you should refer to:

- the specific location (don't forget to use grid references)
- the size and shape of the area.

Inferring human activity from map evidence

As a geographer, you will be expected to describe and interpret features on a map extract. You can use map evidence to infer human activity as well as simply identifying it. For example, you might use map evidence to infer what type of settlement or what type of urban zone you are looking at.

Remember!

You may be asked to explain why land at a specific location is used in a particular way, for example why an area or slope has been planted with coniferous trees. Remember to use the word 'because' when you are asked to explain a land use.

Skills in context

Describing physical features of coastlines, fluvial and glacial landscapes

You need to be able to identify and describe two of these three landscape types with reference to OS maps. You can find out more about how to do this in Chapters 10–12. Inference is all about reaching informed conclusions using the evidence available to you. For example:

- If you are asked to identify the 'inner city', look for the appropriate evidence on the map and then use it to support your suggestion (Map I).
- At the coast, the presence of a sandy beach, sand dunes and clifftop footpaths infer that tourism may well be important in the area. Look for the blue symbols that indicate tourist facilities
- In a glacial landscape, the presence of a lake could be used to infer that people might take part in water sports, fishing or bird watching. The same applies to woodlands or mountains.

Skills in context

Comparing maps

Two or more maps can be compared to see how things have changed over a period of time, for example, the growth of a settlement. The similarities and differences between two maps can also be considered where there may be an association, for example earthquake epicentres and plate boundaries.

Remember!

- the term 'compare' means similarities and differences
- contrast' means differences only!

car park on edge of town in rural–urban fringe

churches, coach station and information office in town centre

golf course, typical rural–urban fringe land use

recent suburban housing estate with cul-de-sacs



Geographical skills

^{1S} Drawing sketch maps

A sketch map is drawn to produce a simplified version of an OS map. It should focus on just a few key elements, such as patterns of roads or rivers, without lots of other information.

d To draw a sketch map, follow these steps:

- **1** Start by drawing a frame, either to the same scale as the map or enlarging/reducing it as required.
- Divide the frame into grid squares as they appear on the map and write the grid reference numbers around the edges of your frame. These will act as your guidelines when you draw your sketch.
 - **3** Using a pencil, carefully draw just the features that you need onto your sketch.
- **4** When your sketch is complete, use colour and shading if you wish, although black and white sketches are often the most successful.
- 5 Label and annotate your sketch as necessary.
- **6** Don't forget to include a scale (which can be approximate), a north point and a title.

You will gain the most credit for your labels and annotations (detailed labels with some explanation), which show your ability to interpret the map.

Characteristics of a small market town – Alnwick (a nucleated settlement)

15 Anwick Castle is evidence of a long history; also tourism 14 ring road in rural–urban fringe health building suggesting that Anwick serves the needs of 13 the surrounding region 12 possible industrial estate (regular road network) close to main road junction 11

Geographical skills

Using photos

Photos are widely used in the study of geography. They can be used on their own or in association with maps.

Geographers make use of three different types of photo.

Ground photos

Photos taken on the ground (J) are the most common types of photo and are usually used to focus on a particular physical feature or characteristic, such as a building or a waterfall.

Aerial photos

These are usually taken from aeroplanes, helicopters or drones, looking down on a landscape. They often show large areas that can be related directly to OS maps - for example showing settlements or stretches of coastline. There are two kinds of aerial photos:

- Vertical aerial photos (K a) look directly down onto the ground and therefore give no indication of relative height - so everything looks flat!
- Oblique aerial photos (**K b**) give a sideways view of the landscape. They are used more often than vertical aerial photos. They can distort size, with objects in the foreground appearing larger than those in the distant background.

Satellite photos

Like vertical aerial photos, these look directly down onto the Earth (L). Satellite photos may be digitally processed with enhanced colours to make certain land uses and features show up more clearly. These 'falsecolour' images can be used to show environmental factors such as pollution and deforestation. They are also widely used to show weather features, such as hurricanes.

Satellite photo



A ground photo



K a A vertical aerial photo



b An oblique aerial photo



Describing human and physical landscapes

Photos are widely used by geographers to record, investigate and understand physical and human landscapes such as landforms, natural vegetation, land use and settlement.

When describing what a photo shows, you should:

- ♦ use directional language for example, 'in the foreground', 'in the background' as well as 'right' and 'left'
- use juxtaposition for example, 'just behind and to the right of the stack', to enable you to identify and describe features accurately.

You may be asked to use photos and maps alongside each other. You could, for example, be asked to identify the direction that a photo is looking. Take your time to orientate the photo on the map, possibly by turning it to line it up correctly – look for evidence in the foreground and the background on the photo to help you do this. Once you have orientated the photo, it should be quite easy to work with both resources.

Drawing sketches from photos

The purpose of a sketch is to identify the main geographical characteristics of the landscape (figure **M**). It is not necessary to produce a brilliant artistic drawing clarity and accuracy are all that are needed so that labels and annotations can be added.

To draw a sketch, follow these steps:

- Draw a frame that is the same shape as the photograph.
- Draw one or two major lines that will subsequently act as guidelines for the rest of your sketch. For example, you could draw the profile of a slope, a hilltop, a road or river.
- Consider what it is that you are trying to show and concentrate on that feature or aspect - it may be river features or the pattern of settlements.

Labels and annotations

You should always add labels or annotations to diagrams, maps, graphs, sketches and photos, where appropriate.

- Labels these are usually single words or phrases identifying features, for example the peak on a hydrograph, a river cliff on a meander or a roundabout in a town.
- Annotations these give more detail and may include some detailed description and explanation, for example, 'The cliff is vertical and high, probably because it is made of hard rock and is being actively eroded and undercut at its base by the sea'.

Geographical skills



(terrarettes)

Remember!

ncentrated

in the valley bottom

and act as a scale

M Sketching from a photo

• Don't waste time drawing a lot of unnecessary detail.

feature line

oss the

s a avide

Eching

Keep 'artistic' lines

to a minimum

further

ketch to act

- Always use a good sharp pencil and don't be afraid to rub things out as you go along.
- Always use labels or annotations (detailed labels) on your sketch, to identify the features.
- Give your sketch a title.

335