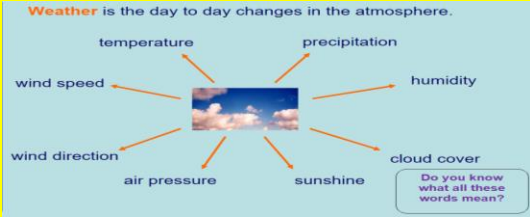
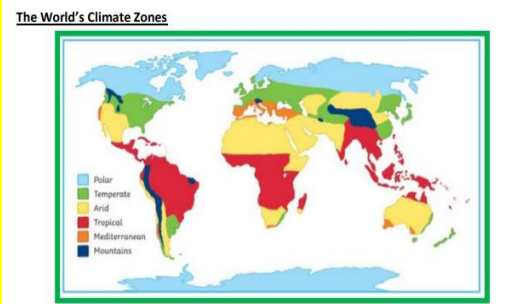


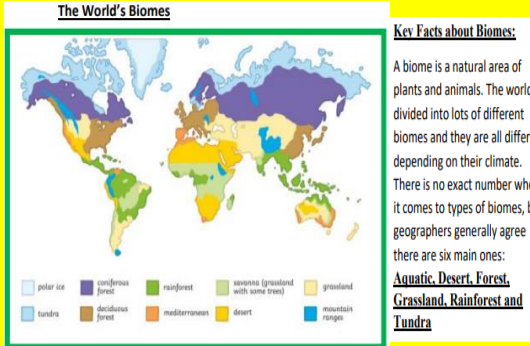
How does the climate influence our actions?



Climate is the overall pattern of weather, usually based on an average over 30 years



Key Facts about Climate Zones:
 Climate is the average daily and seasonal weather patterns over a long period of time. The Equator is an invisible line that runs around the centre of the Earth. The closer you live to the Equator, the hotter it is. As the Earth is tilted on an axis, the Northern and Southern Hemispheres experience different types of weather at the same time of the year. **There are 6 main Climate Zones:** Polar (eg Antarctica); Temperate (eg UK); Arid (eg the Sahara); Tropical (eg Brazil); Mediterranean (eg Spain); and Mountain (eg the Himalayas).









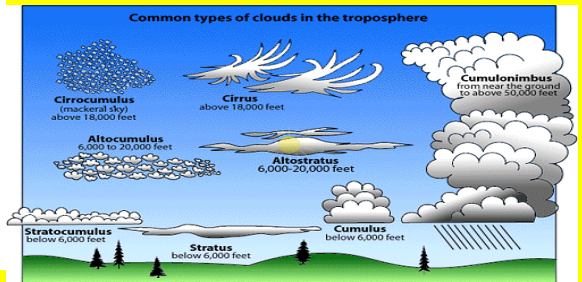
Key Facts about Biomes:
 A biome is a natural area of plants and animals. The world is divided into lots of different biomes and they are all different depending on their climate. There is no exact number when it comes to types of biomes, but geographers generally agree there are six main ones: **Aquatic, Desert, Forest, Grassland, Rainforest and Tundra**

Temperature	How hot or cold the air is
Precipitation	All forms of water that falls from the sky, e.g. rain, snow, hail
Wind	The movement of the air
Humidity	This is a measure of how much water vapour there is in the air
Cloud Cover	The % of the sky that is covered with clouds
Air Pressure	The Earth's atmosphere has a mass (it weighs something). This is the force that the atmosphere is pushing onto the Earth's surface.
Wind Speed	How fast the air is moving
Wind Direction	This is described as the direction the wind is coming from

KS3 Geography – Measuring the Weather

Task: complete the table below using the information in class and on the internet.

Name of the instrument	Photo or diagram	Unit(s) of Measurement	How it works
Anemometer		Feet per minute turned into miles per hour	The wind pushes 'sails' or 'cups' causing rotation, which is translated into speed.
Barometer		1 atmospheric pressure = 1000 millibars	Using either mercury or a small metal box – these expand or contract depending on the air pressure
Weather or Wind vane		Compass directions – where the wind comes from...	The 'tail' catches the wind and moves the arrow to the direction the wind is coming from.
Hygrometer		Usually measured as 'relative' humidity as a %	Some use the expansion and contraction of (horses) hair to show amount of moisture in the air. Others use a thermometer
Thermometer		Either degrees Celsius, or degrees Fahrenheit. 0C = 32F	Traditional thermometers used mercury which expanded (grew) or contracted (shrank) as temperature changed.
Rainfall Gauge		Usually mm, but can also be inches	A measuring cylinder is placed outside to catch the rain. Often has an upside cone as a lid to prevent water loss.



Name:

Topic: How does the climate influence our actions?

What I want my teacher to know about me:

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Signed _____ Date: _____



My Target Grade is:

Geography and British Values



UK Facts

United Kingdom:
Capital - London
Population – 67.7 million
Languages – English (main – 98%)
Scots (2.5%)
Welsh (1.3%)

Bolton has a higher % of people who don't have English as a first language compared to the rest of the UK. **This is because Bolton has a higher % of immigrants than other parts of the UK – which can be linked to plentiful cheaper housing and available jobs.**

British Values

This unit of work will focus on the FIVE British Values and what they mean for you.

They are:

1. Democracy
2. Rule of Law
3. Individual Liberty
4. Mutual Respect
5. Tolerance

"Democracy is a system of government in which the power is vested in the people – where elected representatives govern."

"The Rule of Law is a fundamental principle that governs the UK legal system. This concept means that everyone, including the government, citizens, and other institutions, are equally subjected to the law. It ensures fairness, accountability, and transparency in a democratic society."

"Individual Liberty is the ability in the United Kingdom for everybody to have the freedom to make their own choices and do what you want – within reason and within the 'rule of law'."

"Mutual respect is to treat people politely and thoughtfully and to show them that we value them."

"Tolerance implies respect for others and their opinions and beliefs, which may differ from one's own. It is an appreciation of varying backgrounds of others without any hostilities or prejudices."

Name:

Topic: Geography and British Values

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My Target Grade is:

Global Pattern of Urban Change
 2007 was the first time ever that more people lived in urban areas than rural areas... and difference has only increased since!

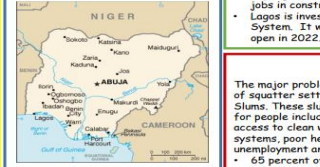


Is Urban Change the same across the world?
 No, it is different across the world. NEEs and LICs are urbanising at a much quicker rate than HICs.



Location and Importance

- Located in Nigeria, Africa. Nigeria is the richest country in Africa.
- Lagos was the financial capital until 1991 and is the financial centre of West Africa.
- It is the most populated city in the country.
- 21 million people live in Lagos and it's one of the fastest growing cities in the world.
- 275,000 migrants arrive in Lagos every year.



Lagos is home to a thriving film industry - **Nollywood** films are very popular in Africa.

Makoko Slum Case Study
 In Lagos, the lack of housing and rapid rate of urbanisation has forced millions of people to build their own homes. These are typically on land they do not own. However, in Lagos, some homes have been built on water. Squatter settlements are any collection of buildings where the people have no legal rights to the land they are built upon. The people are living there illegally and do not own the land. They provide housing for many of the world's poorest people and offer basic shelter. Homes in squatter settlements are typically constructed from scrap material including wood, plastic sheeting and corrugated metal which they are first built. Over time more sophisticated materials can be used to improve the quality of housing.



- Housing is poorly constructed and are generally wooden huts on stilts in the lagoon, e.g. Makoko.
- There is only one school and many families can't afford to send their children there.
- Communal toilets shared by 15 house holds empty into the lake, this spreads disease.
- Water comes from a water pump 3km away and all electricity is illegal and often cuts out.
- The area is policed by gangs called 'Area Boys'
- However, the authorities want to demolish it to help improve the image of the city. Though residents have nowhere else to live. In recent years the authorities have demolished areas of squatter settlements, like the one in 2012.

Factors Affecting rate of Urbanisation

Economic development - Cities are good for business as they allow businesses to trade with each other easily, so they grow economically. It is this growth that creates jobs, which attract people, and it is people who bring the ideas and enterprise on which cities thrive.

Natural Increase - Cities generally have a young population, and so are more likely to have children. Cities tend to have better health care than rural areas, so there is a low death rate and life expectancy is higher.

Push Factors (represented by a hand pushing people away from a rural area):

- Low wages and few job opportunities
- Limited access to services such as healthcare and education
- Poor living conditions
- Conflict and war

Pull Factors (represented by a hand pulling people towards an urban area):

- High wages and more job opportunities
- Better access to healthcare and education
- Improved standard of living
- More entertainment

The Emergence of Megacities

Megacities are cities with a population in excess of 10 million people. In 2018, there were 28 of these megacities (shown in the map opposite), and the United Nations estimates that by 2050 there may be as many as 50. Megacities have such a large population due to natural increase and rural to urban migration. Thousands of people move to these cities each month in the hope of improving their lives because of the available opportunities.

Key Terms

Urban means a built up area such as a town or city.

Rural means a quiet, sparsely populated area, such as the countryside.

Rural to urban migration means the movement of people from the countryside to cities.

Urbanisation is the increase in the proportion of people living in urban areas compared to rural areas.

Megacity is an urban area with a total population in excess of ten million people.

Opportunities of living in Lagos

- Better access to services than rural Nigeria. Rural Nigeria is very poor, most people migrate to Lagos for jobs.
- Lagos is home to lots of the countries government departments, banks and factories.
- More healthcare centres and hospitals and a better range of services in Lagos which will increase their life expectancy.
- 68% of people have a secondary school education in Lagos (40% don't even go to primary school in rural Nigeria).
- Water treatment plants provide safe water to the city.
- Rapid growth of the city means that there are lots of jobs in construction e.g. Eko Atlantic.
- Lagos is investing in the Lagos Rail Mass Transit System. It was announced in 2008 and phase 1 should open in 2022.

Key Terms

Lagos Located in Nigeria, Africa. 21 million people live in Lagos and it's one of the fastest growing cities in the world.

Opportunities A time or set of circumstances that makes it possible to do something.

Challenges of living in Lagos

- It has been estimated that Lagos produces 13million kg of waste per day using infrastructure developed in the 1970s when the city had only 3 million residents. Currently, Traffic congestion - rising car ownership and wealth have meant that more people own cars in Lagos (there are over 5 million). These contribute to both noise and air pollution, as well as lots of lost hours as people sit in traffic jams.
- Lagos has some very dirty air including dangerous levels of Nitrous Oxides, high levels of dust particles and high levels of air pollution. These are both hazardous to human health and can cause things like asthma.
- Only 10% of the population in Lagos have water from the Lagos Water Corporation.
- Rapid population growth means demands for water will increase.
- Lack of sanitation means water in the lagoon becomes polluted by sewage leading to waterborne diseases such as cholera and dysentery.
- The Oshodi landfill is a 100-acre dump in Lagos. It is the largest in Africa, and one of the largest in the world. The site receives up to 100,000 tons of rubbish each day. Waste from around 500 container ships is also delivered to the site, adding a substantial portion of electronic waste. Some of this material is treated with chemicals to extract reusable products resulting in toxic fumes being released.

Challenges Something which makes it difficult to achieve something.

Importance the state or fact of being of great significance or value.

Urban planning scheme for improving quality of life for the poor

The Makoko Floating School

Aim: To give some of the poorest children in Lagos access to free education. The project aimed to improve the quality of life for the residents of Makoko and encourage development.

- Social Improvements:**
- Up to 100 students could be educated for **free** - this meant that they didn't need to work or scavenge to pay school fees.
 - The school was built by unskilled **local workers** - the skills they learnt equipped them to build and repair their own homes.
 - The school was used for local community **meetings and activities**, increasing Makoko's **community spirit**.
- Economic Improvements:**
- Education improved local children's **job prospects**.
 - The school provided **jobs for local teachers**.
 - The schools' success encouraged the government to launch its '**Makoko/Iwaja Regeneration Plan**'. This aims to develop the slum further, e.g. by building **homes** and a **biogas plant** to produce cooking gas for local people.
- Environmental improvements:**
- The school was built using **locally sourced materials**, including 250 floating barrels. This meant that the construction didn't **harm** the local environment and repairs would be **easy**.
 - The schools **buoyancy** allowed it to adjust to different water levels, and **protect** children from floods.
 - The school ran on **solar power** so its energy needs were met in a **sustainable** way.
 - The school collected **rainwater** to meet its water needs.

Bolton University Collegiate School

Professional Responsible Loyal

Name:

Topic: Population issues and management

What I want my teacher to know about me:

Urban Issues and Challenges

Presentation of Work Agreement

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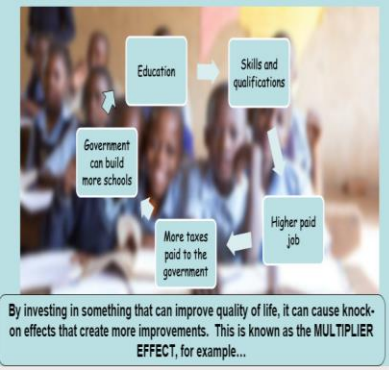
Why do people explore?

Migration – the movement of people or things from one place to another

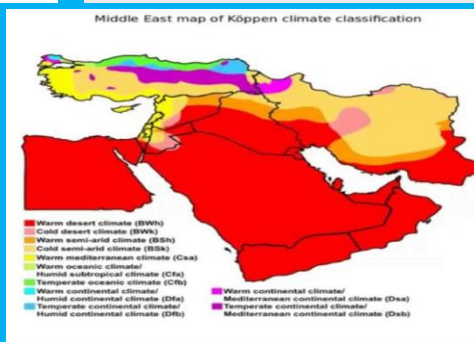
Example	Explanation	Example
Forced	When people are forced (have no choice) to move	War or a Natural Disaster (Syria)
Voluntary	When people choose to migrate	Moving house or going on holiday
Step	When a person moves to many places on their way to a final destination	New jobs or escaping conflict (Syria)
Transnational (International)	Moving from one country to another	Improve quality of life (Mexico to USA)
Chain	Moving to be with your family	Family members moved there years before
Guest Worker	Moving country for a higher paid job	Seasonal workers from Mexico to the USA
Transhumance (Nomadic)	Moving to find food for your animals	Following the desert rains in North Africa
Seasonal	Moving at certain times of year for work	People going to Blackpool in summer for tourism jobs

Literacy is one way which we can measure how developed a place is. Development can also be measured by:

1. **GDP (average wage of people)**
2. **Life Expectancy (the average age people live to)**
3. **Infant Mortality (the proportion of children who die before their 1st birthday)**
4. **Number of doctors per every 1000 people**



Country	Capital City	Population
1 Saudi Arabia	Riyadh	35,581,898
2 Yemen	Sana'a	30,753,988
3 Oman	Muscat	5,289,317
4 UAE	Dubai/Abu Dhabi	10,059,416
5 Qatar	Doha	2,949,829
6 Bahrain	Manama	1,785,167
7 Kuwait	Kuwait City	4,359,873
8 Iraq	Baghdad	41,500,033
9 Jordan	Amman	10,346,429
10 Israel	Jerusalem	8,846,910
11 Lebanon	Beirut	6,782,161
12 Syria	Damascus	18,101,095
13 Iran	Tehran	85,516,321
14 Afghanistan	Kabul	40,164,434
15 Pakistan	Islamabad	226,953,710
16 Turkey	Ankara	85,622,825
17 Egypt	Cairo	105,062,217



KEY IDEA: ANIMALS AND PLANTS HAVE ADAPTED TO THE EXTREME CONDITIONS OF THE ARABIAN DESERT

Animals: Example—THE CAMEL
Behaviourally – some burrow or are nocturnal to avoid heat in the day. Some move quickly across the sand.
Physically – storing water in their fatty tissues, long ears to dissipate heat and thick outer covering to reduce the loss of moisture and keep warm at night. Sandy coloured.
The camel has very specific adaptations.

Plants: Example—THE ACACIA TREE
 Plants living in the Arabian desert are **Xerophytic**. This means that the plants living in this location have adapted to not need large amounts of water. Some plants are also **halophytic** or 'salt-tolerant'.
 There are no cactus species native to the desert here. Most plant species here are characterised by long roots, short spiny shoots, and fleshy, succulent or needle-like leaves; all of which help them adapt to the harsh conditions of the Arabian Desert. The Acacia tree is found in the Arabian desert and has specific importance and adaptations.

Name:
 Topic: Why do we explore?

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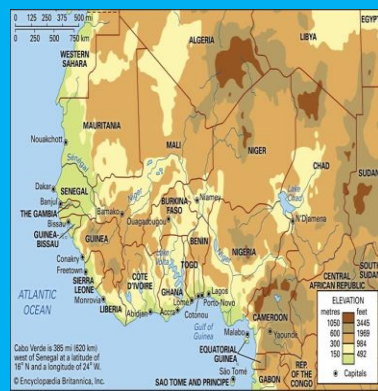
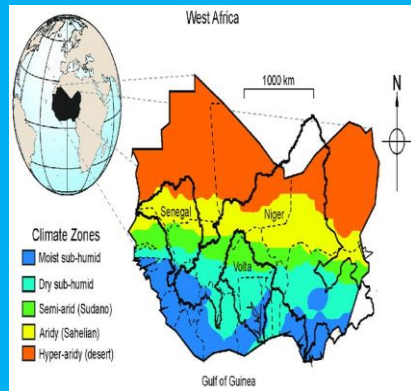
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My Target Grade is:

Geography of West Africa



Name:
Topic: Geography of West Africa

What I want my teacher to know about me:

Location and Importance

- Located in Nigeria, Africa.
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Makoko Slum Case Study

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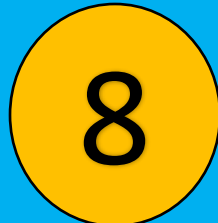
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Geography

How has industrial development contributed to climate change?



Urbanisation

Globally we are seeing a change in the number of people who live in the countryside (rural) compared to towns and cities (urban).



Urbanisation - the increase in the percentage of people living in towns and cities compared to those living in the countryside.

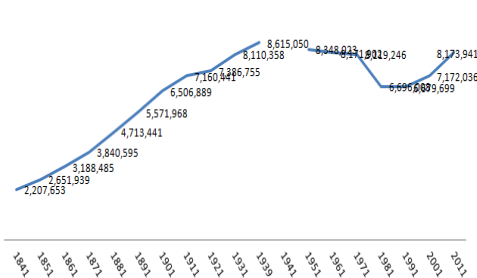
Urban growth per hour

City	Increase (in people per hour)
Berlin	1
Dhaka	76
Dhaka	74
Hong Kong	4
Isarabad	19
Jakarta	27
Johannesburg	2
Punjab	63
Kolkata	32
Luigi	88
London	9
Mumbai	29
Mexico City	22
Mumbai	51
New York	10
Rio de Janeiro	10
Sao Paulo	18
Shanghai	53
Shenzhen	15
Tokyo	-1

Key Words

Climate	The average weather conditions over a long period of time
Climate change	A change in global or regional climate patterns
Global warming	The gradual increase in the overall temperature of the earth's atmosphere
Fossil fuels	A natural fuel such as coal or gas formed from the remains of organisms that lived long ago
Greenhouse gases	Gases in the air that trap energy from the sun e.g. carbon dioxide and methane
Greenhouse effect	Warming of the earth caused by the trapping of the sun's energy by greenhouse gases
Atmosphere	The mixture of gases that surrounds the earth
Primary effects	The immediate consequences of something happening
Secondary effects	Things that occur days, weeks of months after something happens

London Population, 1841-2011



Name:

Topic: How has Industrial Development contributed to climate change?

What I want my teacher to know about me:

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Signed _____ Date: _____



My Target Grade is:

Human causes of climate change

The Greenhouse Effect

- Humans produce greenhouse gases, which create a blanket around the earth.
- Sunlight travels to earth as shortwave radiation.
- Sunlight bounces off the earth's surface as long-wave radiation. This reflected sunlight is trapped in the earth's atmosphere by the greenhouse gases = earth heats up.
- Some heat does manage to escape.

How does human activity = greenhouse gases?

Methane
Humans are to blame because...

Cows produce a methane when they fart, belch and poo. Methane is a greenhouse gas that traps longwave radiation in the earth's atmosphere.

The world's population is rising and countries are becoming more developed = rising demand for meat = more animals farmed = more methane produced.

Carbon dioxide
Humans are to blame because...

Carbon dioxide is the greenhouse gas that people are most worried about, as it is the one we are adding to the atmosphere fastest.

- Fossil fuels are burnt to make energy = carbon dioxide is released into the atmosphere.
- Humans drive cars, which release fossil fuels into the atmosphere

Rising population and more developed countries = increased demand for electricity = more carbon dioxide produced.

Natural causes of climate change

Solar output

A sunspot is dark patch on the sun that appears from time to time. Every 11 years the number of sunspots changes from very few to lots to very few again.

Lots of sunspots = warmer Very few sunspots = cooler

- During 1645-1715 there were very few sunspots. During this time, there was a very cold period known as the 'Little Ice Age'.

Volcanic Activity

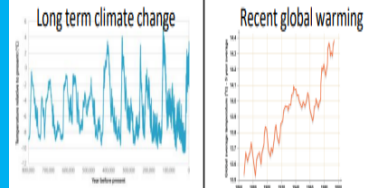
Violent volcanic eruptions blast lots of ash, gases (e.g. sulphur dioxide) and liquids into the atmosphere. Major volcanic eruptions lead to a brief period of global cooling. This is because the ash, gases and liquids can block out the sun's rays, reducing the temperature.

- Pinatubo 1991 eruption = world temperatures fell by 0.5°C for a year.

Orbital Change

Orbital change refers to changes in how the earth moves round the sun. It affects how close the earth is to the sun and therefore how much energy we get from the sun. When the earth is very close to the sun, it is warmer. When the earth is further away from the sun, it is cooler.

- Eccentricity: how the earth orbits the sun. Every 100,000 years the orbit changes from circular to elliptical (egg-shaped). This affected how earth is to the sun.



Over the past 800,000 years the earth's climate has fluctuated, with periods of warmer temperatures and periods of colder temperatures.

More specifically... 300,000 years ago, average temperatures were 4°C warmer than today (interglacial). 420,000 years ago, average temperatures were 9°C colder than today.

Historical records: E.g. Napoleon's army froze in the Little Ice Age

Paintings: E.g. paintings from 1677 show markets on the Thames!

More recently the earth's climate has been rapidly warming. In 1883, the average temperature was 13.5°C, whereas in 1960 the average temperature had risen to 14.0°C. By 1985, the average temperature had risen to almost 14.4°C.

Thermometer records: The 20 warmest years on record have all come since 1995.

Satellite images: Arctic ice cover has decreased by 4% since the 1970s.

Sea level rise: Melting ice sheets has resulted in sea level rise.



Rivers

HYDROLOGICAL CYCLE

RIVER PROCESSES

EROSION where rocks are worn away and the land changes shape.
TRANSPORTATION where eroded material is carried by the river downstream.
DEPOSITION where transported material is dropped when the river loses energy, such as when it enters the sea.

DRAINAGE BASIN

SOURCE The origin of the river.
CONFLUENCE The point at which two rivers meet.
TRIBUTARY Smaller streamlines that flow into a larger one.
FLOODPLAIN Flat land along the river that is prone to flooding.
MOUTH The end where the river meets the sea.

LONG PROFILE OF A RIVER

Source: Steep gradient
 Gentle gradient
 Mouth: Very gentle gradient

THE UPPER COURSE

FEATURES Steep-sided V-shaped valleys, interlocking spurs, rapids, waterfalls and gorges.
 When a river is near its source, it often develops a V-shaped valley as the river erodes down (this is called **vertical erosion**).
 At the same time, weathering breaks up material on the valley slopes. Weathered material from the valley sides gets deposited in the river.

THE MIDDLE COURSE

FEATURES Wider, shallower valleys, meanders, and oxbow lakes.
MEANDERS The formation of meanders is due to both **deposition** and erosion and meanders gradually move downstream.
 The force of the water **erodes** and undercuts the river banks on the outside of the bend where water flow has most energy.
 On the inside of the bend where the river flow is slower material is **deposited** so there is more friction.
 Over time the horseshoe becomes tighter, until the ends become very close together. As the river breaks through the neck the old loop is cut-off from the main channel. The cut-off loop is called an **oxbow lake**.

THE LOWER COURSE

FEATURES Wide flat-bottomed valleys, floodplains and deltas.
 A floodplain is the area around a river that is covered in times of flood. It is a very fertile area. This makes floodplains a good place for agriculture. A build-up of alluvium on the banks of a river can create levees, which raise the riverbank.

BOSCASTLE

CAUSES There was a spell of heavy localized rainfall - 81 mm of rain fell in an hour on saturated ground.

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FLOODING

A flood occurs whenever a river overflows its banks (exceeds its 'bankfull' discharge). However, a flood becomes a problem when the water rises to a level where it threatens property and/or life. Rivers usually flood due to a range of physical factors. These physical factors can be divided into **climatic factors** and **drainage basin characteristics**. **Human intervention** can also make flooding worse.

HUMAN CAUSES OF FLOODING

PHYSICAL CAUSES OF FLOODING

Name:

Topic: Rivers

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My Target Grade is:

LANDFORMS FORMED BY WEATHERING AND EROSION

HEADLAND AND BAY

Headland and bays occur along coastlines that have different types of rock, as the rock erode at different speeds.
 • The **hard rock** (granite) erodes more slowly than the soft rock, creating **headlands** that jut out to sea.
 • The **soft rock** (clay) will erode more quickly than the hard rock, creating bays.
 • Bays are sheltered = deposition = beaches are formed.

CAVE, ARCH, STACK

Erosion (hydraulic action, abrasion) attacks a line of weakness in the cliff. This makes the line of weakness bigger, creating a cave.
 • Continued erosion, erodes the back of the cave = arch.
 • Weathering (freeze-thaw, animals) weakens the top of the arch, making it unstable, eventually collapses = stack.
 • Erosion and weathering erode the stack to form a stump.

MASS MOVEMENT

Mass movement is the downhill movement of material caused by gravity.

ROTATIONAL SLUMP

A rotational slump is the downhill movement of material along a curved line of weakness. It occurs where permeable rock, overlies impermeable rock.
 • Heavy rain infiltrates the permeable rock, making it heavier. The cliff becomes unstable.
 • Waves erode the base of the cliff, making the cliff more unstable.
 • Eventually a curved line of weakness (slip plane) is formed.
 • The rocks slide down the curved line of weakness.

LANDFORMS FORMED BY TRANSPORTATION AND DEPOSITION

SPLIT

- LONGSHORE DRIFT** transports material along the coastline in a zigzag pattern.
- Where there is a sudden **BEND** in the coastline, the waves lose energy = material is deposited.
- REPEAT**: Continued longshore drift and deposition, deposits material out to sea.
- Strong winds and waves curve the end of the spit = **RECURVED END**.
- The area behind the spit is sheltered from waves = low energy = deposition. **SALT MARSHES** and mud flats are common here. They attract lots of wildlife.

BAR

A **BAR** is formed when a spit joins two headlands together. A lagoon forms behind the bar.

TOMBOLO

A **TOMBOLO** is formed when a spit joins to an island.

Hard engineering - Using manmade, artificial structures to prevent erosion and flooding.

➤ More effective, long lasting and need less maintaining than soft engineering, however more expensive and less natural/environmentally friendly.

Sea Wall	A strong concrete wall built in front of the cliff/settlement that absorbs the wave's energy. A curved sea wall reflects the wave back to sea. • They absorb the power of the wave = less erosion. Tourists also like to walk along it. • It can, however, be expensive and ugly.
Rock Armour	Large rocks placed in front of the cliff or settlement, that absorb the wave's energy. • They absorb the power of the wave = less erosion. They look quite natural. • It can, however, be expensive and make access to the beach difficult.
Gabions	A wire cage filled with rocks that are placed in front of the cliff or seaside settlement, that absorb the wave's energy. • They absorb the power of the wave = less erosion. They are cheaper than rock armour. • The sea can corrode the metal cages = broken gabions which can be dangerous to tourists.
Groyne	Wood or rock fences built out into the sea. They trap sediment transported by longshore drift and make the beach larger. • Groynes = Beach becomes wider = waves lose energy as they rush up the beach = less erosion. Big beaches boosts tourism. • They prevent sediment reaching beaches further along the coastline = problem is shifted and not solved. More expensive than soft engineering.

Soft engineering - Using natural, environmentally friendly methods to prevent flooding.

➤ Often cheaper than hard engineering however need more maintaining and have a shorter lifespan

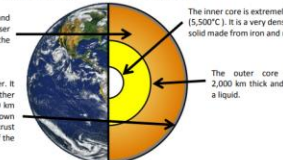
Beach Nourishment	Adds sediment to the beach to make it wider = acts as a barrier from the waves = reduces erosion and flooding. • Cheap and easy to maintain, natural looking, bigger beaches = more tourism • Short lifespan, constant maintenance, beach is closed due it is being done.
Dune Regeneration	Sand dunes are repaired and made larger using fences or marram grass = barrier from the waves. • Cheap, very natural, popular with wildlife (creates habitats). • While being repaired, dunes are closed = less tourists, constant maintenance as dunes are constantly changing.
Managed retreat	Allowing erosion to take place naturally and move settlements when necessary. • It is very environmentally friendly. Nature is allowed to takes it course. • It forces people from their homes and lots of compensation must be paid to help them buy a new home in a safer place.



Why do people live in hazardous places?

The earth's structure:
The Earth has four main layers: the **inner core**, the **outer core**, the **mantle** and the **crust**.

- The **inner core** is extremely hot (5,500°C). It is a very dense solid made from iron and nickel.
- The **outer core** is 2,000 km thick and is a liquid.
- The **mantle** is semi-molten and about 3,000 km thick. The closer the mantle is to the core, the more liquid it is.
- The **crust** is the rocky outer layer. It is thin compared to the other sections, approximately 5 to 70 km thick. If the Earth was scaled down to the size of an apple, the crust would be about the thickness of the apple skin.



The earth's crust:
The earth's crust is broken up into plates, called tectonic plates. There are two types of tectonic plate: **oceanic** and **continental**.

- Oceanic plates carry the **oceans**. They are **thinner** but **more dense** than continental plates.
- Continental plates carry the **land**. They are **thicker** but **less dense** than oceanic plates.

Heat from the core causes convection currents in the mantle. These cause the mantle to move as it heats and cools. These currents slowly move the crust around. In some places the crust is destroyed. In other places new crust is formed.

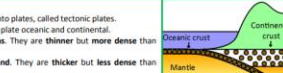
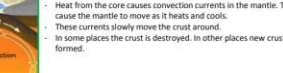







Plate boundaries:

- The Earth's crust is broken into different plates, which sit on the Earth's mantle.
- These plates move because of **convection currents**.
- The plates move in different directions and meet at **plate boundaries**.
- As the plates move, parts of the crust are **destroyed** and in other areas new crust is **created**.



Different types of plate boundary:
There are three different types of plate boundary: **destructive**, **constructive** and **conservative**. Which type they are depends on how the plates move at this boundary.

Boundary	Movement	Diagram	Example	Landforms
Destructive	The plates either collide or the oceanic plate subducts under the continental plate.		The Nazca plate being forced under the South American plate.	Volcanoes Fold mountains Earthquakes
Constructive	The plates move apart .		The African plate and the South American plate.	Volcanoes
Conservative	The plates move alongside each other.		The Pacific plate and the North American plate.	Earthquakes

The effects of a volcanic eruption:

- It is important to note that volcanic eruptions can have both **positive** and **negative** effects.
- These effects can also be grouped into economic, social and environmental effects.
- The extent of the negative effects on a country often depends on the ability of the country to **predict, prepare for and protect people from the eruption (PPP)**.

Positive:	Negative:
The dramatic scenery created by volcanic eruptions attracts tourists. This brings income to an area.	Lives can be lost.
The lava and ash deposited during an eruption breaks down to provide valuable nutrients for the soil. This creates very fertile soil which is good for agriculture.	If the ash and mud from a volcanic eruption mix with rain water or melting snow, fast moving mudflows are created. These flows are called lahars.
The high level of heat and activity close to a volcano can provide opportunities for generating geothermal energy.	Lava flows and lahars can destroy settlements and areas of woodland or agriculture.
Mount St. Helens, USA, 1980: (MDC) In 1980, Mount St. Helens, a composite volcano in a rural area in the Northeast of the USA, erupted.	Nyiragongo, Democratic Republic of Congo, 2002: (LDC) In 2002, Nyiragongo, a composite volcano near the city of Goma in the DRC, erupted, causing lava to flow into its city centre.
Effects:	Effects:
- More than 200 homes were destroyed.	- Roughly 130,000 people were made homeless.
- 57 died as a result of the eruption.	- 300,000 people were evacuated from the area.
- 185 miles of roads and 15 miles of railways were damaged.	- Approximately 100 people died as a result of the eruption.
- Damage to property was estimated at \$1.1 billion.	- The lava destroyed roughly 80% of the city's infrastructure (roads, electricity services, sewage pipes).
Responses and PPP:	- Cholera and other diseases spread as people did not have access to clean water.
- Seismographs began closely monitoring the volcano roughly 3 months before the eruption.	Responses and PPP:
- Hundreds of tourists and scientists flocked to the area. However, the government imposed an exclusion zone around the volcano to prevent loss of life.	- Due to unrest in the country, the volcano was not properly monitored and the eruption was unexpected.
- The US government issued \$950 million in emergency funds to help recovery efforts.	- There was no clear plan in place in case of an eruption.
	- A huge amount of foreign aid was sent to the DRC to help people cope.
	- It took years for Goma's economy to recover, even with the support of aid agencies.

Volcanoes:

- Volcanoes are a vent in the earth's crust from which lava, ash and gas is released.
- Most volcanoes form at **destructive** and **constructive** plate boundaries.
- Volcanoes **do not form** at **conservative** boundaries.
- If a volcano forms at a plate boundary, they are either **composite** or **shield** volcanoes.
- Of these two types, volcanoes can be **active**, **dormant** or **extinct**.

Composite and shield volcanoes:
There are a number of key differences between composite and shield volcanoes.

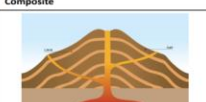
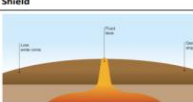
Diagram	Composite	Shield
		
Shape	Steep sides.	Gentle sides.
Plate boundary	Form at destructive plate boundaries.	Form at constructive plate boundaries.
Lava	Thick lava.	Thin, runny lava.
Eruptions	Eruptions happen less often but are usually violent . The eruption consists of ash , pyroclastic flow and lava .	Eruptions happen often but they are usually quite gentle . The eruption is mainly lava , with little pyroclastic flow and lava .
Example	Mount Vesuvius in Naples, Italy Mount St. Helens, USA	Mauna Loa in Hawaii. La Cumbre, The Galapagos Islands

Plate boundaries and earthquakes:

- The Earth's crust is broken into different plates, which sit on the Earth's mantle.
- The plates move in different directions and meet at **plate boundaries**. These three boundaries are called **destructive**, **constructive** or **conservative** plate boundaries (see knowledge organiser 8.1.2 for further detail).
- Earthquakes can happen at **any plate boundary**.
- Plates do not always move smoothly alongside, under or beside each other. They sometimes get stuck. When this happens pressure builds up and, when this pressure is released, an earthquake occurs.
- Every earthquake has an **epicentre** and a **focus**.
- The focus is the point in the earth's crust where the pressure between the two plates is released. It is underground.
- The epicentre is the point on the **surface** of the crust, above the focus.

Predicting earthquakes:

- Scientists can currently forecast the likelihood of an earthquake in the long term (over years and decades). However, it is almost impossible to predict earthquakes in the short term.
- However, there are ways that scientists can **monitor** tectonic activity to help them forecast earthquakes:
- Scientists can look at the **history** of earthquakes in the area and try to identify patterns about them.
- Some scientists argue that a **higher level of radon gas being released into the atmosphere** is a sign of an impending earthquake.
- An increase in **minor earthquakes**, measured using a **seismometer**, often suggests an impending, larger earthquake.

Measuring earthquakes:

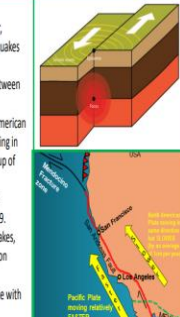
- Each year scientists record over 20,000 earthquakes. Most of these earthquakes are small and are not noticed by ordinary people.
- Earthquakes are measured according to two different scales: the **Richter scale** and the **Mercalli scale**.
- Some argue that the Mercalli scale is not as reliable as the Richter scale because it is **subjective** and can vary according to where you are.

The Mercalli Scale (without the final 2 levels):

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Vibrations similar to the passing of a truck.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows and doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked.
V	Moderate	Felt by nearly everyone; many awakened. Some windows broken. Unstable objects overturned.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved. Damage slight.
VII	Very strong	Slight damage in buildings of good design and construction; moderate in well-built ordinary structures; considerable damage in poorly built structures.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments.
IX	Violent	Damage considerable in specially designed structures. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Earthquakes on conservative plate boundaries:

- Earthquakes can occur at all plate boundaries. However, conservative plate boundaries clearly show how earthquakes happen.
- The **San Andreas Fault** is part of the plate boundary between the **Pacific plate** and the **North American plate**.
- The Pacific plate moves slightly faster than the North American plate. This means that, even though the plates are moving in the same direction, they can get stuck, causing a build up of pressure.
- This build up and release of pressure caused two major earthquakes during the last century, in 1906 and in 1989.
- However, this area experiences constant small earthquakes, with Los Angeles experiencing 10 earthquakes per day on average!
- Because of this movement, Los Angeles should be in line with San Francisco in roughly 20 million years.



The effects of an earthquake:
The damage of an earthquake depends on the ability of the country to **predict, prepare for and protect people from the effects of the earthquake (PPP)**.

	Social Impacts	Economic Impacts	Environmental Impacts
Short Term:	People may be killed or injured. Homes may be destroyed. Infrastructure may be disrupted. Water supplies may be contaminated.	Shops and business may be destroyed. Looting may take place.	The landscape may be destroyed because of fires or landslides. Tsunamis may cause flooding in coastal areas.
Long Term:	Disease may spread. People may have to be re-housed, sometimes in refugee camps.	Rebuilding can be expensive. Income could be lost.	Important natural and human landmarks may be lost.

Chile, 2010: (MDC)
In 2010, Chile experienced an earthquake measuring 8.8 on the Richter scale originating from the boundary between the South American and Nazca plates.

Haiti, 2010: (LDC)
In 2010, Haiti experienced an earthquake measuring 7.0 on the Richter scale originating from the boundary between the Caribbean and North American plates.

Effects:

- 500 people died.
- 500,000 buildings were destroyed, including minor damage to a major airport.
- Communication networks and power went down after the earthquake.

Responses and PPP:

- Chile has a history of earthquakes, meaning that most buildings were "earthquake proof" and people were trained in how to survive earthquakes.
- Within 10 days power was restored to affected areas.
- Roads were repaired very quickly.
- Chile put in place a house rebuilding scheme which was paid for by the Chilean government.

Effects:

- 220,000 people died.
- 1 million people were made homeless and the main port, airport and roads were severely damaged.
- 2 million people had no food or clean water.
- Many homes and businesses were looted because of a lack of government presence.

Responses and PPP:

- Haiti has no history of earthquakes. As a result, their buildings were not prepared and people were not drilled.
- Other countries, such as the USA, sent aid to help.
- However, the damaged airport found it difficult to cope.
- Due to a weak and poor government people are still living in camps almost 10 years after the earthquake.

Name:

Topic: Why do people live in hazardous places?

What I want my teacher to know about me:

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Signed _____ Date: _____

Is the geography of Russia a curse or a benefit?

Name:

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My Target Grade is:

9 Geography

<p>Environment and Climate</p> <p>Russia experiences 3 continental climate, this means two main seasons.</p> <p>(1) Long dark cold winters with (2) brief warm summers</p> <p>Precipitation is low throughout the year</p> <p>Yakutsk</p> <p>Yakutsk is the coldest city in Russia and on Earth.</p> <p>Temperatures can reach -45C</p> <p>Yakutsk is built on permafrost (frozen ground, in fact 65% of Russia is land.</p>	<p>Russia's Population</p> <p>144 million people live in Russia, but they are not evenly spread out, they are unevenly distributed.</p> <p>Russia is the largest country in the world, BUT, it is ranked 9th in terms of population size.</p> <p>Most people in Russia live in areas where it is easier to live (good soils, good communication, good weather conditions)</p> <p>77% of the Russian population live on the European part of the country (West to the Ural Mountains)</p> <p>Russia is one of the most sparsely populated countries in the world.</p> <p>But even in an extreme climate people decide to live there if there is an economic gain (Yakutsk) or a strong culture and way of life such as the Nenets in Siberia.</p> <p style="text-align: center;"><u>Russia and The Arctic</u></p> <p>The Arctic is a region surrounding the North Pole that is made up of a large ocean.</p> <p>It is the Northernmost region of Earth.</p> <p>There are many natural resources located here.</p> <p>Taking these resources can have social and environmental impacts.</p> <p>Greenpeace are concerned about the damage to the environment.</p> <p>A campaign 'Save the Arctic' wants to make people aware of the issues.</p> <p>An oil spill under these icy waters would have a catastrophic impact on animals and the pristine water.</p> <p>Russia produces 12% of the world oil it is responsible for roughly half of the worlds oil spill.</p> <p>Nenets herders have always moved seasonally with their reindeer.</p> <p>The Yamal Megaproject was developed to extract the large gas reserves of the region.</p> <p>The Nenets migratory routes are now affected by the gas and oil pipelines, making it difficult to move the reindeer herds.</p> <p>If they cannot migrate, their people, their way of life might disappear forever and culture lost.</p>	<p>Russia's Key Facts</p> <p>Russia (The Russian Federation) is the largest country in the world. It cover 1/10th of ALL the land on the earth.</p> <p>Russia twice the size of Canada (2nd biggest country in the world) and is the 20 times the size of the UK.</p> <p>Russia is so large that it spans across two continents (Asia and Europe). It is mostly in Asia, but most people live in the European part.</p> <p>The Ural Mountains physically separate Asia and Europe.</p> <p>Russia spans across 11 time zones.</p> <p>It has 14 neighbouring countries and a coastline on two oceans (35,000km of coastline).</p> <p>It is also home to Lake Baikal, the world's oldest and deepest lake. It is the largest freshwater lake by volume, containing about one-fifth of the fresh water on Earth's surface.</p>	<p>Russia's Ecogeography</p> <p>There are four biomes distributed across Russia.</p> <p>Temperate forest (Red)</p> <p>Taiga (Green)</p> <p>Steppe (Orange)</p> <p>Tundra (Yellow)</p> <p>Most of Russia is dominated by Taiga and Tundra</p> <p>The largest biome in Russia (apart from oceans)</p> <p>The largest biome in the world</p> <p>The largest forested area on the earth (larger than the Amazon)</p> <p>Coniferous forest</p> <p>Made up of pines, larch's, spruce</p> <p>Writers are long and summers are short</p> <p>Soil forms very slowly</p> <p>Much of the land is permafrost (permanently frozen)</p> <p>It is too cold for trees to grow</p> <p>Located in the north-eastern Russia 60-80N</p> <p>It is the coldest of all biomes</p> <p>It is too cold for trees to grow</p>
<p>Land Use</p> <p>Animals adapt to survive in the ecosystem then live in. <i>Adaptation = changing to suit the surrounding environment.</i></p> <p>Thick camouflaged seasonal fur to help keep it warm in the freezing conditions. When the seasons change, the fox's coat turns as well, adopting a brown or grey appearance that provides cover among the summer tundra's rocks and plants.</p> <p>Thick fur on the tail, thick fur on the paws, which helps to protect it from the freezing conditions.</p> <p>A very keen sense of hearing.</p> <p>Long thin needles to reduce moisture loss.</p> <p>Down sloping branches so that snowfall can fall off easily.</p> <p>Evergreen and has thick bark and comes to protect it during the harsh conditions.</p>	<p>Russia's Major European Cities</p> <ol style="list-style-type: none"> 1. Moscow is Russia's capital city with about 12 million people. It is visited by many tourists and also has the Kremlin, which is where the president lives. 2. St Petersburg is Russia's second largest city (and used to be the capital). 5 million people live here. It has a port and lots of industry such as ship building. 3. The North Caucasus is mostly a farming region. This is where Mt Elbrus (a dormant volcano) is found. It is the highest mountain in Europe (5,642 m). 4. Sochi is located next to the Black Sea. It's Russia's top holiday resort with warm summers. In 2014 the Winter Olympics took place here. 5. Kaliningrad is an enclave (area surrounded by other countries) and surrounded by Poland and Lithuania. It has a port on the Baltic Sea and has lots of manufacturing jobs (e.g. cars) 6. Murmansk is the Kola Peninsula's (far north) main city and is also a port. It is important for fishing. It is the biggest city in the Arctic. 7. Crimea is a Peninsula south of Ukraine. It belongs to Ukraine, but Russia controls it. 	<p>Russia's Natural Resources</p> <p>A natural resource is something that occurs naturally that we can make use of.</p> <p>There is an abundance of natural resources in Russia.</p> <p>It produces 20% of the world's natural gas and the worlds leading producer of oil</p> <p>Russia is self-sufficient in all major raw materials (e.g. Iron, Bauxite)</p> <p>Many resources are in Siberia, which has very harsh weather and extreme cold temperatures.</p> <p>It is very hard to work in these areas as steel become brittle at these low temperatures</p> <p>The roads are in poor condition due to the weather, this is not good when they are trying to export goods</p>	<p>The problem</p>