

# Year 7

## Geography revision

### handbook



Everything that you need to succeed in your geography exam.

It is recommended that you produce your own revision resources, such as flash cards and mind maps to help you to recall this information in the exam.

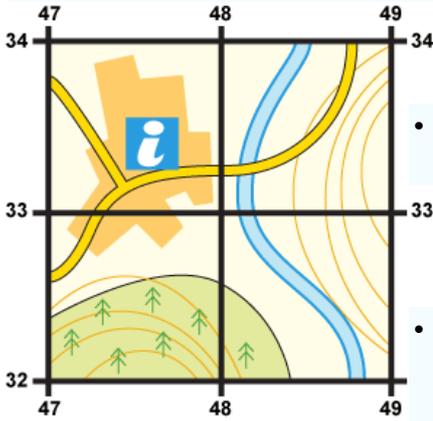
Get revising and remember to ask your teacher if you need any help.

Good luck and work hard!

# Geographical Skills

## 4 and 6 figure grid references

A grid of squares helps the map-reader to locate a place. The horizontal lines crossing the map from one side to the other are called **northings**. They are numbered - the numbers increase to the north. The vertical lines crossing the map from top to bottom are called **eastings** as the numbers increase in an easterly direction.



**Things to remember:** On an OS map each grid square is 1 km x 1 km or 1 sq km.

- When you give a grid reference, always give the easting first... "Along the corridor and up the stairs".

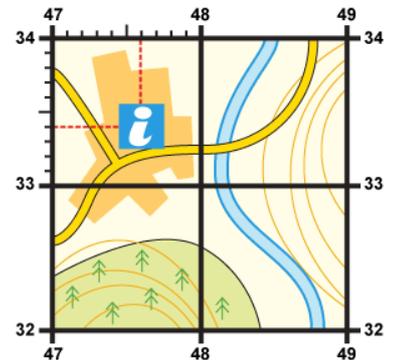
**Four-figure grid references** can be used to pinpoint a location to within a square measuring 1 sq km. To find the number of the square:

- Start at the left-hand side of the map and go east until you get to the easting crossing through the bottom-left-hand corner of the square you want. Write this number down.
- Move north until you get to the northing crossing the bottom-left-hand corner of the square you want. Look at the number of this grid line and add it to the two-digit number you already have. This is your four-figure grid reference.

In this case, the tourist information office is in grid square **4733**.

Sometimes it is necessary to be even more accurate. In this case you can imagine that each grid is divided into 100 tiny squares. The distance between one grid line and the next is divided into tenths.

- First, find the four-figure grid reference but leave a space after the first two digits. When you get to the easting at the left-hand side of the grid square you want, keep moving east and estimate or measure how many tenths across your symbol lies. Write this number after the first two digits.
- Next, move north from the bottom-left-hand corner of your grid square and estimate how many tenths your symbol is from this point. Put them together to create a six figure grid reference.



In this instance, the tourist information office is located at **476334**.

## Direction, scale, distance and height

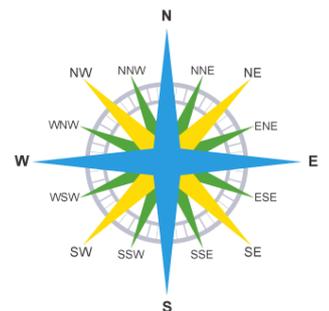
### Direction

Try to remember the main compass points by using a mnemonic, eg

**Naughty Elephants Squirt Water - North East South West**

The four main points of the compass are north, east, south and west. Half way between each of these there are four other points: north-east, south-east, south-west and north-west. This makes an eight-point compass. There are a further eight points between these... remember the names of these are a mix of the two closest compass points but they always start with the main compass point, i.e. north, east, south or west.

Ordnance Survey maps are always printed so that north is at the top of the map.



## Scale and distance

Most maps have a scale. These help us to work out distances on maps. This is given by the scale statement (eg 1:25,000) and/or by showing a scale bar.

The scale shows how much bigger the real world is than the map. If the scale is 1:50,000 it means that the map is 50,000 times smaller than the real world. For example, every 1 cm on the map represents 50,000 cm (500m) in the real world.

## Height on maps

Maps show height in a number of different ways:

### Spot heights and triangulation pillars

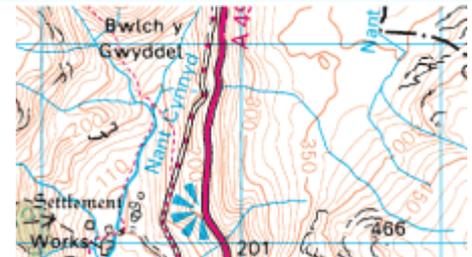
This map extract shows exact heights by a black dot with a number next to it. The number is the height above sea level in metres. The blue triangle represents a **triangulation pillar**.



## Contours

These are lines drawn on maps that join places of the same height. They are usually an orange or brown colour. Some

contour lines have their height above or below sea level written on them. It is possible to use them to see the shape of the land - if contour lines are close together the slope is steep, if they are far apart the slope is gentle.



Contour lines are usually drawn at 10 metre intervals on a 1:50,000 scale map and at 5 metre intervals on a 1:25,000 scale map.

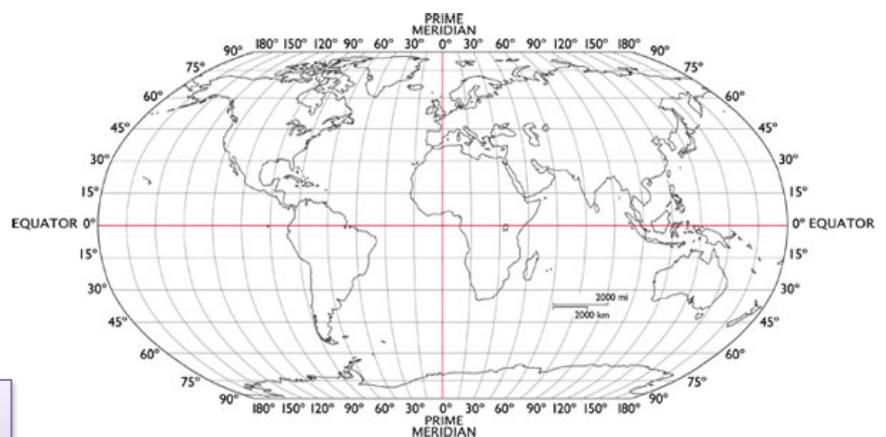
## Layer shading

Maps are sometimes shaded to show the height of land.

## Longitude and latitude

Lines of longitude run north to south so are measured east or west from the prime meridian.

Lines of latitude run east to west so are measured north or south of the equator.



Tip to remember: Latitude has a t at the start, a t is a cross, latitude is across.

## World Geography



Continents	Oceans
North America	Atlantic Ocean
South America	Pacific Ocean
Africa	Indian Ocean
Europe	Southern Ocean
Asia	Arctic Ocean
Australia	
Antarctica	

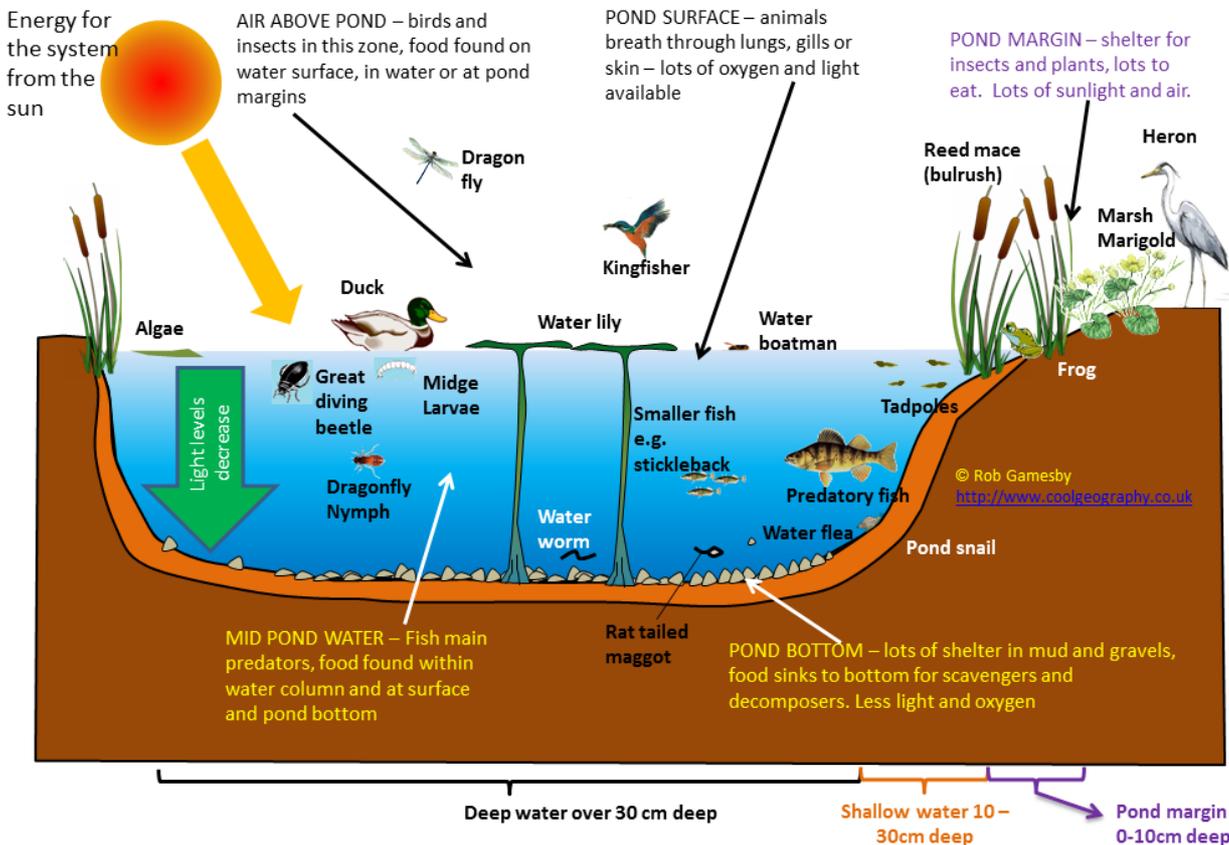
## Geography of the UK



Seas	Rivers	Mountains	Capitals
North Sea	River Severn	Cambrian Mountains	London
English Channel	River Trent	Pennines	Cardiff
Celtic Sea	River Thames	Southern Uplands	Dublin
Irish Sea	River Mersey	Grampian Mountains	Edinburgh
Atlantic Ocean	Tyne	Northwest Highlands	

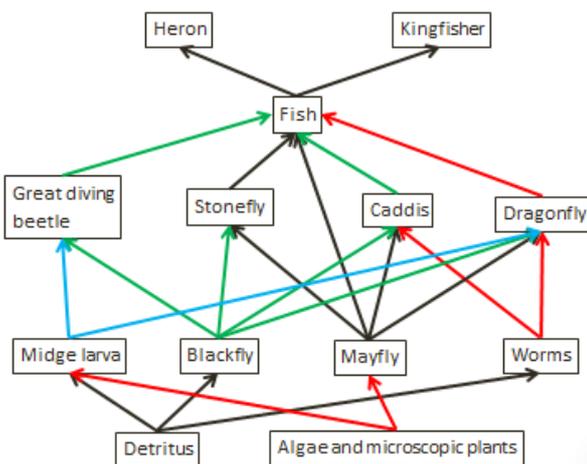
## Ecosystems

An **ecosystem** is a group of **biotic** (living) organisms interacting with the **abiotic** (non-living) parts of an environment, which live together in a **habitat**. The lives of the plants and animals are closely linked to each other as well as the climate and soil of the area in which they live. Ecosystems can be small-scale, covering a small area (such as a pond) or large-scale covering a large area (such as a tropical rainforest).



We can classify living organisms in an ecosystem as either **producers** or **consumers**. **Producers** generally use energy from the environment, such as from the sun, and convert it into sugars (or glucose). Plants do this through the process of photosynthesis. **Consumers** then get their energy by eating the producers for their sugars.

In our pond example, reeds living at the edge of the pond and water lilies would be our producers, and pond snails are a consumer as they eat the pond plants.

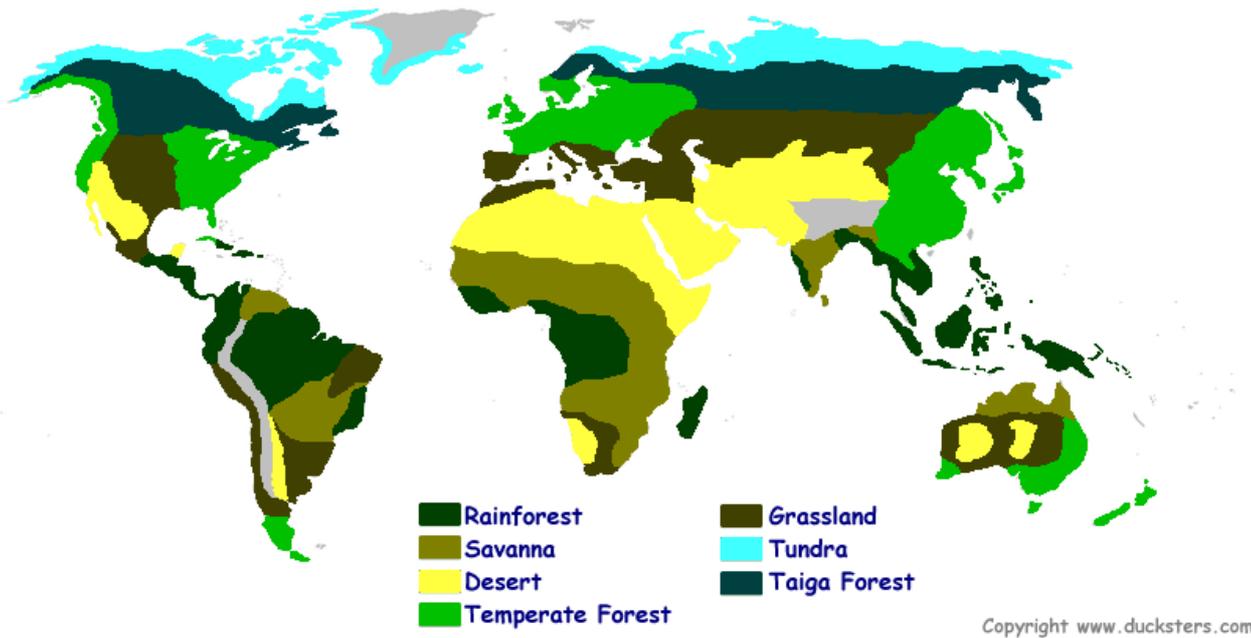


The simple example of the connections between different organisms that consume each other is known as a food chain. When links between the hierarchies of different components are shown across the ecosystem it is called a Food Web.

Decomposers are organisms such as fungi and worms that break down dead tissue and recycle food and nutrients back into the environment.

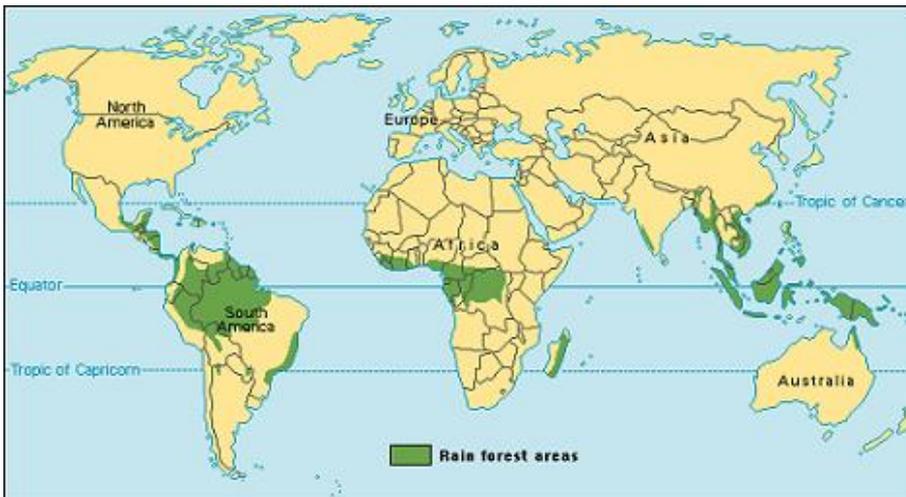
The Nutrient Cycle shows the movement of nutrients around an environment and passing through the food chain.

Large ecosystems are called **biomes** examples include tropical rainforests and tundra.



## Tropical Rainforests

### Location



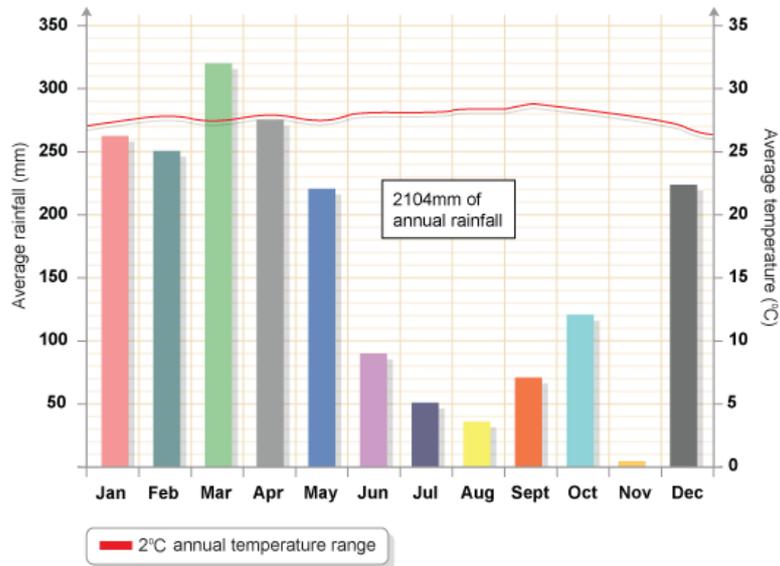
Tropical Rainforests are found in a narrow band along the equator. They are found in the continents of South America, Africa, Asia and Australia. Brazil, Congo, Madagascar, Indonesia and Australia are all examples of countries that have tropical rainforests in them. The Amazon Rainforest and Congo Basin are examples of rainforests.

### Characteristics and climate

A tropical rainforest biome is found in hot, humid environments in equatorial climates. They contain the most diverse range and highest volume of plant and animal life found anywhere on earth.

In general, tropical rainforests have hot and humid climates where it rains virtually everyday. The level of rainfall depends on the time of year. Temperatures vary through the year - but much less than the rainfall.

The graph shows average rainfall and temperature in Manaus, Brazil, in the Amazon rainforest. The rainy season is from December to May. Notice how much the rainfall varies over the year - the highest monthly rainfall is in March with over 300mm, while the lowest is in August with less than 50mm. Over the year, the temperature only varies by 2°C



## Why are rainforest so important?

Many of the things we have in our homes come from the rainforest.

These include:

- chocolate - Chocolate is made from cocoa. Cocoa pods grow on trees in rainforests.
- sugar
- medicine
- spices - includes ginger, allspice, pepper, cinnamon, coconut, vanilla, turmeric and paprika.
- rubber
- pineapples
- bamboo

They are very important as the plants of the rainforest generate much of the Earth's oxygen. As many as 30 million species of plants and animals live in tropical rainforests.

## Layers of the Rainforest

**Emergent Layer** - very sunny because it is the very top. Only the tallest trees reach this level.

**Who lives here?** birds, butterflies and small monkeys live with bats, snakes and bugs.

**Canopy Layer** - much of the rain is stopped by the thick foliage. Most trees in the forest grow to this height. Trees have drip tips to get rid of rainwater. There are plants that grow in the canopy layer. Their roots don't reach the ground. These are called air plants.

**Who lives here?** birds, monkeys, frogs, and sloths, as well as lizards, snakes and many insects.

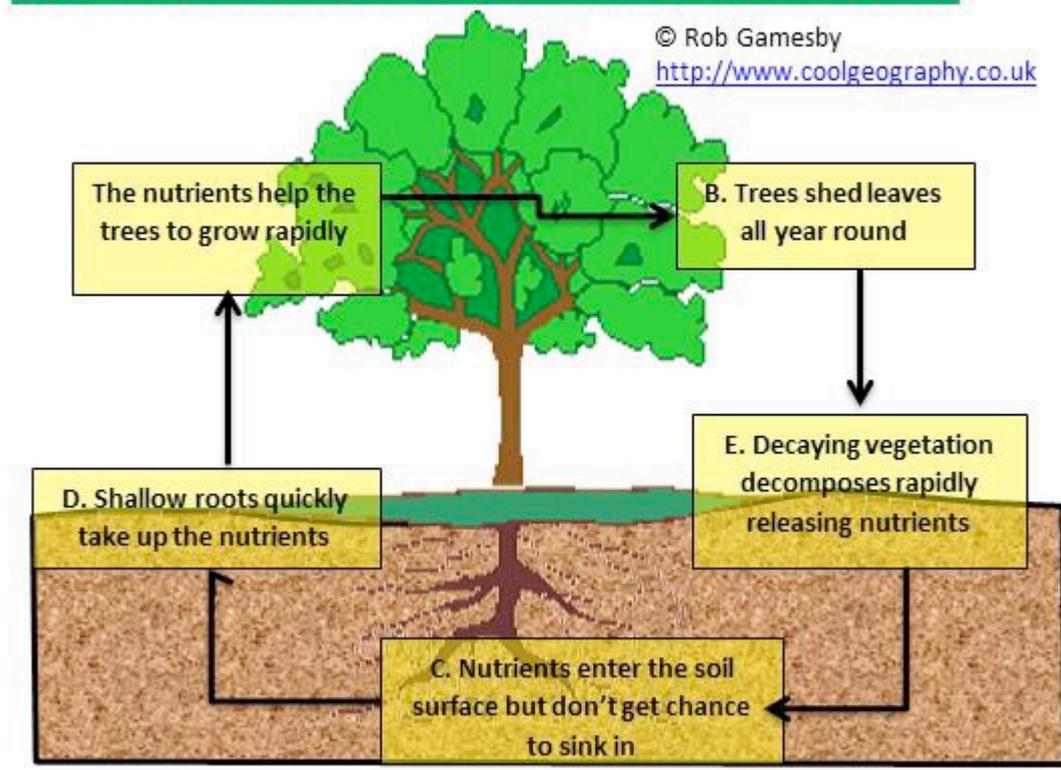


**Under Canopy Layer** - many vines, dense vegetation, not much light.

**Who lives here?** birds, butterflies, frogs and snakes

**Shrub Layer** - dark, damp, full of many dead leaves, twigs and dead plants. The forest floor is dark due to the trees above stopping the sunlight from entering the forest. It is estimated that only 2% of the sunlight actually reaches the floor. Trees have large buttress roots to give them support.

## Tropical Rainforest Nutrient Cycle



Tropical soils are **very deep**, some of the deepest in the world. This includes the **Latosol**, a typical tropical forest soil. The soils have been underneath tropical rain forests for millions of years and the high rainfall **weathering the rock below** and masses of vegetation allow deep soils to form. Tropical soils can be several metres thick BUT are often **very nutrient poor** as you go down through the soils. This is because the rainwater washes out or **LEACHES the nutrients** and minerals out of the soil. Soils are often red in colour as they are rich in iron.

This leaching means that the lower layers of the soils lack the nutrients and minerals needed by the lush vegetation. It is a huge system of **NUTRIENT CYCLING** that allows the vegetation to grow. This is a good example of the **INTERDEPENDENT (where things rely upon each other)** nature of the forest. As vegetation dies it is quickly decomposed by insects, bacteria and fungi. This releases nutrients into the surface of the soil which is taken up quickly by the plants.

## Adapting to the Rainforest



Each has adapted to rainforest conditions in a different way.

**Fan palms** have large, fan-shaped leaves that are good for catching sunshine and water. The leaves are segmented, so excess water can drain away. These are called **drip tips**.

Rainforests have a shallow layer of fertile soil, so trees only need shallow roots to reach the nutrients. However, shallow roots can't support huge rainforest trees, so many tropical trees have developed huge **buttress roots**. These stretch from the ground to two metres or more up the trunk and help to anchor the tree to the ground.



**Lianas** are woody vines that start at ground level, and use trees to climb up to the canopy where they spread from tree to tree to get as much light as possible.



**Strangler figs** start at the top of a tree and work down. The seed is dropped in a nook at the top of a tree and starts to grow, using the debris collected there as nourishment. Gradually the fig sends aerial roots down the trunk of the host, until they reach the ground and take root. As it

matures, the fig will gradually surround the host, criss-cross its roots around the trunk and start to strangle. The figs branches will grow taller to catch the sunlight and invasive roots rob the host of nutrients. Eventually the host will die and decompose leaving the hollow but sturdy trunk of the strangler fig.



## Causes of deforestation in the rainforest

### Soybean farming.

Brazil is the biggest exporter of soybeans. Soybeans can be eaten or used for biofuel.



### Cattle Ranching

There are about 200 million cattle in Brazil. World demand for beef products continues to grow. It is a very profitable export for Brazil.



### Hydro-electric power

Lots of land is flooded when you build a large dam. The electricity produced is renewable and clean. Most of Brazil's electricity is produced in this way.



## Mining

Brazil has vast amounts of minerals that are very valuable to mine and export. They are helping to create many jobs and are worth a lot of money.



## There are many social, economic and environmental impact of deforestation

### Positives of deforestation

- Improved **transportation** - new roads and airports. Better transportation means easier access to raw materials like minerals and timber. Rainforest resources can be transported away and sold.
- **Infrastructure**, hospitals and education can be improved from the money gained from selling natural resources.
- **Profits** from selling resources can be used to improve a country's infrastructure. For example, profits from the sale of rainforest resources can be used to build schools and hospitals.
- **Raw materials**, eg tropical hardwoods such as ebony and mahogany, can be sold for a good price abroad.
- **Mineral deposits** in the Amazon include bauxite (the main constituent of aluminium), iron ore, manganese, gold, silver and diamonds. Minerals can be sold for high profits.
- **Large-scale farming** brings money into the country and provides food and jobs for the country's growing population.
- **Small-scale farming** provides food for rainforest communities and the landless poor of Brazil.

### Problems of deforestation

- New **roads** divide up parts of the rainforest and can cut off connections between different systems. For example, a road can stop monkeys such as the golden lion tamarin from travelling to gather food and, in turn, distribute seeds to re-sow plants in the forest.
- **Land clearance** for farming, transportation and mining can lead to **deforestation**. Hardwood trees take many years to grow so can be difficult to replace.
- **Fertile soils** that make farming possible are quickly washed away when the forest is cleared. If soil ends up in rivers, this can lead to flooding.
- **Loss of animal habitat** occurs when trees are cut down. Hence, deforestation can result in endangering animals and plant life, or even causing them to become extinct.
- **Profits** from large-scale farming and selling resources often go back to MEDCs or large companies and don't benefit the rainforest communities

## The Kayapo

The Kayapo live in thatched-roof huts without room divisions. The thatch for the roofs is made of palm leaves. The huts are quite roomy and large enough for an entire family. Instead of using mattresses, the bedding usually consists of hammocks. These are much cooler and more comfortable in a jungle environment.

Health protection is achieved through the use of medicinal roots and herbs.

Fish is a main source of protein in the Kakapo's diet. Wild fruits and Brazil nuts are eaten. Vegetables are harvested, and animals such as monkey and turtle are hunted. Some animals are eaten rarely except during festivals. Kayapo are skilled hunters. They use blowguns and darts dipped in a type of poison called *curare*, which instantly paralyzes an animal.



### Sustainable management

Brazil needs to exploit the Amazon's resources to develop, so leaving it untouched is not an option. Uncontrolled and unchecked exploitation can cause irreversible damage such as loss of biodiversity, soil erosion, flooding and climate change. So, sustainable use of the forest is essential. Sustainable development will meet the needs of Brazil's population without compromising the needs of future generations.

Possible strategies include:

- **Selective logging** - trees are only felled when they reach a particular height. This allows young trees a guaranteed life span and the forest will regain full maturity after around 30-50 years.
- **Eco-tourism** - Allowing tourists to visit the rainforests. The tourists are educated about the importance of the rainforest. Local people are employed as guides. Hotels are built out of natural resources. This means that the government will want to preserve the rainforest as it is bringing them an income.

## Sustainable Management

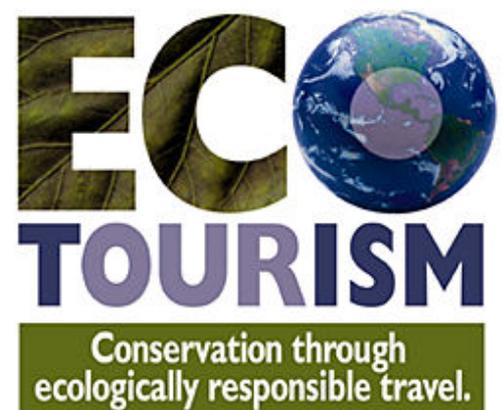
- **Agro-forestry** - growing trees and crops at the same time.
- This lets farmers take advantage of shelter from the canopy of trees.
- It prevents soil erosion and the crops benefit from the nutrients from the dead organic matter.



- **Selective logging** - trees are only felled when they reach a particular height.
- This allows young trees a guaranteed life span and the forest will regain full maturity after around 30-50 years.



- **Education** - ensuring those involved in exploitation and management of the forest understand the consequences behind their actions.



## Tectonic Hazards

### What is a hazard?

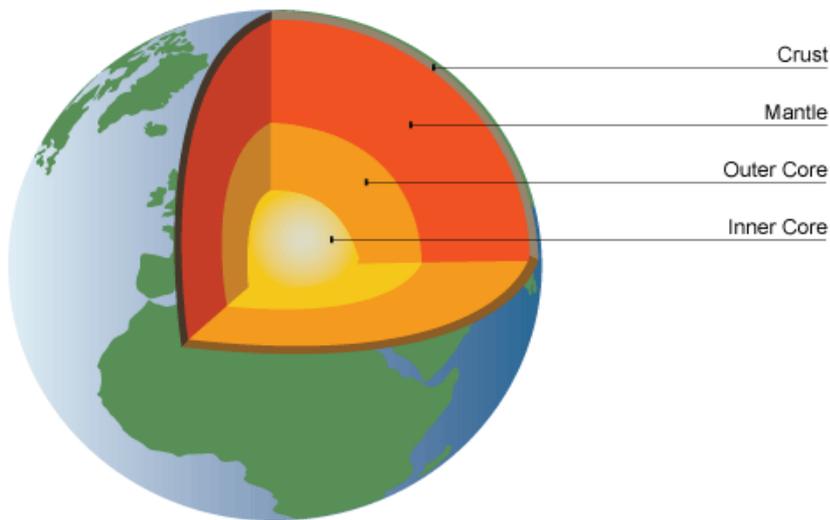
A Natural Hazard is a naturally occurring event which has the potential to cause loss of life or property. Without people it would just be an event as it would need to affect people to be a hazard.

### How can we classify hazards?

Climatic hazards - are hazards that are caused by the weather.

Geological hazards - are hazards that are caused due to the structure of the earth.

### What is the structure of the earth?



The **inner core** is in the centre and is the hottest part of the Earth. It is solid and made up of iron and nickel with temperatures of up to 5,500°C. With its immense heat energy, the inner core is like the engine room of the Earth.

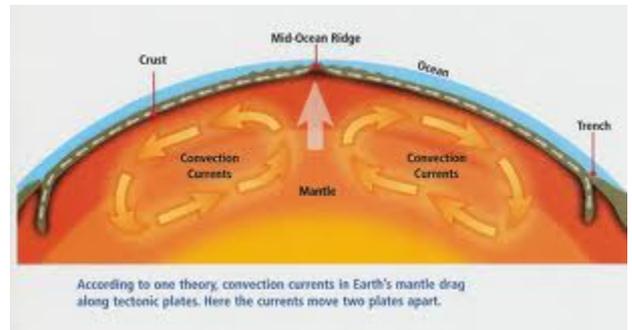
The **outer core** is the layer surrounding the inner core. It is a liquid layer, also made up of iron and nickel. It is still extremely hot, with temperatures similar to the inner core.

The **mantle** is the widest section of the Earth. It has a thickness of approximately 2900km. The mantle is made up of semi-molten rock called magma. In the upper parts of the mantle the rock is solid, but lower down the rock is soft and beginning to melt.

The **crust** is the outer layer of the earth. It is a solid layer between 0-60 km thick. The crust is the thin rock layer upon which we live.

## What are Tectonic Plates?

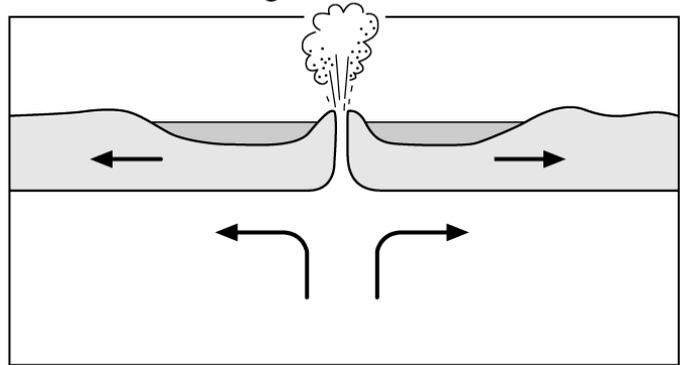
The crust is broken up into pieces called plates. These float on the mantle convection current within the mantle cause the plates to move.



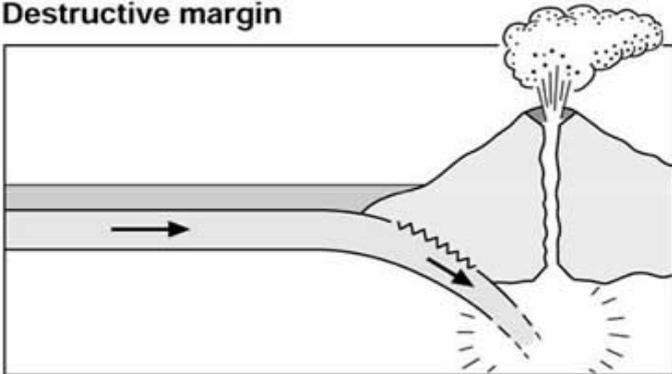
The points at which these plates meet is called a plate margin. There are 4 main types of plate margin:

- **Constructive**
  - Plates moving apart, creating new crust.
  - Volcanoes and earthquakes.
  - Example Mid-Atlantic Ridge, Iceland - Eyjafjallajokull

### Constructive margin

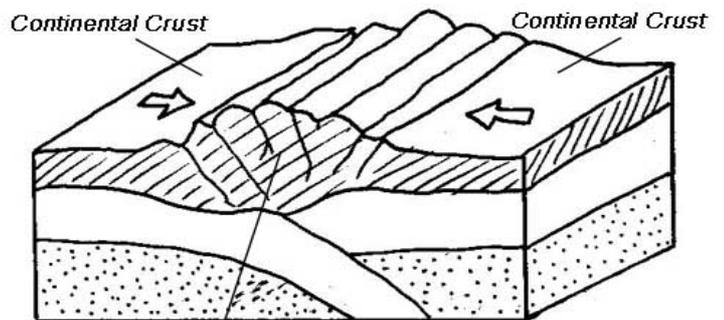


### Destructive margin



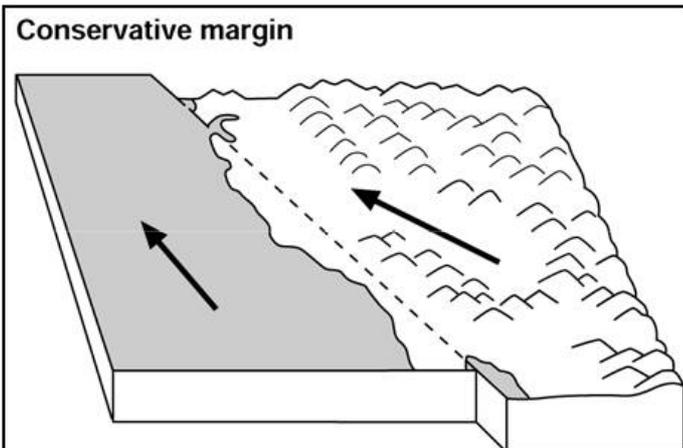
- **Destructive (Collision)**
  - When two continental plates move towards each other.
  - No volcanoes occur at this plate margin.
  - Earthquakes occur and fold mountains are formed.
  - Example Himalayas.

- **Destructive (Subduction)**
  - Plates are moving together, destroying tectonic plates.
  - Volcanoes and earthquakes occur at this plate margin.
  - An example is Peru-Chile trench.



*Fold Mountains produced by upthrust on collision*

### Conservative margin



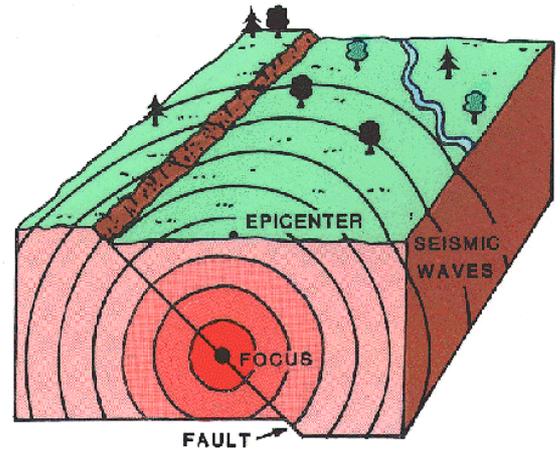
- **Conservative**
  - When plates are moving in the same direction but at different speeds.
  - Earthquakes are common but volcanoes occur.
  - Example is the San Andreas Fault on the west coast of America.

## Earthquakes

Earthquakes are the sudden violent shaking of the ground. They occur because the Earth's plates are constantly moving and sometimes pressure builds up due friction when this pressure is released an earthquake is caused.

The point within the crust where the rock breaks due to the pressure is known as the **focus**.

The point directly above the focus on the earth's surface is known as the **epicentre**.



## Earthquake Casestudies

You have looked at 2 different case studies one in Christchurch the other in Haiti. In both case studies you have looked at the background information, cause, effects and responses.

Background information - when and where the earthquake occurred.

Causes - why did the earthquake happen?

Effects - What happened because of the earthquake?

- Effects can be primary or secondary.
  - Primary effects - effects that are a direct result of the earthquake.
  - Secondary effect - happen as a result of the primary effects.

Response - What were the reactions to the earthquake?

- Responses can be broken down into immediate and long term.
  - Immediate - What were the immediate reactions
  - Long term - What happens after a period of time

## Christchurch earthquake 2011

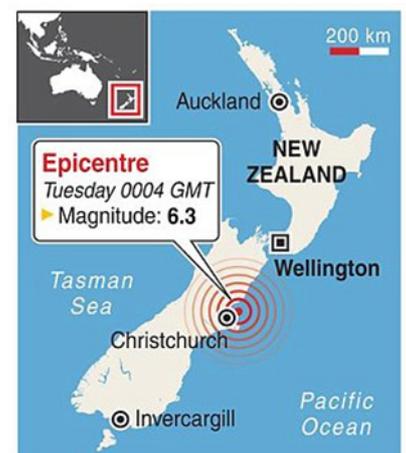
### Background information and causes

- The epicentre was 10Km West of the city of Christchurch which is located on the east coast of the south island of New Zealand.
- The earthquake happened on 22<sup>nd</sup> February 2011, at 12.51 pm.
- The earthquake measured 6.3 on the Richter Scale.
- The earthquake was caused due to being located on a conservative plate margin between the Australian and pacific plates.

### Effects

#### Primary

- 185 people were killed



- 3129 people were injured as a direct result of the earthquake.
- It was estimated that \$40 billion worth of damage was caused.
- 100,000 buildings were damaged as a result of the earthquake, 10,000 of these buildings needed to be demolished.
- More than 50% of the city centre was damaged, including the cathedral losing its spire

### Secondary

- Water and sewage systems were damaged and 54,000 homes were without power.
- A number of roads and bridges were damaged.
- Phone lines were destroyed and mobile phone towers were damaged.
- A number of schools had to be joined together due to the lack of safe school buildings.
- Christchurch was unable to host any of the games during the 2011 rugby world cup event, meaning the country missed out on the tourism and money that it would have gained

### Responses

#### Immediate

- Aid money was received including \$5 million (AUS) from Australia.
- The New Zealand president John Key announced a state of emergency.
- Rescuers came from all over the world to help, including Australia, USA and the UK.
- 800 farmers from around the country travelled to the city with their machinery to aid with the clean-up operation.

#### Long term

- The government provided the people who were made homeless with temporary accommodation and housing.
- Water and sewage systems were restored to all residents by the end of August.
- 80% of the damaged roads were repaired by the end of August.

## Haiti 2010

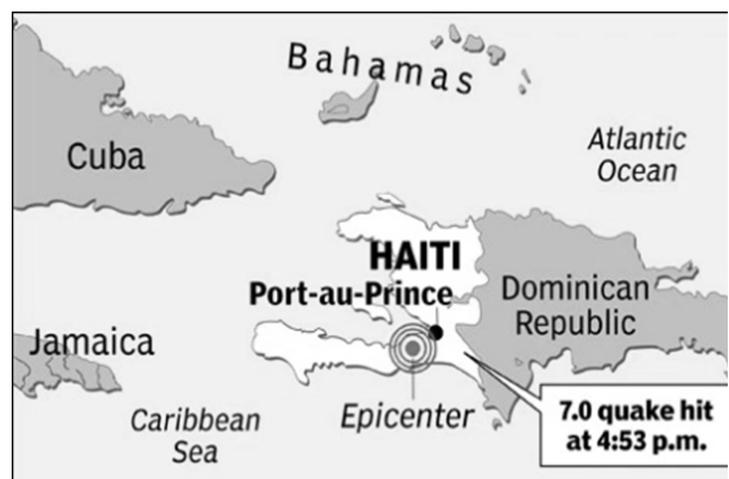
### Background information and causes

- The epicentre was 16Km south-west of the capital city of Port Au Prince which is located on the west coast of Haiti.
- The earthquake happened on 12<sup>th</sup> January 2010, at 16.53 pm.
- The earthquake measured 7.0 on the Richter scale.
- The earthquake was caused due to being located on a destructive subductive plate margin between the North American and Caribbean plate.

### Effects

#### Primary

- 316,000 people were killed
- 3,000,000 (million) were affected by the earthquake.
- It was estimated that \$8.5 billion worth of damage was caused.
- 300,000 buildings were damaged as a result



of the earthquake, including 250,000 residential homes.

- Damaged buildings included the cathedral and jail.
- failure of the electric power system, loss of communication lines, a destroyed port and roads blocked with debris Secondary
- The total death rate was increased because people with serious injuries did not receive the medical treatment that they required.
- .In October 2010 an outbreak of cholera (a waterborne disease) occurred, one of the major water supplies had been contaminated by faecal matter. It turned out to be one of the aid groups had accidentally contaminated the water and by 2016 770,000 had been killed by the disease.

## **Response**

### Immediate

- Aid money was received including \$100 million (USD) from America.
- Rescuers came from all over the world to help, including USA and the UK.
- One of the first responses was to bury the dead, due to the number of bodies and the lack of time 1000's of bodies were buried together in mass graves.
- To aid Haiti in its recovery the EU gave the country \$330 million and the World Bank erased the following 5 years debt repayments, giving the country more money to rebuild the country.

### Long Term

- Two years after the quake approximately half a million people were still living in the temporary accommodation (tents), this number dropped to 360,000 by 2013 but in 2016 62,000 people were still without a permanent house, these camps had very little running water, sewage disposal or electricity, and the tents were not designed to withstand the conditions.
- America took control over organising the different rescue teams both on the ground and I the air as well as supporting by providing the nation with ships, helicopters, 10,000 troops and \$100 million in aid to aid in response to the quake.

## **Tsunami**

A tsunami is a large sea wave caused by a disturbance. They can be caused by disturbance of water usually as a result of earthquakes, Volcanoes or underwater landslides.

When tectonic plates move together at a destructive margin the pressure builds as the rocks grind together. When the pressure builds so much the plates suddenly move and one of the plates jolts upwards. This upwards movement of the plate displaces the ocean water above it. The displaced water moves outwards in a ripple motion in all directions. When the wave meets the ocean the base of the wave slows down as friction with the seabed increases The top of the wave continues to move faster than the base and this makes the wave increase in height as it approaches the shore.

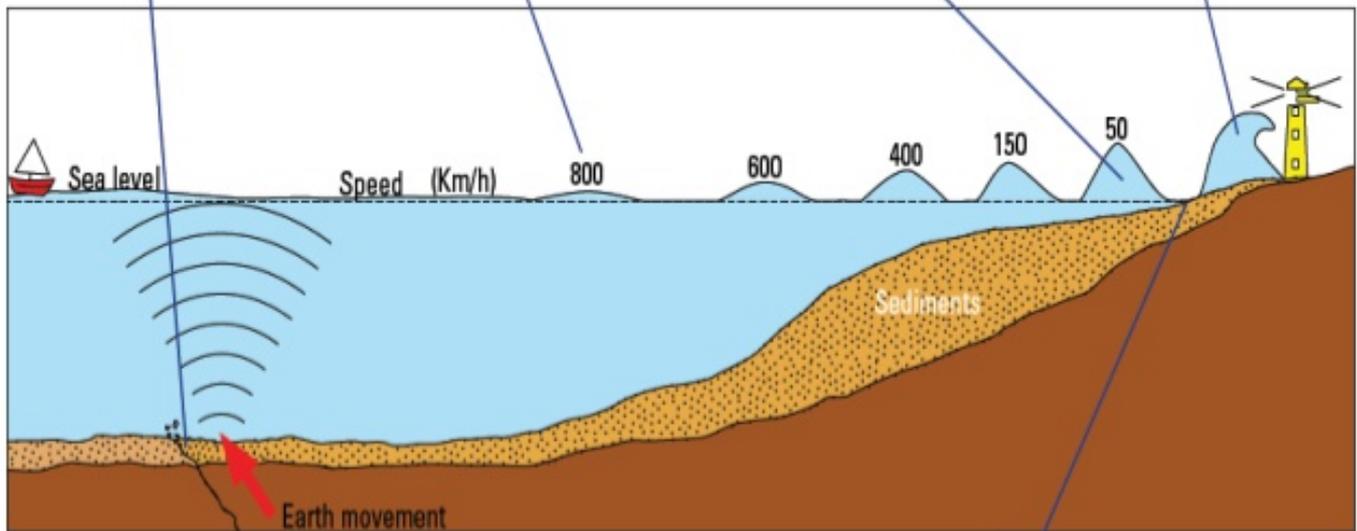
# Formation of a Tsunami

1. The formation of tsunami waves starts when seismic energy from an offshore earthquake forces out a mass of sea water.

2. The tsunami waves may start at a height of less than 1 m, with wave lengths of 100 to 150 km, at speeds of 800 km/h and may pass undetected.

3. On reaching shallower water, greater friction slows the waves and forces them to increase in height.

4. At the point of impact with the coast, the tsunami waves could be travelling at 30 to 50 km/h and may reach heights of around 15 m.



5. Sometimes, the sea recedes from the coast before advancing onshore. If the sea recedes, it only does so minutes before the tsunami reaches the shore. The sea recedes because water first rushes to fill the void caused by the movement of the sea floor. Water is then forced out again soon afterwards, resulting in a tsunami.

## Management Techniques

**The 3P's - Prediction, Protection, Preparation.**

**Prediction** - involves trying to guess when and where the earthquake will occur

Prediction is very difficult because scientist do not know the exact moment that the pressure will be released.

**Protection** - involved constructing/adapting building so that they are safe to live and work within and are unlikely to collapse during an earthquake. Buildings are built to strict building regulations to reduce the likelihood of collapsing.

**Preparation** - involves educating the population on how to react during an earthquake and informing them of methods that will improve chances of survival Disaster Preparation day in Japan, involved education the whole country on what to do during a natural disaster, and carrying out earthquake drills.