Form 7 Geography

November Exam Revision 2018

Location Knowledge

You will need to be able to locate both **physical** and **human features** on a map of the **UK**. These are Maps 3 and Maps 4 in your Global Location booklet.

Oceans and Seas

- North Atlantic Ocean
- North Sea
- English Channel
- Irish Sea

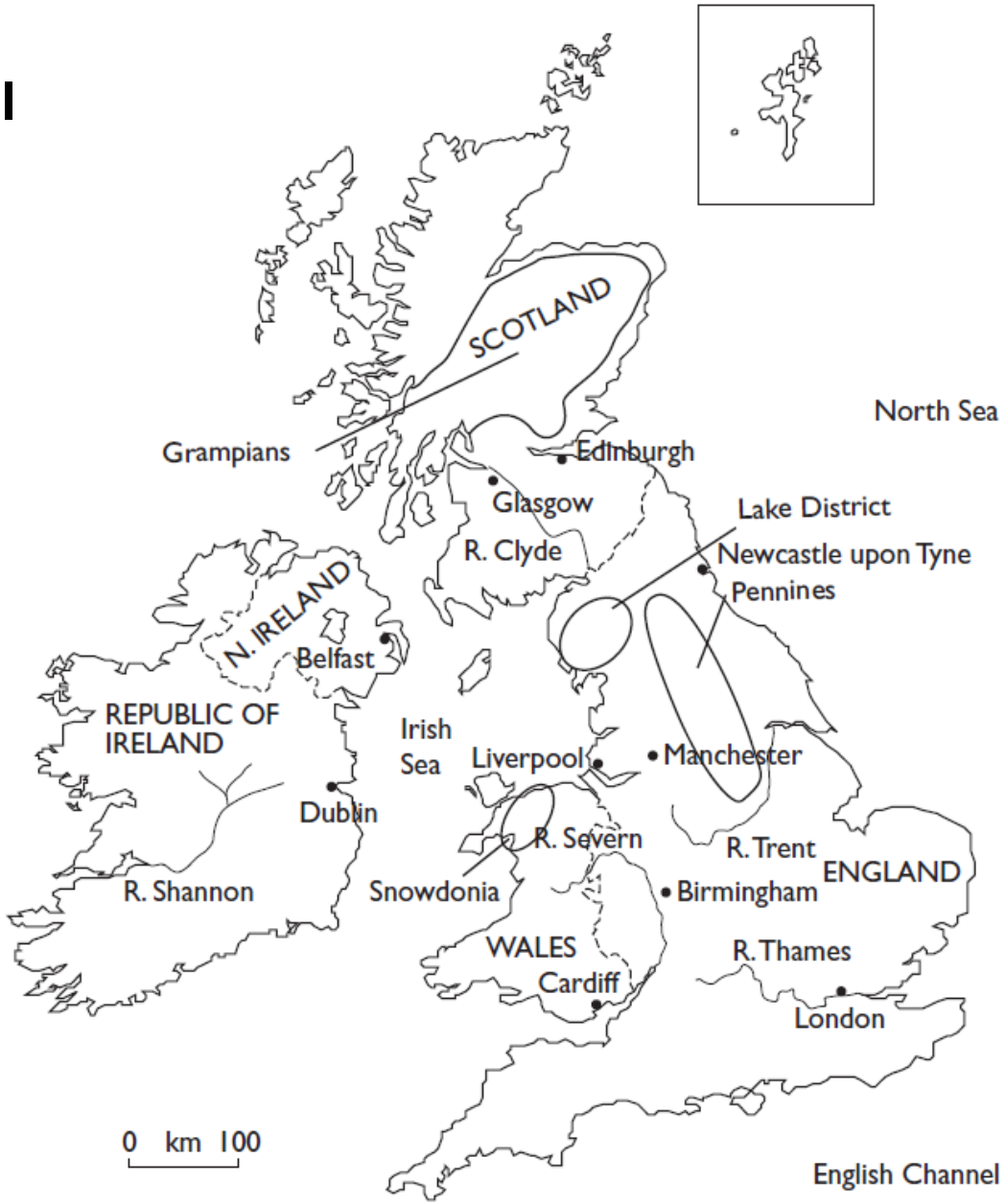
Islands

- Isle of Wight
- Isle of Man
- Shetland Isles
- Orkney Isles

Upland areas

- Lake District
- Pennines
- Grampians

Major cities of the UK (on Map 3 in your booklet)



Location Knowledge

World Map

Lines of Latitude and Longitude

- Arctic Circle
- Prime Meridian
- Equator

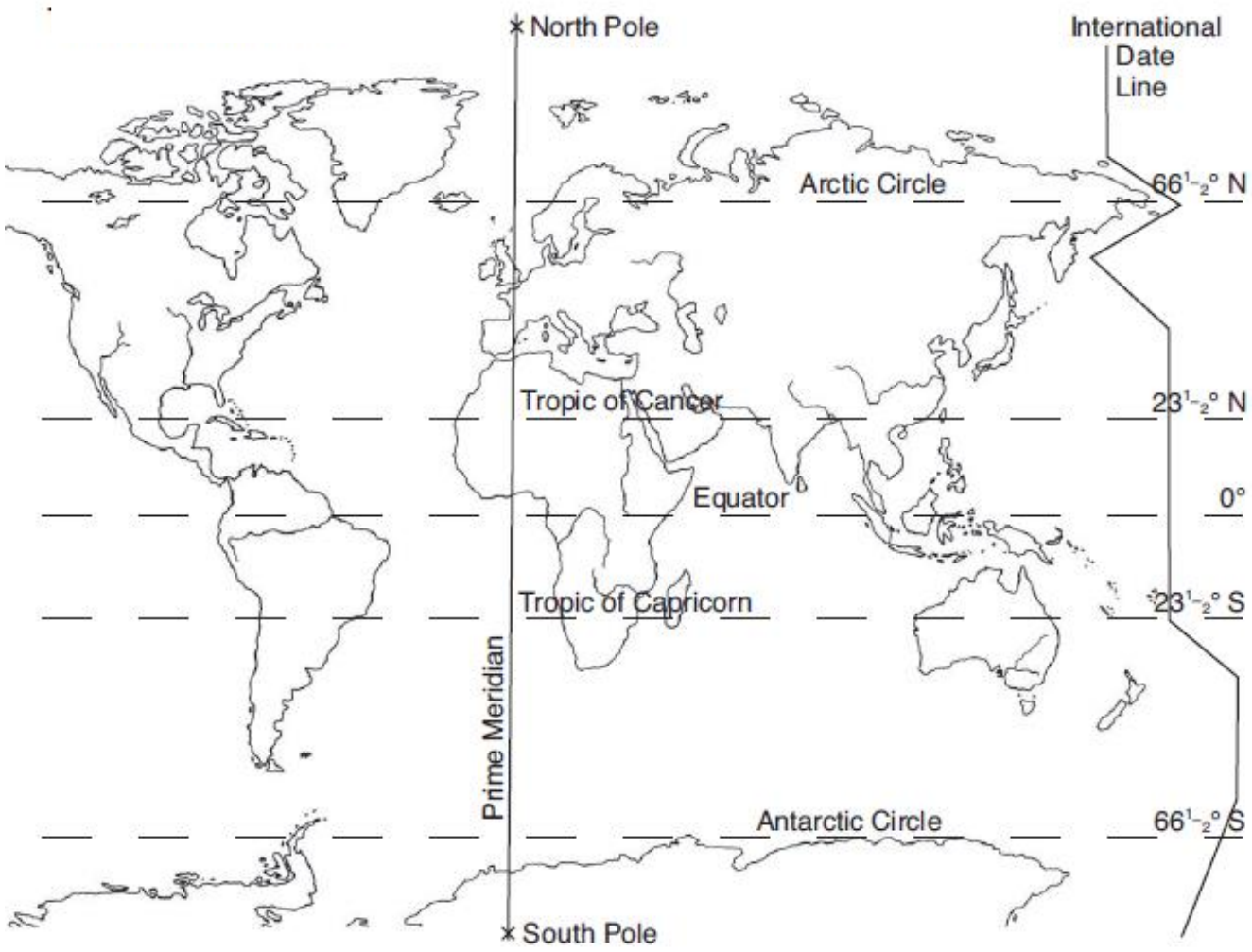
Rivers

- Mississippi
- Yangtze

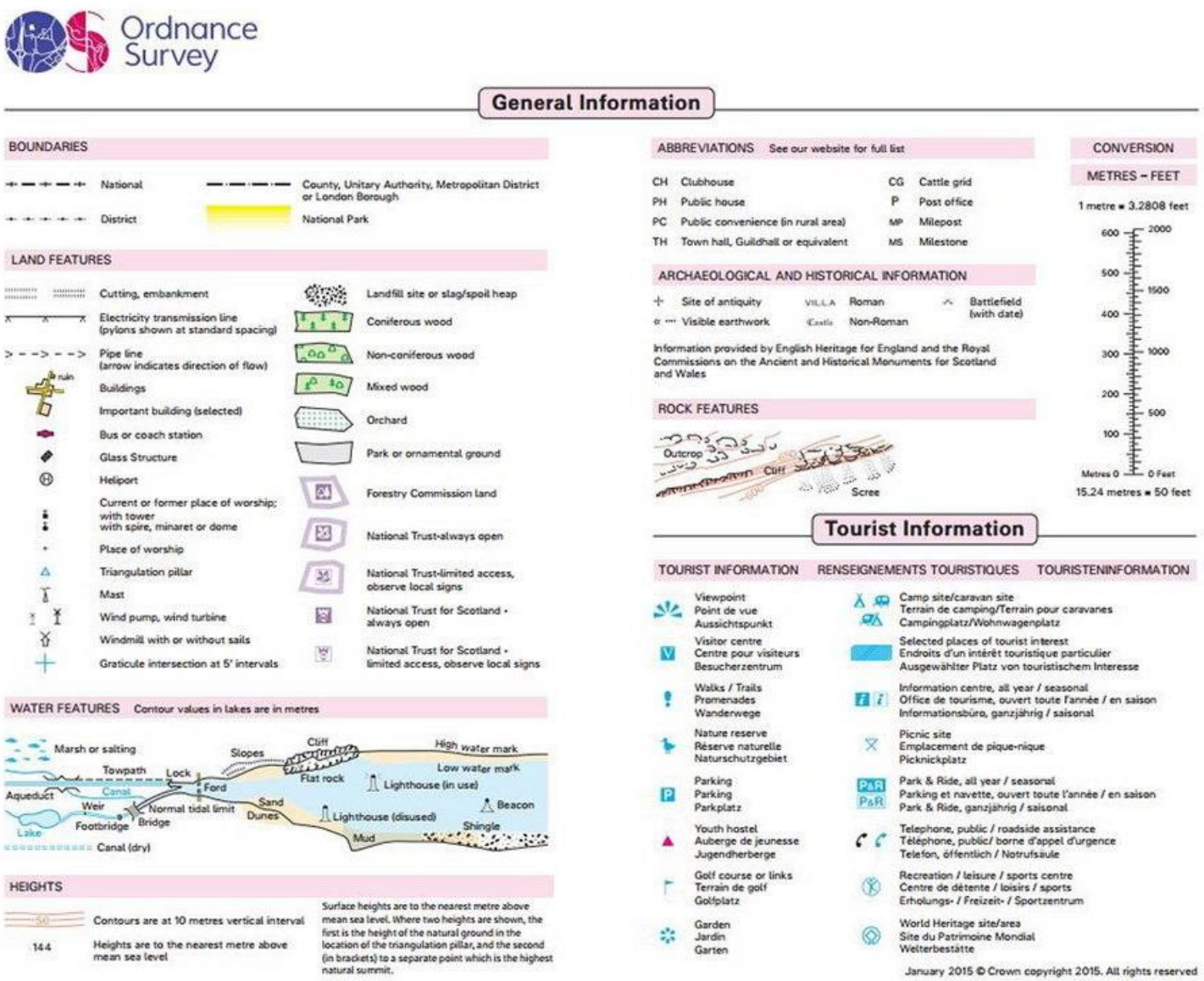
Mountain Ranges

- Andes
- Rockies

Oceans & Continents

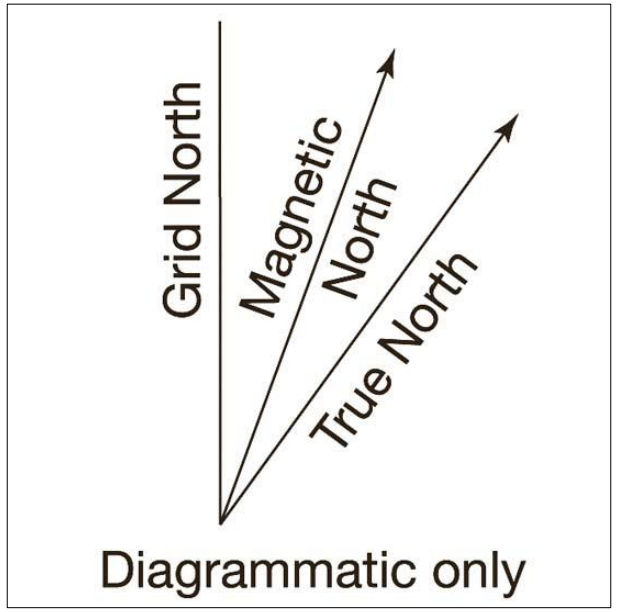


Ordnance Survey Map Work



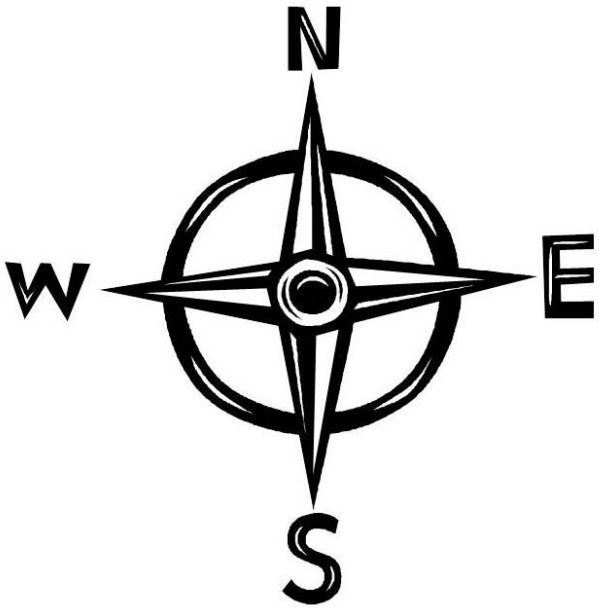
You need to be able to;

- Identify **major transport routes**: A roads, B roads, Motorways, train lines.
- Identify features using **6 figure grid** references.
- Identify grid squares using **4 figure grid** references.
- Work out **direction**.
- Use the **symbols** in key to identify features on the map.
- Work out, by looking at **contour lines**, how high the land is.
- Measure **distance** (straight line and actual distance).

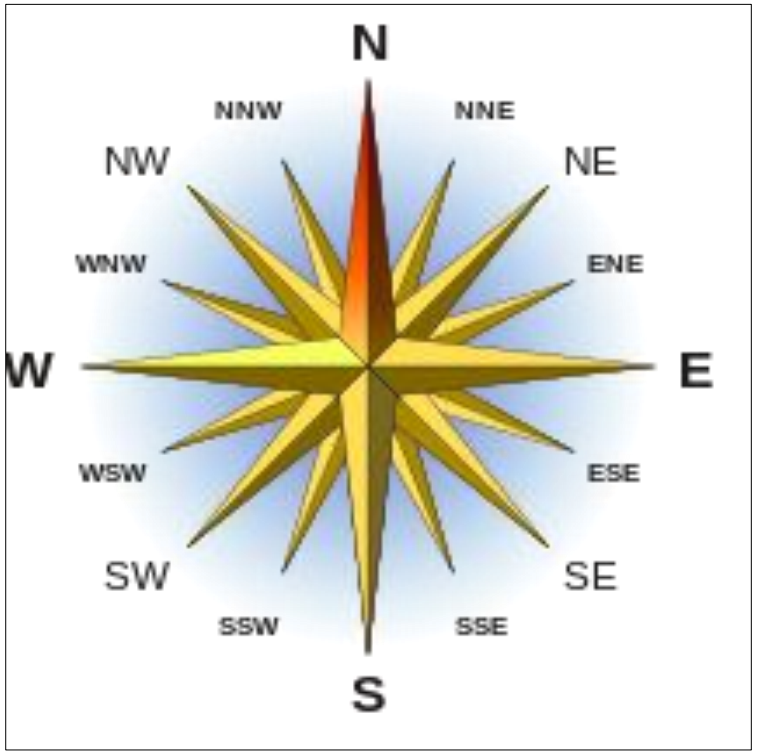


Which direction?

On the OS map you will see the symbol on the left. You should use Grid North as the starting point to working out the direction of a place.



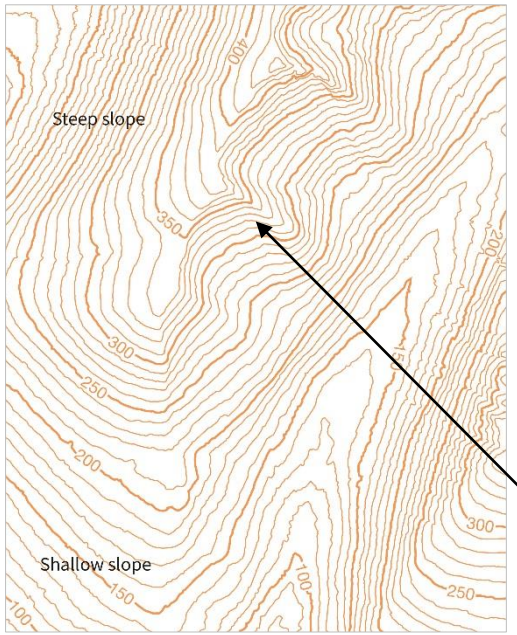
You will usually only need to give a compass direction as a **general direction** and you will **not** need to use degrees.
You should give the direction in two points e.g. NE or SW.
You will not need to be too detailed so don't use NNE, WNW etc.



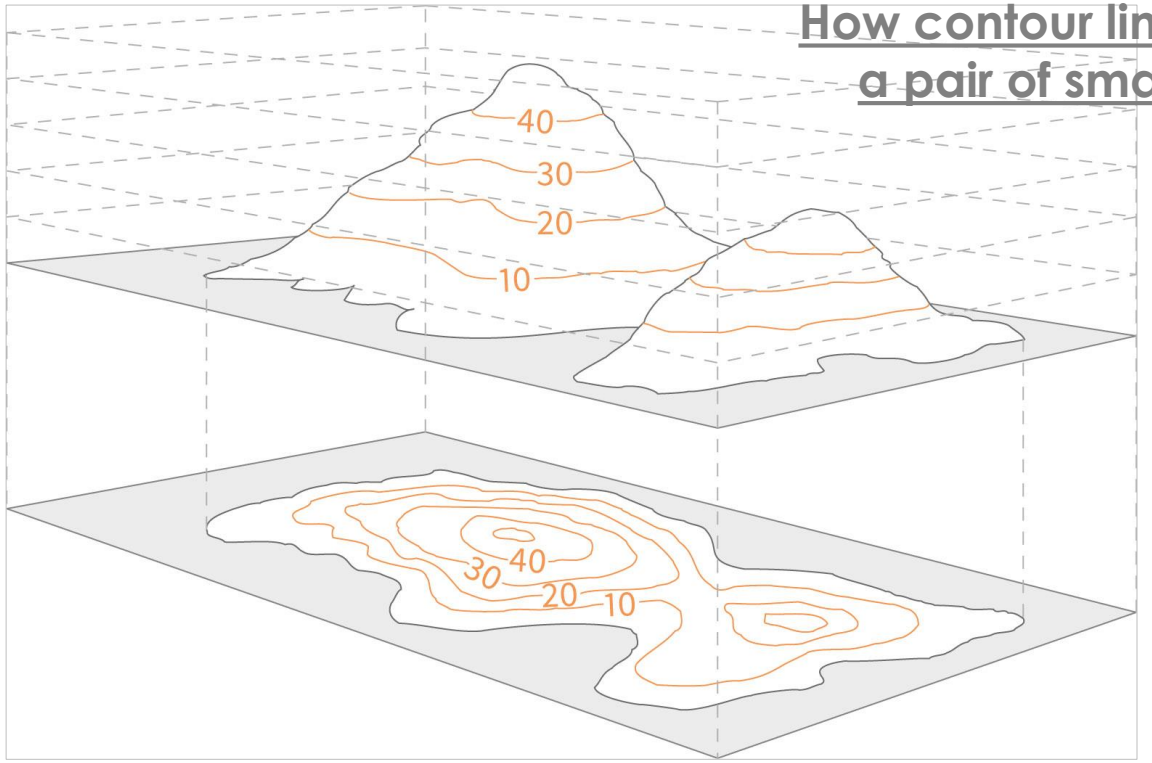
Contour Lines

Hills, slopes and mountains are represented on a map using contour lines. By studying the contour lines you can work out lots about the surrounding terrain including gradients of hills, valleys and steepness of climbs.

How are hills and mountains shown on a map?
A contour is a line drawn on a map that joins points of equal height above sea level. For 1:25 000 scale maps the interval between contours is usually 5 metres, although in mountainous regions it may be 10 metres.



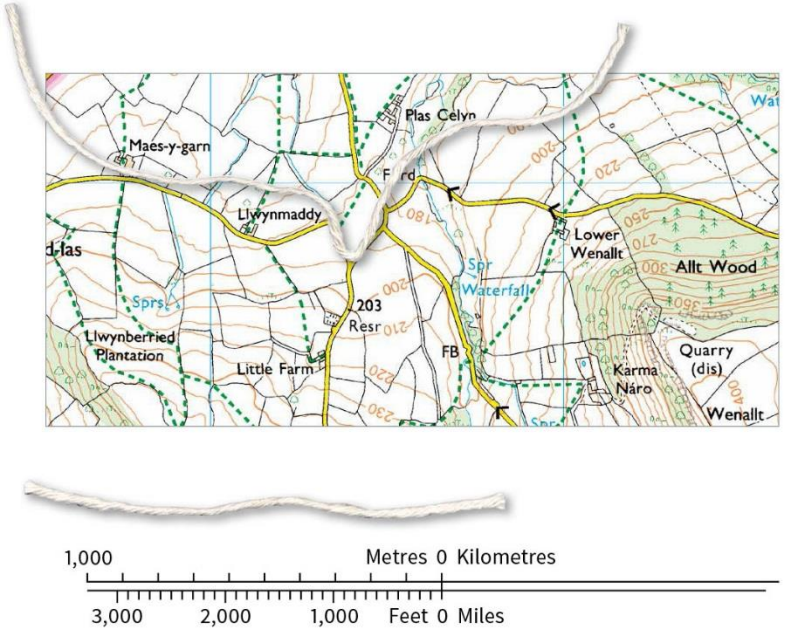
How contour lines show a pair of small hills



You can see from the picture above the link between the shape of a hill and the contours representing it on a map. Another way of thinking about contour lines is as a tide mark left by the sea as the tide goes out, leaving a line every 5 metres.

Top tip! Remember contour numbering reads up hill – in other words the top of the number is uphill and the bottom is downhill. Also remember the closer contour lines are together, the steeper the slope.

Measuring Distance on an OS Map

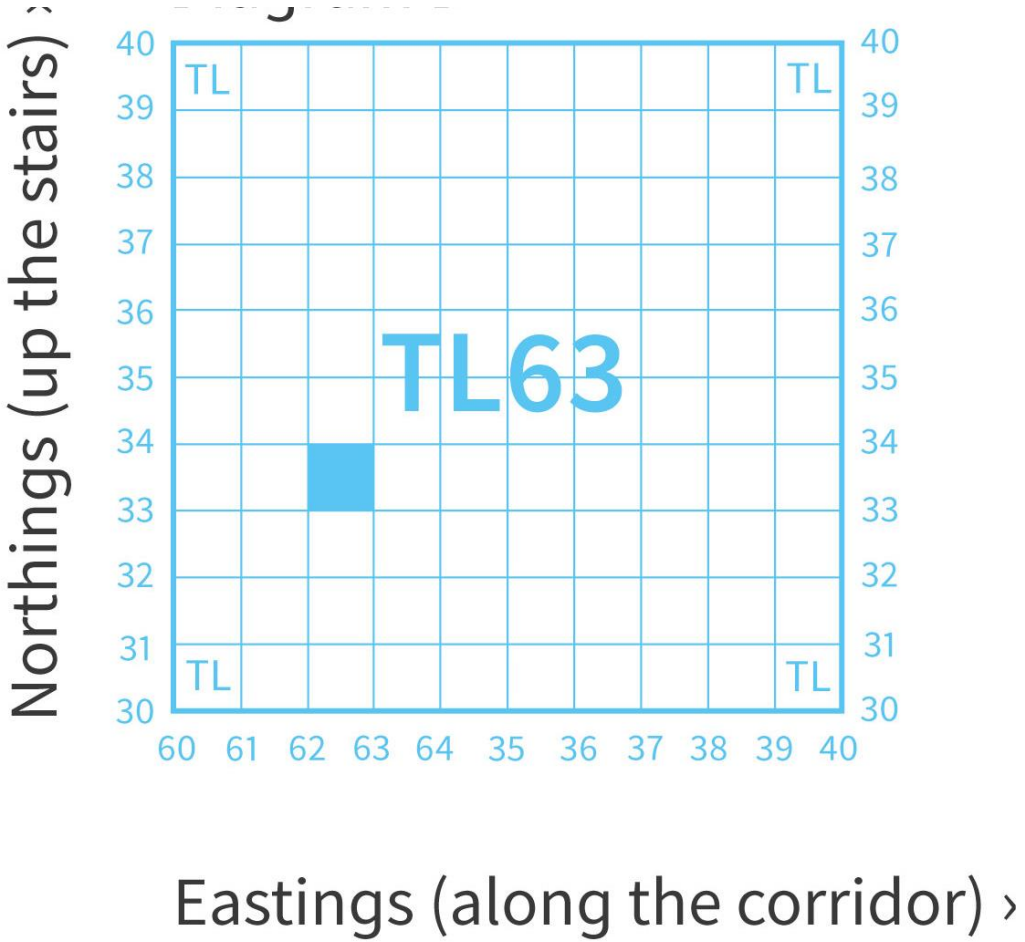


You can measure **straight line distances** on a map with a ruler.

To measure **actual distances** from one place to another you can use a piece of string or a strip of paper.

1. Take a strip of paper and place the corner edge on your starting point.
2. Move the paper until the edge follows the route you want to take.
3. Every time the route changes make a small mark on the paper.
4. Repeat this process until you reach your destination.
5. You will be left with a series of marks on your paper.
6. Now place the paper on the scale bar and measure the total distance.

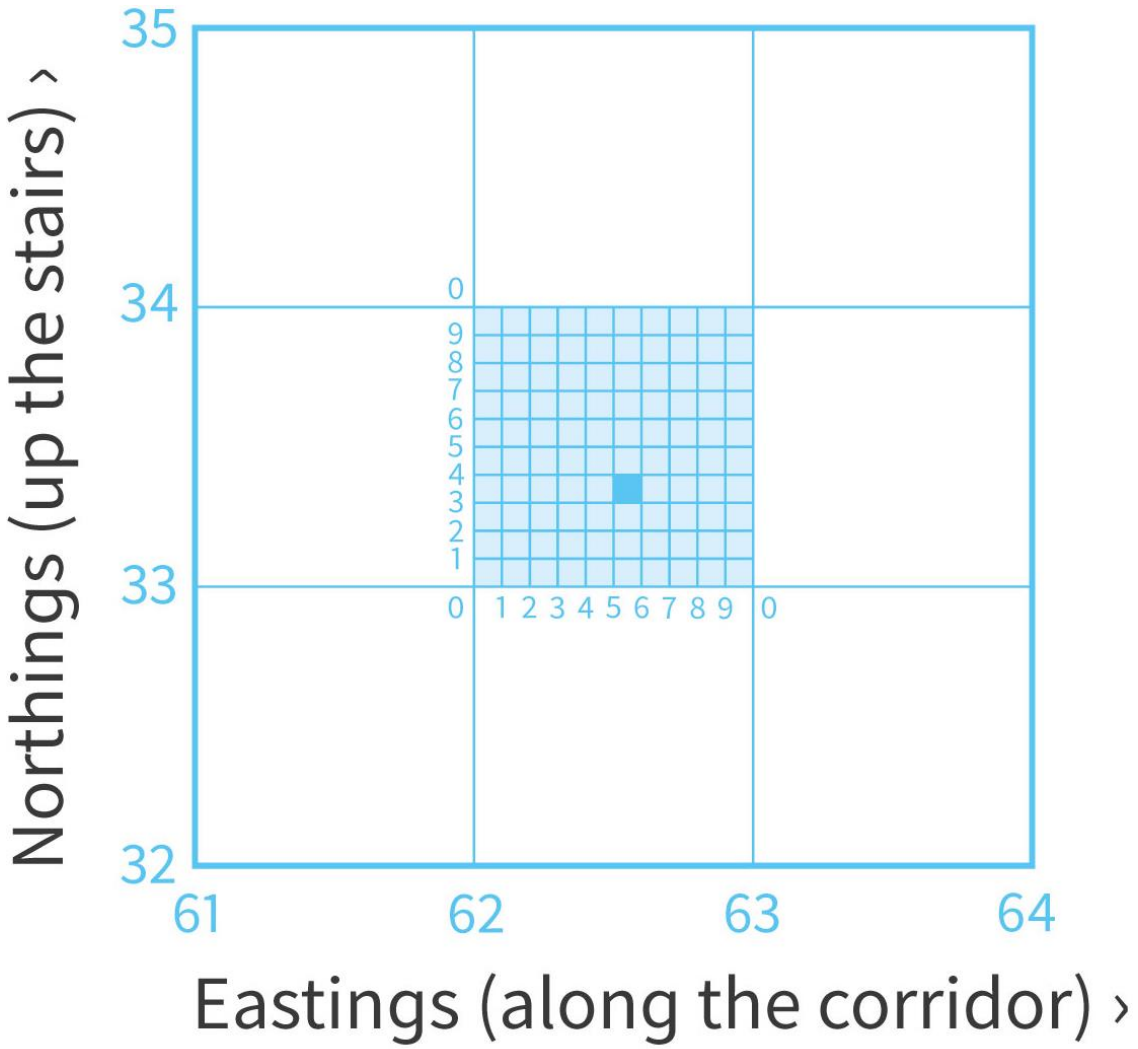
Grid References



It is easy to find a particular place using a grid reference.

- To start, a **four-figure grid reference** is a handy way of identifying any square on a map.
- Grid references are easy if you can remember that you always have to go **along the corridor** before you go **up the stairs**.
- To find the number of a square first use the eastings to go along the corridor until you come to the bottom left-hand corner of the square you want.
- Write this two-figure number down.
- Then use the northing to go up the stairs until you find the same corner.
- Put this two-figure number after your first one and you now have the four-figure grid reference, which looks like the example in diagram: **6233.**

6 figure Grid References



- If you want to pinpoint a more exact place on a map, such as your own house, you will need to use a **six-figure grid reference**.
- First find the four-figure grid reference for the square and write it down with a space after each set of numbers, like this: **62_ 33_**
- Now imagine this square is divided up into 100 tiny squares with 10 squares along each side.
- Still remembering to go along the corridor and up the stairs, work out the extra numbers you need and put them into your four-figure grid reference like this in diagram E: **625 333**.

Landform Processes

What is weathering? The **breakdown** of rocks. It is caused by water and frost, by **changes in temperature**, and by plants and animals.

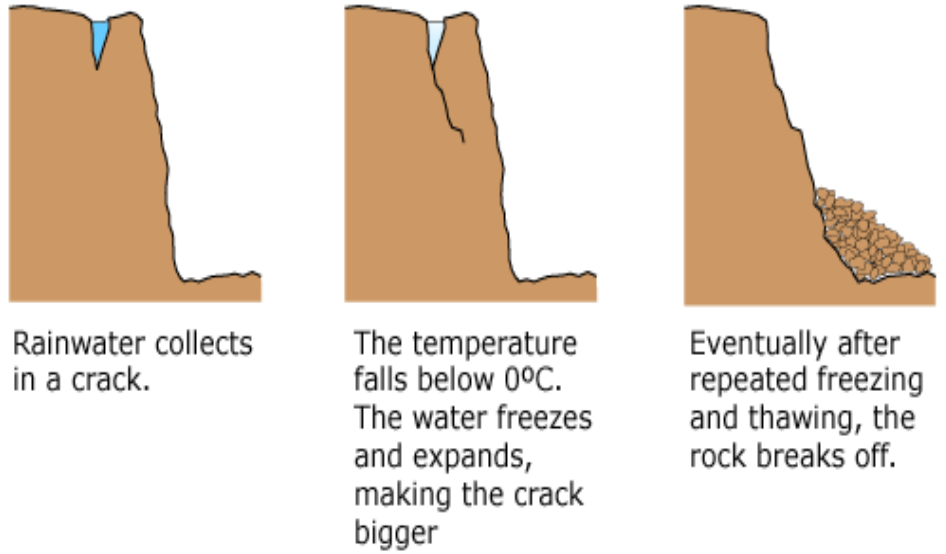
Physical Weathering

1. Freeze-thaw Weathering

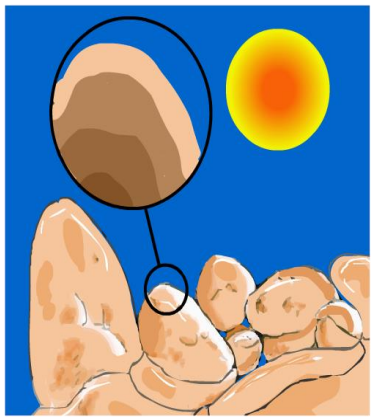
Most rocks are hard, but despite this they can be broken by just a small amount of water getting into cracks in the rock.

This is because water freezes as it expands. This creates powerful forces that can enlarge the cracks.

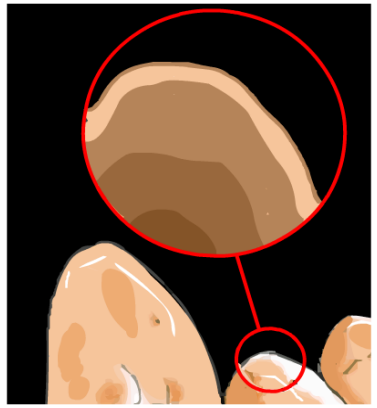
As this **freeze–thaw** process is repeated and cracks spread through the rock. Eventually small pieces of rock (called **scree**) break off altogether.



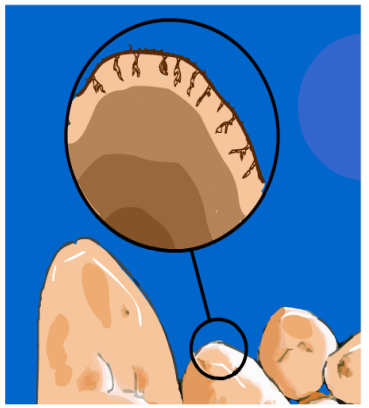
2. Exfoliation or onion-skin weathering



During the day the **sun heats up** the surface of the rock, causing the **rock to expand**.



During the night the rock **cools** down and **contracts**.

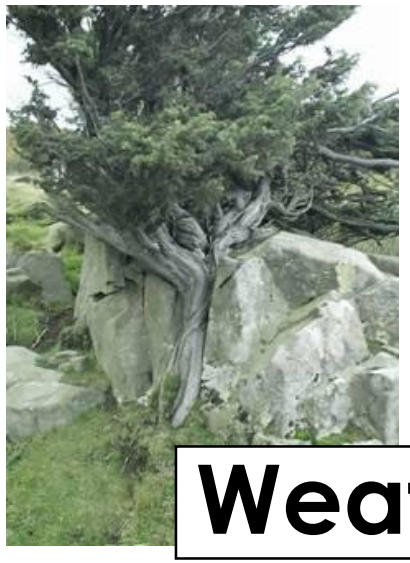


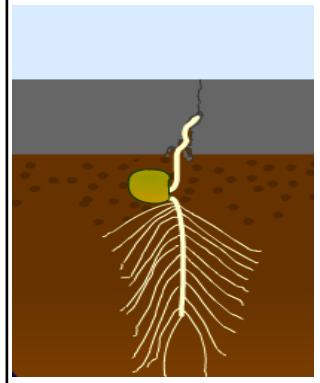
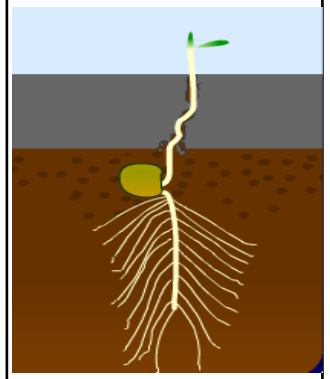
As the rock **expands** and **contracts** over and over again, small pieces of surface rock begin to **flake and fall off**.

Weathering (Chemicals)

There are also acids in the rain that can chemically eat away at rocks – especially rocks consisting of metal carbonates (such as chalk, limestone and marble).

Firstly, there is **carbon dioxide gas** which dissolves in rain to form weak carbonic acid. This very slowly eats away at certain rocks. Secondly, there are **nitrogen and sulphur oxides** which produce much more acidic rain that can rapidly chemically dissolve the rocks.



Plant roots can get into tiny cracks in rocks	
As the roots push their way up to the surface of the rock, they force the crack open even further	
This causes small pieces of the rock to break away. This is called Biological Weathering.	

Weathering (Biological)

Rivers and Coasts

Processes of River Erosion

Abrasion

This is the process by which the bed and banks are worn down by the river's load.

The river throws these particles against the bed/banks.

Hydraulic Action

This process involves the force of water against the bed and banks.

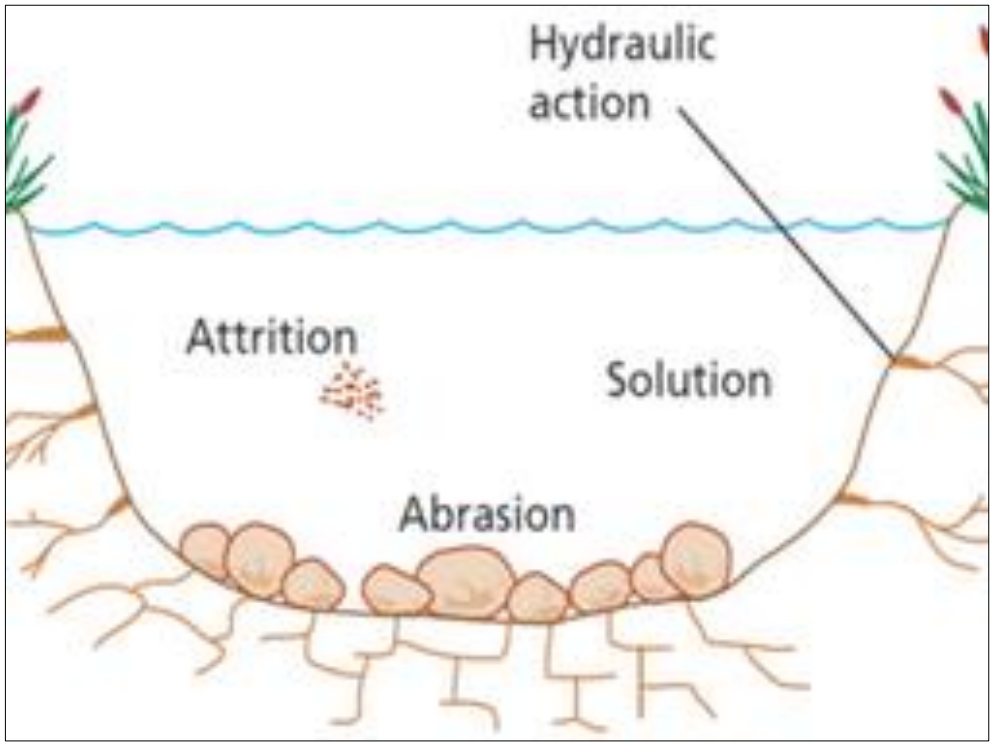
Solution

This is the **chemical action** of river water.

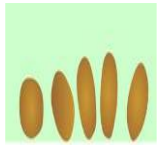
The acids in the water slowly **dissolve** the bed/ banks.

Attrition

Material (**the load**) carried by the river bump into each other and so are **smoothed and broken down** into smaller particles.

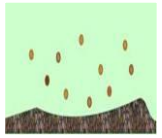


How is material transported downstream?



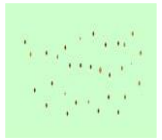
Traction

Boulders and pebbles are **rolled** along the river bed at times of high discharge.



Saltation

Sand sized particles are **bounced along** the river bed by the flow of water.



Suspension

Fine clay and sand particles are **carried along** within the water even at low discharges.

Solution

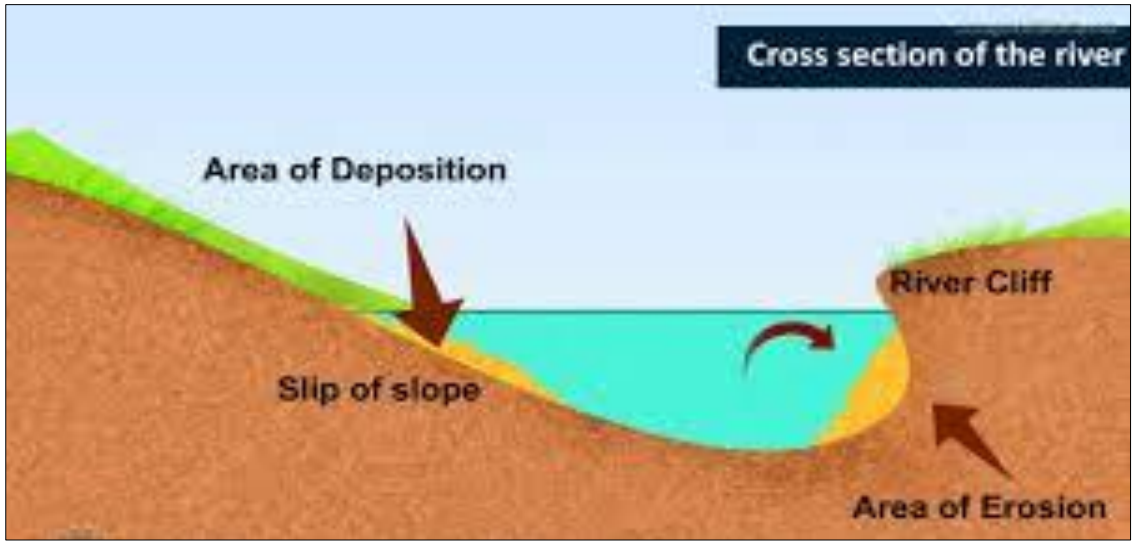
Some minerals **dissolve** in water such as calcium carbonate. This requires very little energy.

What are the main processes that operate in the middle and lower course of a river?

Erosion is still an important process. The river is now flowing over flatter land and so the dominant direction of erosion is **lateral** (from side to side). The river has a greater discharge and so has more energy to transport material. Material that is transported by a river is called its **load**. **Deposition** is also an important process and occurs when the velocity of the river decreases or if the discharge falls due to a dry spell of weather.

What happens on a river bend?

A meander is a **bend in the river**. Meanders usually occur in the middle or lower course, and are formed by **erosion and deposition**. As the river flows around a bend, the water flows **fastest** around the outside of the bend forming a **river cliff**. This creates erosion on the outside. The **slower flow** on the inside of the bend causes deposition and a **river beach (slip-off slope)** to form.



Case Study: Cumbria Flooding 2009 & 2015

Causes
- Unexpected
- **3 months of rainfall fell in just over one day**
- **Storm Desmond (2015)**
- **Ground already saturated**
- **Steep slopes**
- **Climate Change**

Effects
- **1300 homes flooded**
- **Some loss of life**
- 4 feet high water at maximum flood level
- Dirty water all through Carlisle and other towns
- Businesses affected e.g. The Trout Hotel couldn't open for Christmas season
- **Bridges and roads closed.**
- People had to be evacuated from their homes

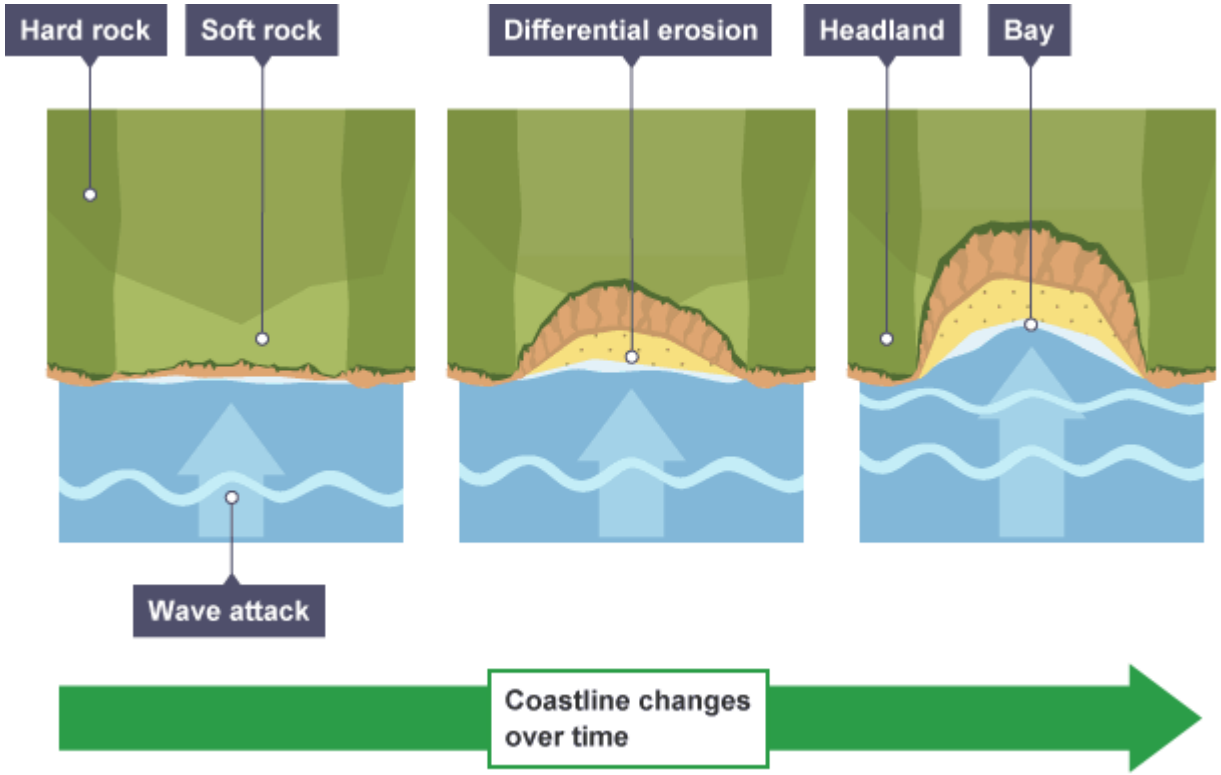
Response
- **Government provided £1 million for clean up and repairs**
- **Cumbria flood recovery fund set up**
- **Food supplies given**
- Villagers helped each other
- Salvage things from their homes
- **Cleared roads and footpaths**

Future Management
- **A £4.4 million management scheme**
- **New flood defence walls**
- River **dredged** more regularly **to deepen the channel**
- **New embankments to raise the height** of the river banks
- **New floodgates** at the back of some houses

Flood Management Strategies (Revise retention ponds and permeable pavement only).

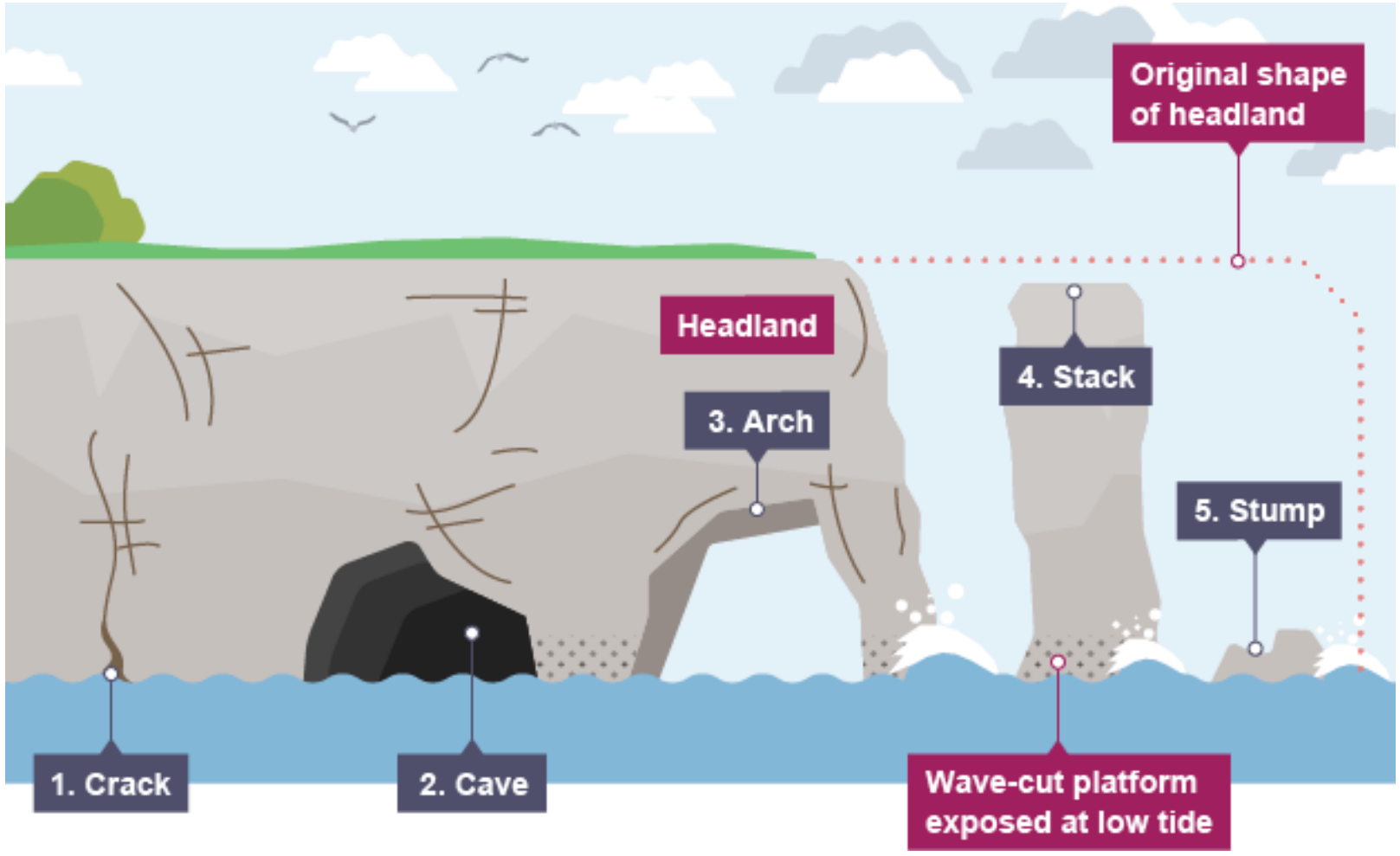
Strategy	Advantages	Disadvantages	Strategy	Advantages	Disadvantages
Dams and reservoirs  The dam traps water, which builds up behind it, forming a reservoir. Water can be released in a controlled way.	• Can be used to produce electricity by passing the water through a turbine within the dam. • Reservoirs can attract tourists.	• Very expensive. • Dams trap sediment which means the reservoir can hold less water. • Habitats are flooded often leading to rotting vegetation. This releases methane which is a greenhouse gas. • Settlements are lost and people have to move.	**Flood warnings and preparation**  The environmental agency monitors rivers and issues warnings via newspapers, TV, radio and the internet when they are likely to flood so people can prepare.	• People have time to protect their properties, e.g. with sandbags. • Many possessions can be saved, resulting in fewer insurance claims.	• Some people may not be able to access the warnings. • Flash floods may happen too quickly for a warning to be effective. • They do not stop land from flooding - they just warn people that a flood is likely.
River straightening and dredging  Straightening the river speeds up the water so it moves quickly. Dredging makes the river deeper so it can hold more water.	• More water can be held in the channel. • It can be used to reduce flood risk in built-up areas.	• Dredging needs to be done frequently. • Speeding up the river increases flood risk downstream.	**Retention Ponds** 	• Attract wildlife • Looks natural	• Take up expensive building land
Embankments  Raising the banks ot a river means that it can hold more water.	• Cheap with a one-off cost • Allows for flood water to be contained within the river.	• Looks unnatural. • Water speeds up and can increase flood risk downstream.	**Permeable Pavement** 	• Allows water to infiltrate • Attracts wildlife • Looks nice	• Harder to maintain than pavement

Coasts – Erosion of a Headland



Headlands are usually formed of more **resistant rock** types than **bays**.
If there are different bands of rock along a coastline, the **weaker** or **softer rock**, such as clay, is **eroded fastest**. This leaves more resistant rock types, such as granite, **sticking out**.

Erosion of a Headland



1. Cracks are widened in the headland through the erosional processes of **hydraulic action** and **abrasion**.
2. As the waves continue to grind away at the crack, it begins to open up to form a **cave**.
3. The cave becomes larger and eventually breaks through the headland to form an **arch**.
4. The base of the arch continually becomes wider through further erosion, until its roof becomes too heavy and collapses into the sea. This leaves a **stack** (an isolated column of rock).
5 The stack is undercut at the base until it collapses to form a **stump**.