

The United Kingdom

- The world is made up of 7 continents (South America, North America, Europe, Africa, Asia, Oceania/Australasia, Antarctica and Antarctica).
- The United Kingdom is made up of four countries (England, Wales, Scotland and Northern Ireland). London is the capital city of the United Kingdom.
- The UK is located in the continent of Europe.
- Europe is the 3rd largest continent in population but only 6/7 for space.

Types of settlement:

- Hamlet**-one or two farms with large space in-between.
- Village**: small settlement, with a population of up to a few thousand people. They are usually surrounded by rural fields and forest.
- Town**: Urban settlements with populations of up to over 10,000 people.
- City**: large urban settlements made up of different neighbourhoods. If a city has a population of over 10 million, it is known as a Megacity. The UK has many cities – the largest is London.
- Urban** - A built up area (e.g. town or city)
- Rural** - A sparsely populated area (such as a village or hamlet)

Human Geography of the UK

Human features have been created by humans (*towns cities roads and railw*

- London (city)
- Birmingham (city)
- M1
- M25



Each continent has different features:

- The continent with the biggest population and land mass is Asia.
- Asia's current population is 4.6bn.
- The climate in Asia can range from tundra to tropical.
- In the north of Asia, the climate is mainly tundra.
- In the South of Asia in countries such as India and Indonesia the weather is mainly tropical.
- North America is bigger in landmass and population compared to South America.
- The UK is in Europe which has a mainly deciduous climate.

Human Geography of London.

- At risk of flooding due to urban development and climate change.
- Not enough houses to meet demand.
- Densely populated resulting in unemployment.
- London is nearly a megacity-9.6m people.
- Lots of cultural events e.g. Notting Hill Carnival.



Physical Geography of the UK

Physical features are natural features of the land that have not been created by humans (*rivers, lakes, mountains and oceans*). Physical features are shown on a relief map. Relief is the geographical word that tells us the lay of the land (slope steepness, altitude (height above sea level).

- Ben Nevis, Scarfell Pike, Showdown
- River Thames, River Trent



How and why might population size of continents change in the future?

- Climate change.** Land is flooded, leaving less space for more people. Mass migration.
- Natural disasters.** Areas are unsafe to live in, mass migration, overcrowding in other countries.
- Natural increase.** World population increases, less space for more people.
- Diseases like Corona Virus.** Some continents (LIC's/poor continents) suffer more.
- Increased wealth.** As some continents like Asia get wealthier they can build more cities.

Physical Geography of London.

- Lowland area
- Area is easy to build on as it is flat.
- UK's second longest river, River Thames - 215miles long
- Easily flooded due to being flat.
- Thames Barrier has been built to prevent flooding.



How does the physical and human landscape affect where people in the UK live?

Physical factors:

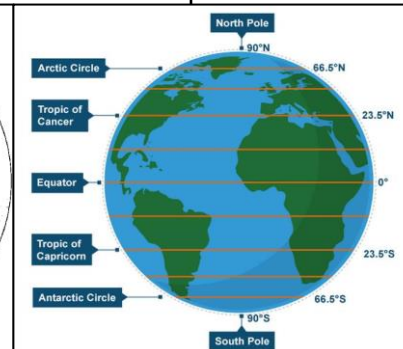
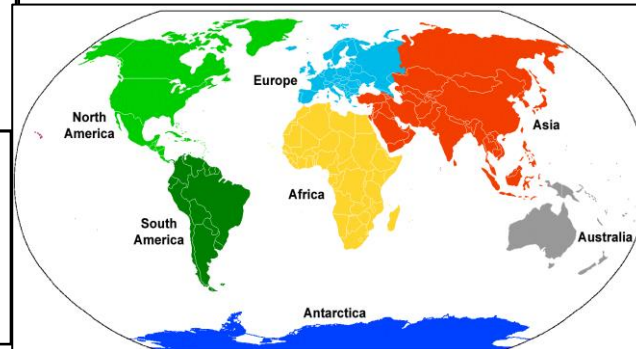
- Flat land is easier to build on/farm.
- The south has warmer drier climate, this is ideal for farming.

Human factors:

- In the South of England is the capital city London, this provides more job opportunities, social activities and entertainment.
- Best Universities in the UK are in the South, Cambridge and Oxford.

How to describe locations using physical and human features.

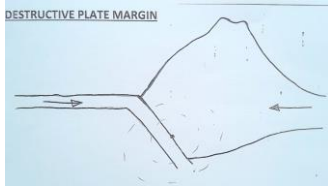
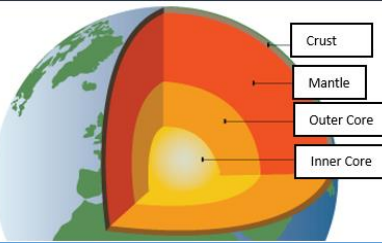
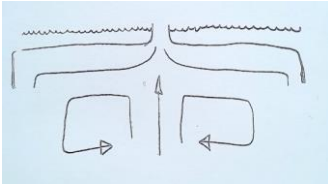
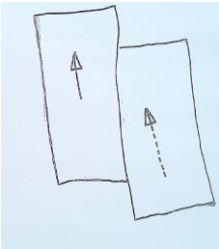
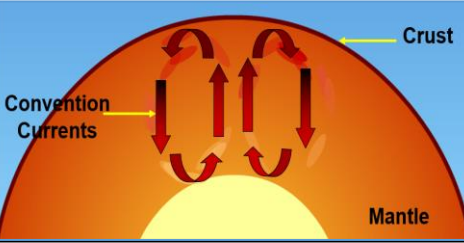
- Use compass points to state what the location is next to
- State the physical features in the area
- State the human features in the area.



Better transport links, making it easier to travel and see people. **By 2040, 70% of the UK will live in urban areas. Do you think this is a good idea or do you think more people should live in rural areas?**

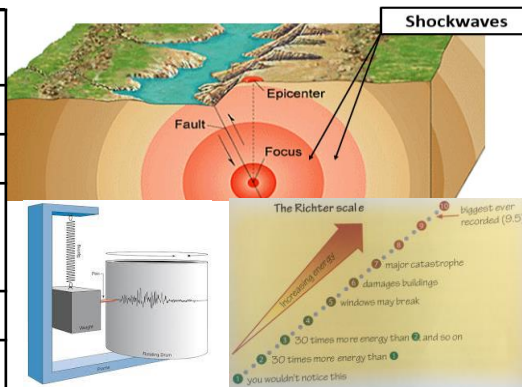
- Isolation during pandemics like COVID vs. better access to technology and wi-fi-homeschooling during lockdown.
- Protecting areas for nature vs. overcrowding in cities and towns.

KS3 Geography Question: Tectonic Hazards

Natural Hazard	A natural process that poses a threat to people and property. If it poses no threat to humans it is called a natural event.		Plate Margin		Description	Example
Meteorological hazard	A hazard that occurs in the atmosphere (e.g. hurricane, thunder and lightning, tornado, drought)		Destructive Plate Margin Tectonic hazards at a destructive margin:		Two plates move towards each other due to CONVECTION CURRENTS in the mantle. The more dense plate is SUBDUCTED beneath the less dense plate. The point of subduction is known as the subduction zone. <ul style="list-style-type: none"> • Volcanoes – as the more dense plate sinks into the mantle, it melts forming magma. This rises up through the crust until it reaches the surface = violent eruptions. • Earthquakes – as the more dense plate sinks beneath the less dense plate, pressure builds up. When this pressure is suddenly released it causes explosive earthquakes. 	<i>The Nazca oceanic plate is being subducted beneath the South American continental plate.</i>
Hazard risk There is a higher risk if....	The probability that a natural hazard occurs. <ul style="list-style-type: none"> • It occurs in an urban area due to the higher population density. • It occurs in an LIC as they have poor quality buildings and less planning and prediction strategies. • Type of hazard: e.g. earthquakes are much harder to predict than tropical storms, floods occur more often than volcanic eruptions. 					
Layers of the earth	There are four layers of the earth: the inner core, outer core, mantle and crust.					
Tectonic Plates	The crust is split into several pieces (like a cracked egg shell). These pieces of rock are called tectonic plates. They float on the mantle.		Constructive Plate Margin Tectonic hazards at a constructive margin:		The plates move away from each other due to convection currents in the mantle. This leaves a gap. Magma rises to fill this gap, creating volcanoes. The lava that is erupted creates new land. This usually happens under the oceans. The continued CREATION OF NEW LAND and movement of plates results in SEA-FLOOR SPREADING . <ul style="list-style-type: none"> • Volcanoes – magma rises to the surface to form volcanic eruptions, however there is little pressure = gentle eruptions. • Earthquakes – as the magma rises, small tremors occur = gentle earthquakes. 	<i>The North American and Eurasian plates are moving away from each other. This has created the Mid Atlantic Ridge in the middle of the Atlantic Ocean. This ocean is getting larger by 2cm/yr</i>
Oceanic Crust	Crust found under the oceans (thinner, younger, more dense, basalt)					
Continental Crust	Crust found under land (thicker, older, less dense, granite)					
Continental Drift	Theory that said the earth's continents are very slowly moving in different directions.		Conservative Plate Margin Tectonic hazards at a conservative margin:		Two plates move past each other due to convection currents in the mantle. They can move in the same direction at different speeds or in opposite directions. The line between the two plates is called the FAULT LINE . <ul style="list-style-type: none"> • No volcanoes (there is no subduction or creation of magma) • Earthquakes – as the two plates slide past each other, pressure builds up. This is suddenly released, it causes violent earthquakes 	<i>The North American and Pacific plates are sliding past each other. They are moving in the same direction however at different speeds. This fault line is known as the San Andreas Fault.</i>
Convection currents	Convection currents are circular currents in the mantle that cause the overlying plates to move.					
Plate boundary/plate margin	The line between the two plates. This is also known as a fault line.					
Subduction	Goes underneath.					
Subduction zone	The point at which the more dense is subducted beneath the less dense plate.					

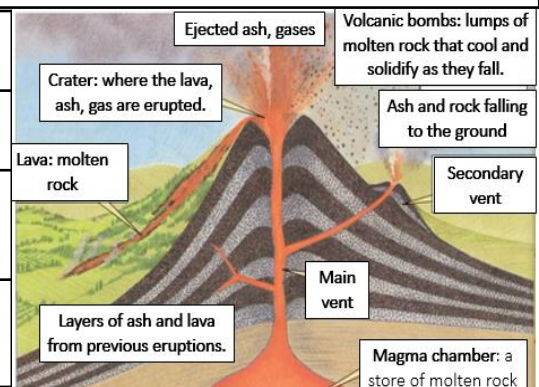
EARTHQUAKES

Earthquake	A sudden movement of tectonic plates due to a release of energy of pressure. It is followed by a series of aftershocks.
Focus	The point of movement in the earth's crust.
Epicentre	The point directly above the focus on the earth's surface.
Shockwaves / Seismic waves	As tectonic plates suddenly move, they send out SHOCK WAVES (seismic waves) that travel through the earth's crust and cause the ground to shake.
Magnitude	The amount of energy released during an earthquake.
Richter Scale	The scale that measures the magnitude of an earthquake.



VOLCANOES

Volcano	A volcano is an opening in the ground from which lava, ash and gases erupt.
Magma Lava	Molten rock that has been erupted from a volcano. Erupted magma is known as lava.
Shield volcano	A volcano found at constructive plate margins. It has runny lava, is low in height and has frequent eruptions. <i>For example Laki in Iceland.</i>
Composite volcano	A volcano found at destructive plate margins. It has thick lava, is tall in height with steep sides and has explosive eruptions. <i>For example Mt Fuji in Japan.</i>



EFFECTS OF THE HAITI EARTHQUAKE

Haiti is located in the Caribbean. It lies on a conservative plate boundary between the Caribbean and North American plates. The plates are sliding past each other at a rate of 2cm/yr. On **12 January 2010**, a magnitude **7.0** earthquake hit Haiti. The **epicentre** was 25km west of Port-au-Prince (the capital) at a depth of 13km.

Primary effects happen straight away or are a direct cause of the earthquake.
Secondary effects happened after the earthquake and are often as a result of a primary effect.

Primary effects	<ul style="list-style-type: none"> • 220,000 dead and 300,000 injured. • 300,000 buildings damaged. • 8 hospitals and 5000 schools damaged. • Transportation routes broken or damaged. • Service lines (water, gas, electricity) destroyed
Secondary effects	<ul style="list-style-type: none"> • Trauma and diseases from dead bodies. • 1.3 million Haitians in temporary camps • Aid supplies could not reach victims. • 2 million Haitians with no food, electricity, water • A rise in unemployment. • Cost :\$11.5 billion



EFFECTS OF THE MONTSERRAT ERUPTION

Montserrat is a small island in the Caribbean. It is located next to a destructive plate margin. The denser North American plate is being subducted beneath the less dense Caribbean plate. Rising magma has created a volcano called Chances Peak, located in Soufriere Hills. It erupted between 1995 – 1997. In June 1997, a large eruption resulted in a pyroclastic flow & large ash cloud.

- **Pyroclastic flow:** *very hot gases and ash (800°C) rush down the volcano at speeds of 500mph, destroying everything in its path.*
- **Ash cloud:** *the ash that is ejected from the volcano falls across large distances, causing respiratory problems.*



Social impacts	<ul style="list-style-type: none"> • 19 people were killed. • Respiratory problems were caused due to ash and gases in the atmosphere. • The capital, Plymouth, was covered in 12m of mud = homes, hospitals and schools were destroyed. • Local and international flights were cancelled.
Economic impacts	<ul style="list-style-type: none"> • Many industries were destroyed = a rise in unemployment, which reached 50%. • 7000 people were displaced. It was expensive to relocate people. • Tourism was suspended = loss of income.
Environmental impacts	<ul style="list-style-type: none"> • 2/3rds of Montserrat was covered in ash, including farmland = destruction of ecosystems and habitats.

REDUCING THE IMPACT OF EARTHQUAKES: PREDICTION + PREPARATION = PROTECTION

Measure for Small Tremors	Before a larger earthquake often there is an increase in the number of small tremors. Scientists use seismometers to record any ground movement.
Unusual Animal Behaviour	Animals act strangely before an earthquake. In China, the city of Haicheng was evacuated following strange animal behaviour. Days later a 7.3 magnitude earthquake struck. The evacuation saved 150,000 lives.
Earthquake Proof Buildings	<i>Using flexible steel frames which sway as the ground moves; Rubber foundations that absorb the shockwaves/shaking; Building with a larger base than top will be less likely to topple over.</i>
Practice Drills	Educate people about to do should an earthquake occur to prevent panic during the disaster (e.g. practice drills and planned evacuation routes). <i>In Japan they practice earthquake drills 4 times a year.</i>
Emergency Kit	Residents are encouraged to have an emergency kit, including <i>a torch, canned food, batteries, radio, medical kit...</i>

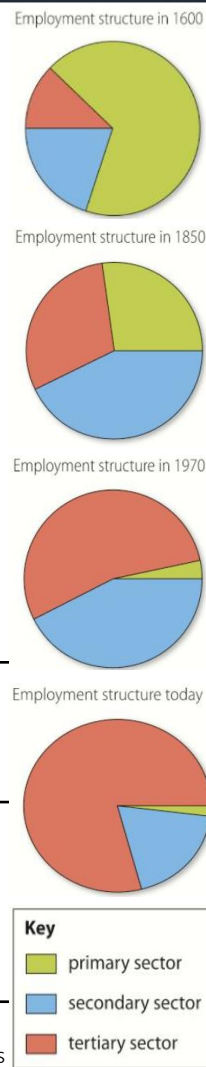
REDUCING THE IMPACT OF VOLCANIC ERUPTIONS: PREDICTION + PREPARATION = PROTECTION

Measure for Small Tremors	Just before a volcanic eruption often there is an increase in earthquake activity as the magma rises. Earthquakes are recorded using a seismometer.
Measure sulphur emissions	Just before an eruption the concentration of gases (such as sulphur dioxide) emitted can change. You can use this to help predict an eruption.
Geothermal monitoring	You can see the temperature of the ground using satellite images. These can show rising magma, which would appear red.
Tiltmeters	Tiltmeters are placed on the ground to measure slight changes in the tilt of the ground caused by rising magma.
Divert lava flow	Concrete walls are built to divert the flow of lava away from areas of high land value (e.g. towns and cities).

Employment	The state of having work.
Employment rate	The % of people within a population who have jobs.
The employment sectors:	Primary, secondary, tertiary, quaternary
Primary sector jobs <i>Primary jobs are found....</i> <i>For example...</i>	The extraction of raw materials. Raw materials are anything that is naturally present in the earth. In rural areas where the raw materials are. Farmers, fishermen, miners, oil workers, forestry workers.
Secondary sector jobs <i>Secondary jobs are found...</i> <i>For example....</i>	The manufacturing of goods. Turning raw materials into higher value products often in factories. In urban areas where the factories are built. Metals become cars, crops become processed foods, cotton becomes clothes.
Tertiary sector jobs <i>Tertiary jobs are found...</i> <i>For example....</i>	Tertiary sector: the provision of services for other people. In urban areas as they need a large population to sell their services to. Teachers, doctors, nurses, lawyers, policemen, dentists, bankers...
Quaternary sector jobs <i>Quaternary jobs are found..</i> <i>For example....</i>	Quaternary sector: research and information technology industries. In urban areas as they need to hire lots of highly skilled university graduates and most universities are located in cities. Scientists developing new medicines, financial planners using models to make financial decisions.
Economy	People produce goods and services, which other people buy. The economy means the whole network of people producing and consuming goods.
Growing economy	When the quantity of goods and services being produced increases.
Shrinking economy	When the quantity of goods and services being produced decreases.
Development	The process of change for the better.
LIC	Low Income Countries have a low income (less than \$1045 per year), poor quality housing, services, healthcare...etc. Their primary source of income is from agriculture. <i>Ethiopia, Somalia, Liberia.</i>
NEE	Newly Emerging Economies are countries that have started to industrialise (move into the secondary sector – factories) and are developing. <i>China, India, Brazil.</i>
HIC	High Income Countries are developed countries that a high income (more than \$12,746), good access to services and strong infrastructure. They are mainly have tertiary & quaternary industries. <i>UK, USA, Japan, Italy, Germany.</i>
Development indicator <i>For example...</i>	A measure of development Gross domestic product (GPD), birth rate, death rate, infant mortality rate, literacy rate,
GDP	The total value of the goods and services a country produces in a year Essentially it's annual income.
GDP per capita	The total income divided by the total population. It gives the average salary within a country.
It is important to use more than one indicator as....	<ul style="list-style-type: none"> Not all people earn the same amount of money. Thereforeper capita is not accurate. There might be an anomalous result.

How has the UK's economy changed since 1600?	
1600s	Most people worked in agriculture (primary), with a few people making things in workshops (shoes, furniture) and providing services to rich families. Most of the jobs were located in rural areas.
1850s	In the 1850s, less people work on farms and more people work in factories in towns and cities. This occurred due to the UK's Industrial Revolution. This was the growth of secondary manufacturing in factories. Less people worked on farms due to the new practices (horses and ploughs). More people worked in factories due to the rapid increase in jobs available in factories. These jobs paid more too.
1970s	In the 1970s, less people work in factories (secondary) and more people work in services (tertiary). Less people work in factories due to de-industrialisation – when many of the factories moved abroad to poor countries due to cheap labour. This meant many factories in the UK closed down. Also jobs in the tertiary sector pay more.
Today	Today most people in the UK work in services (tertiary), however the growth of computers has seen the beginning of quaternary industries in the UK. <i>In 2018, 1% of people worked in the primary sector, 18% in the secondary sector and 81% in the tertiary sector</i>

Economies of the world: how do economies change in different countries?	
Ethiopia	Most people in Ethiopia work in the primary sector, on farms and in mines. There are 58 million farmers in Ethiopia. Farming is important to Ethiopia because they need to grow and sell enough crops to improve their living standards (invest in education, healthcare, infrastructure).
China	220 million people in China work in factories in the secondary sector. It makes more goods than any other country. China has started to develop, having recently gone through their industrial revolution (growth in manufacturing in factories). They still produce most of their own food, however the use of machines has reduced the number of workers on the farms. Due to the money they earn from manufacturing, China have developed their healthcare education and infrastructure.
The UK	Most people in the UK work in tertiary industries. These people provide a service in hospitals, schools, offices, banks, shops...etc. We still have some secondary industries but they need fewer workers because we use machines, robots and computers. We have very few people working in primary industries as we get most primary goods from abroad.
TNC	A transnational corporation is a company that operate across multiple countries.
Evidence Apple is a TNC	<ul style="list-style-type: none"> Its headquarters are in California (USA). Here quaternary sector engineers program the features you love such as <i>voice command, facial recognition...etc.</i> The materials that make up an iPhone include 60 different metals, plastic and glass. These are purchased from many countries. The iPhone is created in factories mostly in China. The iPhone is sold in many countries (such as USA, UK, France, Spain, Italy...etc.)




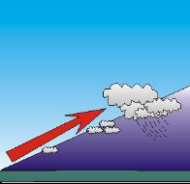

CAUSES OF THE DEVELOPMENT GAP		REDUCING THE GAP: AID	
Development gap	The difference in development between HICs and LICs.	Aid	Another word for help. Richer countries give poorer countries aid to help them make a better future for themselves.
Landlocked	Countries with no coastline = difficult to trade (import/export) with other countries = difficult to make money. For example, Mali, Africa, is landlocked and has a GPD per capita of just \$901.	Bilateral aid	Aid given from one government to another (the UK gives aid to Pakistan).
		Multilateral aid	Aid given through an international organisation (the World Bank, the UN)
Extreme climate	Many LICs have extreme climates (<i>extreme temperatures, too much or too little rain</i>). Extreme climate make it difficult for LICs to grow crops = lack of food to eat or sell = poverty and famine. Between 1978 and 1998, Ethiopia had 15 droughts.	NGOs	Non-Governmental Organisations are charities (e.g. Oxfam, WaterAid).
		The DfID is...	The Department for International Development is responsible for the UK's bilateral aid.
Natural Hazards	Many LICs suffer common natural hazards (<i>droughts, floods, storms, earthquakes</i>). The country is so busy responding to the natural hazard they do not have money to invest in healthcare, education, infrastructure = lack of development. For example Bangladesh suffers from annual floods which in August (2017) affected 6.9 million.	How does the UK provide aid?	In 2018, the UK invested £14.5 billion in aid projects, such as for disaster relief, education, healthcare, access to services. To countries such as Ethiopia, Pakistan, Somalia and Nigeria.
		Sustainable aid...	<ul style="list-style-type: none"> Helps those that need it the most and helps in the long term. Involves the locals and teaches people skills. Is cheap, using appropriate technology that can be easily maintained by locals.
Conflict & corruption	Many wars occur in LICs = money is spent on the military and weapons instead on improving healthcare, education, transportation or access to services.	Large scale aid projects.	Large scale projects are expensive and well-publicised schemes producing help to large areas. To help Ghana develop the Akosombo Dam was built on the River Volta. It was to built to generate hydro-electricity, which is clean renewable energy formed by fast flowing water. <ul style="list-style-type: none"> ✓ The dam produces clean renewable energy for locals to use and Ghana to sell = more money for healthcare, education, services ✓ The lake behind the dam gives water for irrigation = more crops to eat and sell. ✗ Money was borrowed from USA on the condition that an American company Valco could use electricity from the dam at a very cheap price = there is often little left for the locals = blackouts. ✗ It cost £130 million and took 8 years to make. Also 80,000 people were forced to move due to flooding caused by the lake behind the dam.
			Small scale aid projects
Lack of education	Lack of education = people do not have the skills to work in high paying jobs. As a result many people are unemployed or have low paying jobs = low GDP.		
Lack of healthcare	Waterborne diseases & tropical diseases (malaria) are common in LICs due to poor sanitation (sewage gets into drinking water) and mosquitoes. A lack of healthcare stops people getting better = cannot work/die from diseases/children miss school. In 2015, 89% of all malaria cases were in sub-Saharan Africa.		

QUALITY OF LIFE IN AN LIC: MALAWI	QUALITY OF LIFE IN AN NEE: BANGLADESH	QUALITY OF LIFE IN AN HIC: SINGAPORE
<p>Malawi is a long thin country, located in east Africa. It is about ½ the size of the UK with a population of 17 million. One of its main physical features is Lake Malawi, which is rich in fish = food and income for locals, however it is still very poor.</p> <ul style="list-style-type: none"> ➤ GPD per capita = \$780. ➤ Life expectancy = 55 years ➤ Literacy rate = 61% <p>90% of its population work in farming, exporting tobacco, sugar, tea & cotton. These are low value goods which do not make much money. It is also poor as it is landlocked making it difficult to trade with other countries.</p> <p>Quality of life:</p> <ul style="list-style-type: none"> ➤ Poor quality clothing, lack of footwear ➤ School: class sizes of 97 children, no table and chairs, lack of equipment, students sit on the floor ➤ Home: no electricity, children sleep on mats on the mud floor. ➤ Future: education for girls is rare. Most girls get married at 18 and have babies. 	<p>Bangladesh is located in southern Asia bordering India. Its population of 165 million, with 98% identifying as Bengali. It has a high a population density.</p> <p>Bangladesh currently is going through its Industrial Revolution = growth of factories & manufacturing. It makes the 2nd most clothes in the world (after China). Most clothes shops in the UK get clothing made there. This earns Bangladesh over £14 billion a year and employs 4 million, helping Bangladesh to develop, improving healthcare, education & services.</p> <ul style="list-style-type: none"> ➤ GPD per capita = \$1698. ➤ Life expectancy = 72 years ➤ Literacy rate = 73% <p>Quality of life in factories is not great:</p> <ul style="list-style-type: none"> ➤ Low wages (£45 per month), long hours (14 hours a day, 7 days a week) ➤ Dangerous conditions: a number of factories have collapsed or caught fire. In 24th April, 2013, the Rana Plaza (a factory making clothes for Primark, Matalan) collapsed killing 1100 workers. Physical & emotional abuse is also common. 	<p>Singapore is an island located in south east Asia. It is very small (½ the size of Greater London). Its population is 5.5 million, with a very high population density.</p> <p>Singapore is one of the wealthiest countries in the world, with a large tertiary industry. Its employment structure is: 1% (primary), 16% (secondary), 83% (tertiary). Unfortunately, 15% of the population are poor: the wealth is not evenly distributed.</p> <p>It earns money by importing cheap raw materials from LICs and turning these into more expensive products in factories. These are exported (sold) = profit. Its main source of income, however, is from its tertiary industries (<i>finance, insurance</i>).</p> <ul style="list-style-type: none"> ➤ GPD per capita = \$57,700. ➤ Life expectancy = 84 years ➤ Literacy rate = 97% <p>Quality of life:</p> <ul style="list-style-type: none"> ➤ Home: smart clothes, lots of delicious food, many families have a maid. ➤ Great education – extracurricular activities and lots of facilities (<i>swimming pools, gym, basketball court</i>)

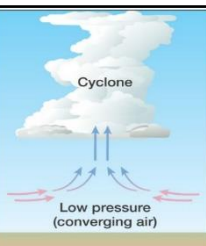
KS3 Geography Knowledge: Weather and Climate

Weather	The state of the atmosphere at a particular place and time
Climate	The state of the atmosphere over a long period of time (<i>typically the average conditions over a 30 yr period</i>)
Temperature <i>It is measured using....</i> <i>Unit...</i>	How hot or cold it is. <i>A thermometer. The liquid inside the thermometer expands and contracts depending on its temperature.</i> <i>Degree centigrade (°C).</i>
Air pressure <i>It is measured using....</i> <i>Unit...</i>	It measures how heavy the air is – how closely packed the air molecules are. <i>A barometer.</i> <i>Millibars. The world's air pressure ranges from 970 to 1040mb.</i>
Wind speed <i>It is measured using....</i> <i>Unit...</i>	How fast the wind is blowing. <i>An anemometer. Cups on the anemometer spin in the wind. The number of rotations are counted to work out wind speed.</i> <i>It is measured using knots or mph.</i>
Wind direction <i>It is measured using....</i> <i>Unit...</i>	Wind direction refers to the direction that the wind is blowing. <i>A wind vane. A wind vane spins and faces the main direction that the wind is travelling in.</i> <i>It is measured using compass directions.</i>
Precipitation <i>It is measured using....</i> <i>Unit...</i>	Precipitation is the amount of rain that falls. <i>A rain gauge. A rain gauge catches precipitation over a period of time.</i> <i>Measured in millimetres per day/month/year.</i>
Cloud cover <i>It is measured using....</i> <i>Unit...</i>	Cloud cover means how much of the sky is hidden by cloud. <i>It is measured using in eighths or oktas. You determine this by looking at the sky and using the above chart.</i> <i>Oktas or eighths.</i>
Air Pressure	Air pressures refers to the density of air molecules within the atmosphere.

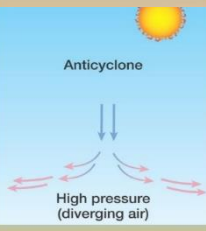
TYPES OF RAINFALL/PRECIPITATION

Relief Rainfall 	When wind meets a hill meets a hill or mountain, it must rises over it. As the warm air rises, it cools, condenses to form clouds. The clouds become saturated (full of water) and rain occurs. In the UK the prevailing wind comes from the south west (over the Atlantic Ocean). There are many mountains on the west coast of the UK (Wales). As the moist air hits the UK it rises up over the mountains = rainfall.
Frontal Rainfall 	Where a warm air mass meets a cold air mass, the warm air mass rises over the cold air mass. As the warm air rises, it cools, condenses to form clouds. The clouds become saturated (full of water) and rain occurs. Front rainfall is the most common type of rainfall in the UK.
Convective Rainfall 	The sun heats the ground, which then warms the air above it. As the warm air rises, it cools, condenses to form clouds. The clouds become saturated (full of water) and rain occurs. In the UK we get convective rainfall in the south east and inland, where the ground gets hottest.

LOW PRESSURE is caused when...
Common weather is...
Where does it occur?



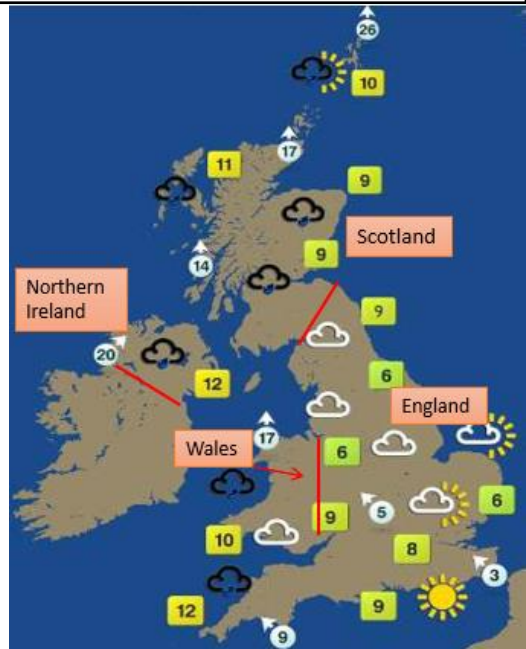
HIGH PRESSURE is caused when...
Common weather is...
Where does it occur?



Weather forecasts:

Meteorology is the scientific study of the atmosphere. Most countries have a central organisation responsible for weather forecasting. Data is collected over millions of weather stations. They use a variety of methods to collect data, including satellites, aeroplanes, radars, ships and ocean buoys. This data is sent to supercomputers which process the data, which meteorologists then use to create charts and forecasts.

- **In Scotland** there is heavy rain with temperatures between 9-11°C. Winds are from the south. The maximum wind speed is 26 mph.
- **In England** there is cloud in the north and sunshine in the southeast, with some rain in the southwest. Temperatures range between 6-9°C. Wind speeds are as low as 3 mph an from the south east.
- **In Northern Ireland** there is heavy rain and temperatures of 12°C, with 20 mph winds from the south west.
- **In Wales** there is cloud and heavy rain with winds of up to 17 mph from the south.



EFFECTS OF THE TEWKESBURY FLOOD

A river flood is when a river overflows its banks and water spreads across the surrounding land. It is caused due to heavy precipitation. Tewkesbury, a market town in Gloucestershire (south west England), was badly affected by a flood in 2007. Following a very dry April, the summer of 2007 was one of the wettest on record. By the end of June, heavy rainfall overloaded rivers, leading to flooding in some areas in Gloucestershire. However, during July the rains were even heavier. On 20th July, two months' worth of rain fell in 14 hours. This resulted in widespread devastation.



Social impacts	<ul style="list-style-type: none"> • 2 people died • 5000 homes and businesses were flooded = 825 homes were evacuated. • 48 homes were without electricity for 2 days. • 135,000 homes were without drinking water for 2 weeks • Transport lines were destroyed.
Economic impacts	<ul style="list-style-type: none"> • Cost: £50 million • Destruction to transport lines cost £25 million • 5000 homes and businesses were flooded and 7500 businesses were without mains water for 17 days = businesses temporarily closed down = unemployment and lack of earnings.
Environmental impacts	<ul style="list-style-type: none"> • Floodwater destroyed crops and contaminated groundwater. • Habitats were lost.

EFFECTS OF THE MILLENNIUM DROUGHT

Between 2002 and 2009 south-east Australia experienced its worst drought in 125 years. This was known as the Millennium Drought. The dry and hot conditions resulted in desertification. This is when land becomes 'desert like' and too dry to grow crops on.



Social impacts	<ul style="list-style-type: none"> • Families had to sell their farms due to loss of crops & livestock. • The rate of suicides among farmers increased. • Buildings started to crack due to extreme temperatures forcing people to evacuate. • The government imposed hosepipe bans and limited showers to just four minutes. • Water and food bills increased by 20%.
Economic impacts	<ul style="list-style-type: none"> • 40% of the land became desertified = crop yields dropped by 66%. • The lack of food being produced in Australia = they stopped making money from exporting foods and have to spend more money importing food from other countries. • The government spent millions on helping farmers cope with the effects of the drought. • The tourism industry declined as people went to other countries.
Environmental impacts	<ul style="list-style-type: none"> • 40% of the land became desertified. The dry conditions led to dry soils that were vulnerable to soil erosion. • Many livestock (animals) died due to a lack of water and food. • Many habitats were lost due to wildfires and lack of water = a dramatic loss in biodiversity as animal and plant species died.

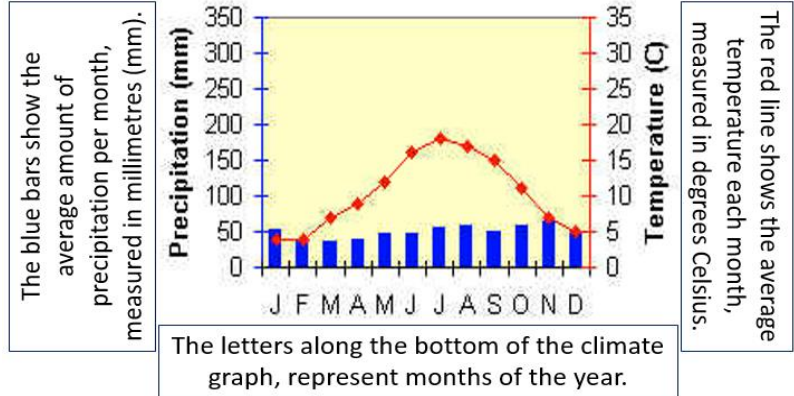
CLIMATE GRAPHS

- Weather is the state of the atmosphere at a given time. The photo shows warm, dry weather in Plymouth, however it might have been raining an hour later.
- Climate is the *average* weather in a place – what the weather is *usually* like. To work it out you collect data over a long period & then calculate average measurements for each month.



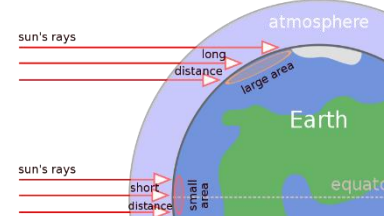
Geographers collect climate data to use this to calculate average weather conditions each month (e.g. temperature and precipitation). This data is plotted on a climate graph.

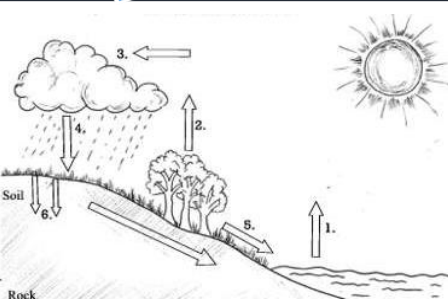
A climate graph shows how precipitation and temperature change throughout the year.



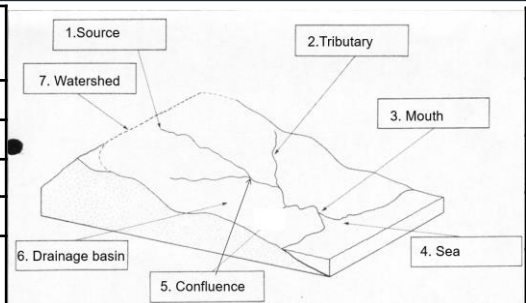
EXPLAINING GLOBAL CLIMATES

Altitude	The higher you are above sea level, the colder it is. The temperature falls by about 1°C every 100 meters. Many areas in the Alps (a mountain range in Europe) are 40°C colder than the coastal areas because they are 4000m high. This also explains why you can find snow on Mt Kilimanjaro which lies on the equator.
Prevailing Wind	Prevailing wind is the most common wind direction. <ul style="list-style-type: none"> • If the prevailing wind direction is over water (sea/ocean), it brings rain. • If the prevailing wind direction is over land, it brings dry air. In the UK, the prevailing wind is from the SW, over the Atlantic Ocean = moist (wet) air which is why we have lots of rain.
Ocean Currents	The temperature of water surrounding a country affects its temperature. <ul style="list-style-type: none"> • If there are warm ocean currents, the temperature will be warm. • If there are cold ocean currents, the temperature will be cold. In Britain we have warm ocean currents, which have travelled across the Atlantic Ocean from the Gulf of Mexico where it is hot. This ocean current is called the North Atlantic Drift and it warms the coast of the UK.
Latitude	Latitude means how far a place is from the equator. <ul style="list-style-type: none"> • Far from the equator (e.g. poles) it is very cold. This is because the earth is curved = many of the sun's rays bounce off the earth's surface. Therefore there is indirect sunlight which shines at a low angle onto a larger area. • At the equator it is very hot. This is because there is direct sunlight which shines directly onto a small area = hot.





Evaporation	When the sun heats up water from the sea and it goes into the air.
Transpiration	When the sun heats up water from the leaves of trees.
Condensation	When water vapour cools and turns into clouds
Precipitation	Rain, hail, sleet and snow that falls from the clouds
Surface run-off	When the water runs off the surface of the ground.
Groundwater flow	When water goes into the ground (infiltration) and flows through the rocks/soil underground.



Drainage Basin	The area of land in which water drains into a specific river.
Source	The point where the river begins.
Tributary	A stream or small river that joins a larger stream or big river.
Confluence	A point where two streams or rivers meet.
Mouth	The point where the river meets the sea or ocean.

River	A channel of water which flows downstream.
Social uses of the river	<ul style="list-style-type: none"> Supplying water to people's homes: <i>Water is taken from the Thames, cleaned and piped to millions of homes. Dirty water is collected from homes, cleaned and put back in rivers.</i> Leisure activities: <i>Rowing, canoeing, swimming, picnics, walking. Over 250,000 fishing licenses are brought each year to fish along the Thames and its tributaries.</i> Transporting people: <i>The Thames River Boats transport thousands of people to work everyday. Tourists also enjoy Thames cruises.</i>
Economic uses of the river	<ul style="list-style-type: none"> Use in industries: <i>Factories (e.g. the Ford Factory in east London) uses water for cooling and washing factory machinery.</i> Transporting goods to other countries: <i>London Gateway Port is located in East London. It is used for importing and exporting goods.</i> Producing electricity to sell: <i>In power stations, steam drives turbines. River water is used to cool tanks of steam. For example in the power station beside the Thames at Didcot.</i> Agriculture (farming) <i>A lot of the River Thames passes through rural areas and farmland. Farmers use the river water to water their crops in dry weather (irrigation).</i>

LANDFORMS FORMED BY EROSION

WATERFALL

The diagram shows a waterfall where water flows over a ledge of hard rock. The soft rock underneath erodes more quickly, creating a plunge pool and an overhanging ledge. As the waterfall retreats upstream, a steep-sided gorge develops. Labels include: Hard rock, Waterfall retreats, Overhang, Plunge pool, Fallen rocks, and Steep-sided gorge develops as waterfall retreats.

A waterfall is a steep fall of water, where water flows over a ledge of hard rock.

- Waterfalls occur in areas where hard rock overlies soft rock.
- The soft rock erodes more quickly than the hard rock, creating a plunge pool and overhanging ledge.
- Further erosion of the soft rock, makes the plunge pool deeper and the overhanging ledge unstable. Eventually the ledge falls into the plunge pool.
- As the steps 1-3 are repeated, the waterfall retreats upstream.

GORGE

The diagram shows a narrow, steep-sided valley (gorge) formed by the gradual retreat of a waterfall over time. Labels include: Waterfall, Gorge, and River.

A gorge is a narrow, steep sided valley that is found immediately downstream from a waterfall.

It is formed by the gradual retreat of a waterfall over hundreds or thousands of years.

Erosion	The wearing away or breakdown of rocks by wind, water or ice.
Hydraulic Action	The force of water hits against the river channel and removes material. It is common with fast moving, high energy water.
Abrasion	Sediment carried by the river hits the river channel and removes material.
Corrosion	Chemicals in the water dissolve rocks (e.g. limestone)
Attrition	Stones carried by the river hit into each other, gradually making the rocks smaller and smoother. Rocks in the upper course are large and more angular than rocks in the lower course.
Transportation	Eroded material is carried by the river downstream.
Traction	Large particles roll along the river bed.
Saltation	Pebble-sized particles bounce along the river bed.
Suspension	Small particles (silt and clay) are carried in the water.
Solution	Soluble materials dissolve in the water and are carried along.
Deposition	Deposition takes place where a river does not have enough energy to carry sediment (its load). As a result it is dropped.

LANDFORMS FORMED BY EROSION and DEPOSITION

MEANDER

The diagram shows a river with a bend. The outside of the bend is eroded, while the inside is where material is deposited. A red arrow points to the neck of the meander, labeled 'A'. Labels include: on inside of bend, neck of meander, and A.

A bend in the river.

- It starts with a slight bend.
- Water moves faster on the outside of the bend and slower on the inside.
- The fast water erodes the outside of the bend. The slower water deposits material on the inside of the bend.
- Continued erosion and deposition makes the bend bigger.

OX-BOW LAKE

The diagram shows a meander that has become larger and narrower at its neck (labeled 'A'). Eventually, the neck breaks through, and the water takes a more direct path. The former meander loop is now a dry lake (oxbow lake). Labels include: flow meander, now dry, and Abandoned meander.

U-shaped lakes formed when a meander is no longer connected to a river

- Further erosion and deposition make the meander bend larger and the neck of the meander (A) narrows.
- Eventually the neck breaks through and the water takes the most direct route, avoiding the meander.
- As less water is flowing through the meander, the energy is reduced = deposition. The meander is blocked off and an oxbow lake is created.

An OS map is a very detailed map. They are split up into squares, known as grid squares.

- A 4 figure grid reference directs you to a certain grid square.
- A 6 figure grid reference directs you to a certain point within a grid square.

How to read grid references: remember the rule **along the corridor, up the stairs**.

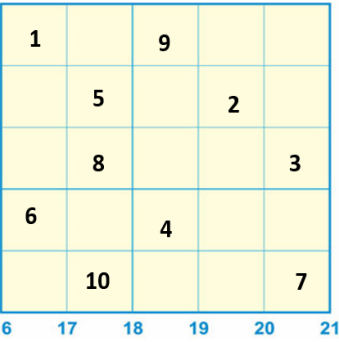
ALWAYS send to the **BOTTOM LEFT** corner.



4 FIGURE GRID REFERENCES

___ ___ / ___ ___

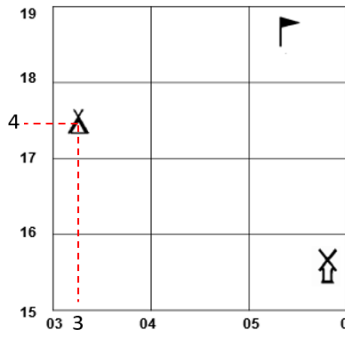
1. Draw a **X** in the bottom left corner of the grid square.
2. **Along the corridor** – go along the horizontal axis until you reach the line that the X is on.
3. **Up the stairs** – go along the vertical axis until you reach the line that the X is on. **1 = 16,46.**



6 FIGURE GRID REFERENCES

___ ___ ___ / ___ ___ ___

1. What is the grid square? **03,17**
2. To work out the 3rd number you state how many 10^{ths} across the campsite is in 03, 17 = 03**3**, 17 _
3. To work out the 6th number you state how many 10^{ths} up the grid square the campsite is = 033, 17**4**
4. Therefore the six figure grid reference is **033, 174**

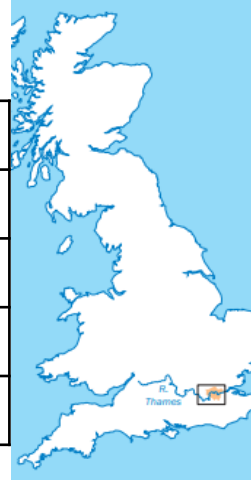


RIVER MANAGEMENT STRATEGIES

Embankment	Raised river banks, built next to rivers. <i>There are high embankments that run along the River Thames in London.</i>
Advantages	They are very effective at preventing flooding. They are built from concrete, which means they are strong and long lasting.
Disadvantages	During storms, water can sometimes go over the embankments. They are expensive and unnatural to look at.
Flood Relief Channel	A additional manmade river channel is built to divert water away from high value land. <i>The Jubilee River channel was a flood relief channel to reduce the amount of water in the River Thames in Windsor and Eton (west London).</i>
Advantages	Advantages: the relief channels prevent the main river from overflowing its banks = it is very effective.
Disadvantages	Disadvantages: it causes disruption as it is being built and can be very expensive.
Afforestation	Trees are planted in the drainage basin.
Advantages	Trees intercept rainfall and take water out of the soil. This reduces the amount reaching rivers. Wooded areas look attractive and provide wildlife habitats.
Disadvantages	The land cannot be used for other activities, such as farming. It is less effective than embankments and flood relief channels at reducing the risk of flooding.
Land Use Zoning	The government allocates areas of land to different uses, according to their level of flood risk. <i>Land closest to the river, at high risk, is used as parkland/playing fields. Land further from the river is used for housing and industry.</i>
Advantages	It reduces the cost of future floods..
Disadvantages	It does not prevent the flood from occurring. It also only applies to new housing developments. Finally it can reduce the value of existing homes that are said to be in a high risk area.
Preparation	The Environment Agency and local government educate people how to protect themselves from future floods. <i>Moving valuables upstairs, using flood gates and sandbags to keep floodwater away.</i>
Advantages	It reduces the cost of future floods as people are better able to protect themselves and their belongings.
Disadvantages	It does not prevent the flood from occurring. House prices drop if they are deemed at risk of flooding.
THAMES BARRIER	This is a barrier in east London. It has a set of giant steel gates that are raised when there is a risk of high water levels in the Thames. It prevents the addition of water from the North Sea during high tides.
Advantages	It is extremely effective at reducing the risk of flooding in London,
Disadvantages	It cost £534 million!

FLOODING OF THE RIVER THAMES IN 2014

The River Thames is located in south east England. It is the second longest river in the UK, running 346km from its source to mouth. In February (2014), the River Thames flooded. A **river flood occurs when water overflows the river channel and spreads across the surrounding land**. The worst hit areas were from Datchet to Shepperton, to the west of London.



CAUSES OF THE FLOOD

Slope steepness	If there is a steep slope, water flows quickly into the river = floods. The tributaries for the Thames River are in the Cotswolds hills which increases the speed the water reaches the river channel.
Precipitation	Intense rain = flooding. Between December (2013) to February (2014), the UK experienced very wet weather. The south-east of England experienced over 200mm of rain, more than double the average for these months.
Rock Type	Impermeable rock = more surface run off = water quickly reaches river channel = flood. London is built over clay which is impermeable.
Settlements	A growth of settlements = the creation of more concrete surfaces, which are impermeable = more surface runoff = more flooding. London and the surrounding area is growing. In 2013, 36,000 new homes were built in London alone.
Deforestation	The leaves of trees intercept rainfall as it falls to the ground = water takes longer to reach the river. If trees are cut down, water quickly reaches the river = flood. Trees along the River Thames have been cut down as settlements grow.

EFFECTS OF THE FLOOD

Social impacts	<ul style="list-style-type: none"> • More than 1000 homes flooded, with families moving into temporary housing. Many people did not return home for 6 months. • Homes lost water services due to contamination • Homes in Datchet, Singleton and East Marden experienced powercuts. • Crime rates increased as people stole from the evacuated homes.
Economic impacts	<ul style="list-style-type: none"> • The flood cost £500 million. • Transport lines were flooded, preventing commuters getting to work. • Local businesses were flooded, affecting jobs and local economies. • Floodwater covered agricultural fields and destroyed crops. These crops could then not be exported (sold).
Environmental impacts	<ul style="list-style-type: none"> • Habitats were flooded, affecting wildlife.