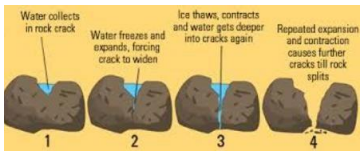
GEOGRAPHY KNOWLEDGE BOOK

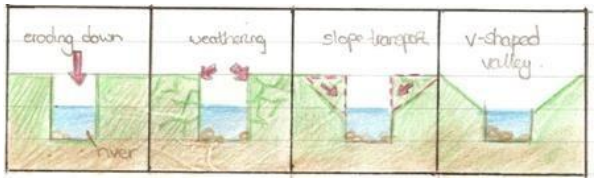
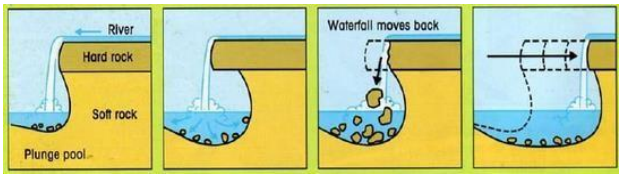
YEAR 8

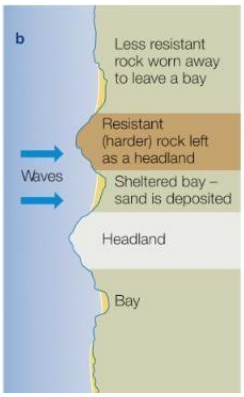
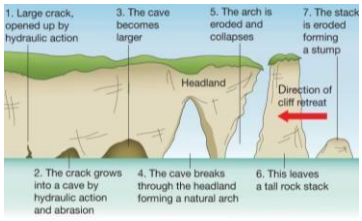
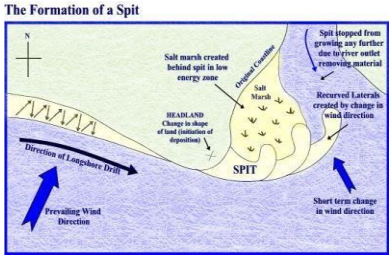
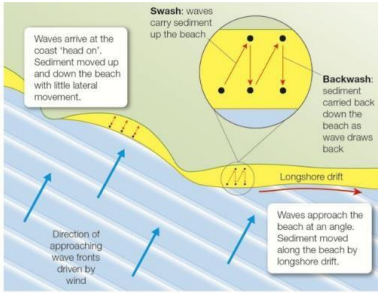
Y8 Geography revision sheet – RIVERS and COASTS

The information here is what all students MUST know. Use this sheet as a checklist to identify what is clear to you, what you need to work on, and what you can tick off once revised. **If you have any doubts or questions, please come and see your teacher** – we will be very happy to help!

Key content	What you need to know
Weathering	***-The breaking up of rocks by the weather.*** There are three types: **1. Freeze-thaw weathering (frost shattering):** Water collects in cracks; freezes and expands at night, breaking rock apart; ice thaws and contracts by day; more water collects in larger crack; process repeats).   **2. Chemical weathering** – acids in rainwater dissolve rock (chalk and limestone). Check out the statues in your local churchyard!  **3. Biological weathering** – due to plants and animals. Roots of plants grow in cracks in rocks and break them apart; animals can burrow into weak rocks.  **4. Onion skin weathering** – when rocks are repeatedly heated by day (causing expansion) and cooled by night (causing contraction). Layers of rock peel off like an onion.
Erosion	**-The breaking up *and removal* of rocks by rivers, waves, glaciers (ice) and the wind.** ***Note that **both erosion and weathering cause rock to break up into smaller pieces.** However, **erosion** also involves ***movement:*** rivers, waves, ice and the wind ***remove*** the broken-up pieces of rock from the landscape.

	1. River erosion – rivers wear away small bits of rock from their **bed and banks.** This material is ***transported*** downstream and deposited when the river loses energy.   **2. Sea erosion –** during storms, **waves hit the coast** with the force of several tonnes**.** This weakens the rock and breaks pieces off. **Currents transport loose material** elsewhere.  **3. Ice erosion –** rocks that fall onto ***glaciers*** **(ice sheets) act like sandpaper** on the valley floor and sides of a mountain. **4. Wind erosion –** the wind picks up tiny **particles of sand** and **blasts them against rocks.**

Transportation and deposition	***-Transportation*** **– the movement of eroded material. H**appens when the water's energy is high enough to pick material up and move it. Both rivers and waves transport material. ***-Deposition*** **– the dropping of eroded material.** Happens when the water's energy is too low to move the material, causing it to fall under **gravity.**
Formation of v-shaped valleys	These are formed in ***4 stages***:  1. **The river erodes downwards** as stones and boulders are bounced and scraped along the river bed. 2. As the river cuts down, steep valley sides are created. These are exposed to **weathering,** which breaks them down. 3. Over time, the loosened material falls into the river channel under **gravity**. This is called **slope transport**. 4. Slope transport leaves behind a **valley in the shape of a 'V'.**
Formation of waterfalls	These are also formed in ***4 stages***:  1. Waterfalls occur where rivers flow over areas of **hard and soft rock**. (Note - the hard rock is above the soft rock.) 2. Falling water and rock particles erode the soft rock faster than the hard rock above it. This creates a **plunge pool** – a 'cut-out' area of soft rock at the bottom of the waterfall. 3. Further erosion makes the plunge pool larger and **undercuts** the hard rock above to create an **overhang**. Under **gravity**, the overhang eventually falls into the plunge pool below. 4. Stages 2 and 3 repeat, causing the waterfall to retreat (move) up the river. This leaves behind a **gorge**.

Coastal erosion landforms	**<u>Landform – a feature of the landscape created by the erosion, transportation or deposition of material</u>**  ***<u>Erosion landforms</u>*** include: **1. Headlands and bays** -Less resistant (softer) rock erodes more quickly than more resistant (harder) rock. -Areas of more resistant rock therefore stick out to form **headlands**. -Areas of less resistant rock erode further inland between the headlands to create **bays or beaches**. Sand is **deposited** due to the shelter provided by headlands. **2. Caves, arches, stacks and stumps** – all occur at *HEADLANDS*, and in ***<u>this order</u>***:  a) **Cracks** are opened up by hydraulic action. b) Cracks widen by hydraulic action and abrasion to form a **cave**. c) Cave erodes through to other side of headland to form an **arch.** d) Continued erosion leads to widening of arch and collapse of above material into sea under gravity. A **stack** is left behind. e) Stacks are eroded until their collapse, creating a **stump**.
Coastal deposition landforms	1. **Beaches** – formed by material transported and deposited by **gentle waves**.  2. **Spits -** long fingers of sand or shingle stretching out to sea. -They occur where there is a sudden change in the coastline's direction, often at a river estuary or headland. -Longshore drift transports sediment along the coastline until the change in direction. -Then, the sediment gets deposited out to sea to form an extension of the land.
Longshore drift – *a key transportation process*	 -LSD moves sand and rock along the beach in a **zig-zag pattern**. -Waves move material up the beach **(swash)** at an angle set by the **prevailing wind**. -The **backwash** brings material back to sea at a **right angle** to the beach, under **gravity**. -Process repeats to create **beaches and spits.**

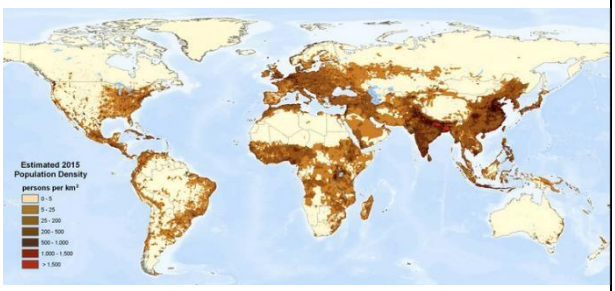
Coastal management: *Hard engineering*	***-Hard engineering = artificial (concrete or steel) structures to stop waves or reduce their energy*** *-General advantages*: Effective at reducing erosion; lasts a long time.
	-General disadvantages: Expensive and high maintenance costs; an eyesore (looks ugly); interferes with natural processes to cause problems elsewhere along coast. -**Sea wall:** vertical structures that **reflect** wave energy back out to sea  (+) Protects base of cliffs; can be built very tall (-) Limits beach access; does not reduce or absorb wave energy – just reflects it  **Rock armour (rip-rap):** Big rocks dropped on beach to **dissipate** (break down) wave energy (+) Looks more natural (-) Beach access difficult; expensive to purchase and transport **Groynes:** Wooden and concrete structures built at right angles to the sea. Designed to prevent **longshore drift** and build up the beach.  (+) Creates a wide beach – a natural sea defence (-) **Terminal groyne syndrome** – rate or erosion increases along coast after the last groyne because less sand reaches here
Coastal management: *soft engineering*	***-Soft engineering = a more sustainable (environmentally friendly) approach to coastal management. Works with, not against, natural processes.*** *-General advantages*: Cheaper than hard engineering; looks more natural; better for beach access and therefore tourism. *-General disadvantages*: Does not last as long as hard engineering; requires regular maintenance; less effective than hard engineering at at reducing rates of erosion. -**Beach nourishment (rebuilding; replenishment):** building up the beach by replacing sand lost to sea.  (+) A natural sea defence – beaches dissipate wave energy (-) Sand needs replacing after storms which bring destructive waves -**Managed retreat (doing nothing)** - A deliberate policy of allowing the sea to flood or erode an area of low-value land. Allows nature to take its course.  (+) No costs involved; creates habitats for wildlife (-) People lose land and property; they may need to be compensated; not suitable for towns and cities

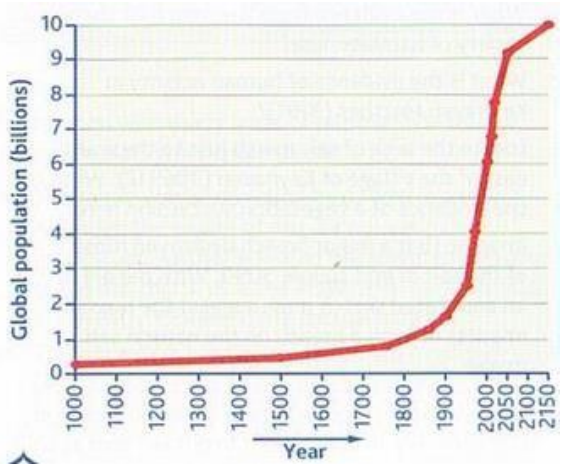
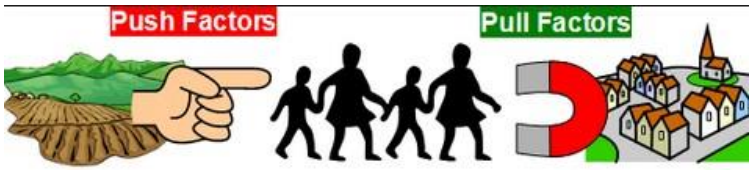
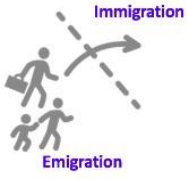
The coastal erosion problem: Holderness case study	***Holderness:*** North east coast of Yorkshire, north east England, north east of Hull -Fastest eroding coastline in Europe (1m / month). Made of clay. -A groyne was built to protect the town of Mappleton. -This led to **terminal groyne syndrome** further south along the coast. 
	-Farmers of livestock lost their land, business and livelihood. -**What would you do?** Build sea defences along the whole coastline? Protect just the main towns?  Or do nothing?

POPULATION and MIGRATION

The information here is what all students MUST know. Use this sheet as a checklist to identify what is clear to you, what you need to work on, and what you can tick off once revised. **If you have any doubts or questions, please come and see your teacher** – we will be very happy to help!

Key content	What you need to know
Population: key terms	**Population** – the *number of people* living in a specific area, such as a continent, country, city or town. **Population distribution** – how people are *spread out* over an area. **Population density** – the average number of people per square kilometre. **Densely populated** - a *high* number of people per square kilometre in a specific area. **Sparsely populated** – a *low* number of people per square kilometre in a specific area. Population density = Number of people / Area

Why are some places *densely populated* and others *sparsely populated?*	**Positive factors (densely populated):** -Moderate climate – good for people and growing crops -Gentle slopes – easier to construct buildings -Good soils for crops -Many natural resources – food and water supply -Industry and jobs -Good communications (roads, railways etc) due to flat land  **Negative factors (sparsely populated):** -Extreme climate (very hot or cold) -Steep slopes – difficult to construct buildings -Poor soils – difficult to grow crops -Few natural resources – poor food and water supply -Not many jobs or industry -Poor communications due to steep land 
Where do we live – and why?	**You are expected to be able to ***describe*** and ***explain*** the world's population distribution using a map of world population density (see right).**  **Places with a high population density:** - *Western Europe, India, China and Japan*. All these places benefit from the **positive factors** above. **Places with a low population density:** *Polar regions* (too cold, no soil, ice makes communications and settlement difficult); *Amazon* (too hot and wet; very dense forest); *Sahara* (too hot and dry for people and crops; sand makes communications difficult); *Himalayas* (too cold; thin soils; steep slopes difficult for settlement and communications).
How does population change?	**-You are expected to be able to ***interpret*** population graphs.**

How does population change?	-The world's population is increasing. The increase is so rapid it is known as a **population explosion.** Every second, there are an extra two people on the planet. Every hour, therefore, there are an extra 8,000! -From the year 1000 to 1800, the world's population increased **gradually**. Since 1800 it has increased **rapidly** (see graph). - **If BR > DR, population increases.** **If DR > BR, population decreases.** **If BR = DR, population stays the same.** **Birth rate (BR):** number of babies born each year, per 1000 population **-Death rate (DR):** number of people dying each year, per 1000 population  **Factors that affect the birth rate:** (+) children needed to help with work; (+) tradition for larger families; (-) birth control **Factors that affect the death rate:** (+) food shortages; (+) war; (-) good harvest; (-) poor healthcare; (-) good water supply; (-) new hospitals
Migration: key terms	Migration – the movement of people from one home to another.  Push factors – reasons why people leave a place (negative – 'pushed out'). E.g. water shortages, war, disease, unemployment (few jobs). Pull factors – reasons why people are attracted to another place (positive – 'pulled towards'). E.g. job opportunities, safety, better education and healthcare. International migration – moving from one country to another Refugee (forced) migration – moving home due to war or natural disasters Economic migration – moving home for job opportunities Rural to urban migration – moving from the countryside to the city
Immigration and emigration	**Immigration:** when people move into a new country (**immigrants**). **Emigration:** when people leave their country of birth (**emigrants**). 

Effects of immigration and emigration	See next page
Effects of immigration and emigration	**Immigration (to the host country)** **Advantages** Migrants help to reduce labour shortages. Most immigrants get jobs, pay taxes, set up businesses, and help expand the economy. A richer and more diverse culture. Migrants bring religions, traditions, food and ideas from other countries. **Disadvantages** Possible tensions between different cultures, ethnic groups and religions. Increased demand for services such as healthcare and education. Overcrowding could become an issue in certain areas. **Emigration (from the migrant's home country)** **Advantages** Migrants send money home to their families. Migrants may return with new skills. Less pressure on jobs and resources. **Disadvantages** If skilled workers leave, the country suffers a 'brain drain'. Gender imbalances can occur as it is usually men who look for jobs in other countries. By leaving, economically active people are reducing the size of their country's workforce.

YEAR 8: WORLD ISSUES

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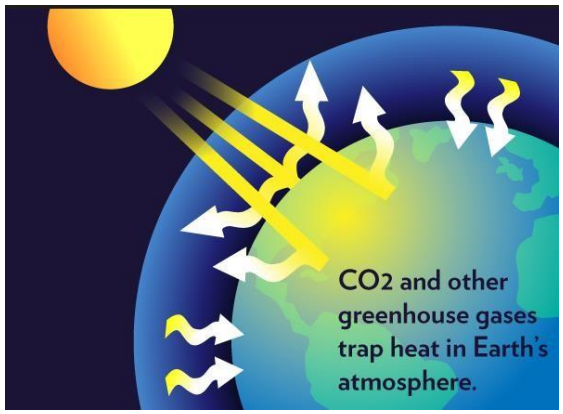
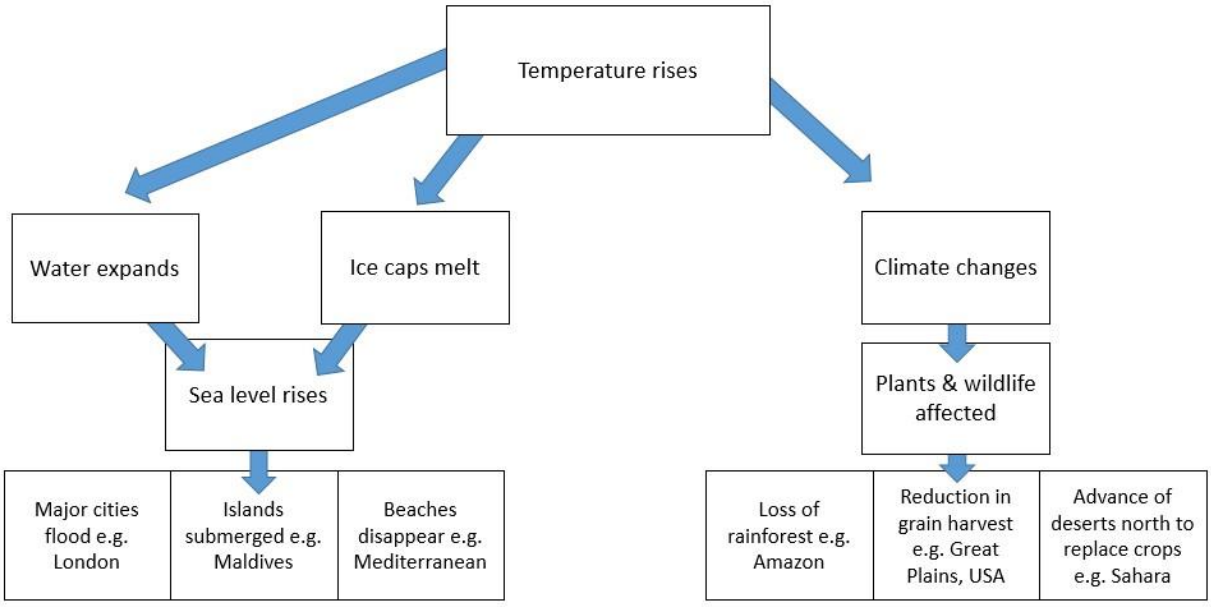
KEY IDEA	IDENTIFY & KNOW

1. Climate Change	The earth's climate has changed many times. For example, 11,000 years ago, the UK was covered by ice and snow. This was known as the **ice age.** Today, the world is now much warmer than in the past and in the last century average temperatures have risen by 1°C, with the greatest increase in the last 40 years. This heating up of the planet is referred to as **global warming**. Climate change is thought to be due to the **greenhouse effect**. This is where gases in the atmosphere such as carbon dioxide, methane, nitrous oxide, CFCs and water vapour trap heat radiated from the sun.  Without these gases, the earth would be too cold for us to survive. However**, deforestation** and burning of **fossil fuels** such as coil, oil and natural gas has produced too much carbon dioxide in the atmosphere. This now means that the earth is getting too hot. This is having both positive and negative effects on the planet (see below). Some of these are illustrated in the flow map below:  Other effects include more extreme weather events like **hurricanes** and **tropical cyclones** which are fuelled by higher sea temperatures; a rise in pests and the spread of tropical diseases like **malaria** to the more temperate regions of Europe like the UK. On the plus side, the warmer climate in the UK will allow us to cultivate crops we have never been able to cultivate before such as grapes for wine, citrus fruits and peaches. In addition, we will enjoy Mediterranean summers and a greater area of the country can be devoted to cereal production which is hugely profitable.

KEY IDEA	IDENTIFY & KNOW
	Global warming is a world problem as every country contributes in some way to producing greenhouse gases. International agreement is needed if we are to reduce greenhouse gases and slow down global warming. So far this agreement has been difficult to reach and climate change remains a real problem.

2. Energy use

Currently, we largely rely on **fossil fuels** like coal, oil and natural gas to provide most of our energy needs (about 90%). However, these fuels are **non-renewable** meaning they will eventually run out. As a result we need to review our energy use and fuel consumption and look for alternative more **renewable** forms of energy which cause less harm to the environment and are more reliable.

In 15 years…

…we will hopefully be less reliant on oil and coal with a greater uptake of fuels like natural gas and hydrogen. In addition, there will be more use of renewable forms of energy like **solar** and **wind** power.

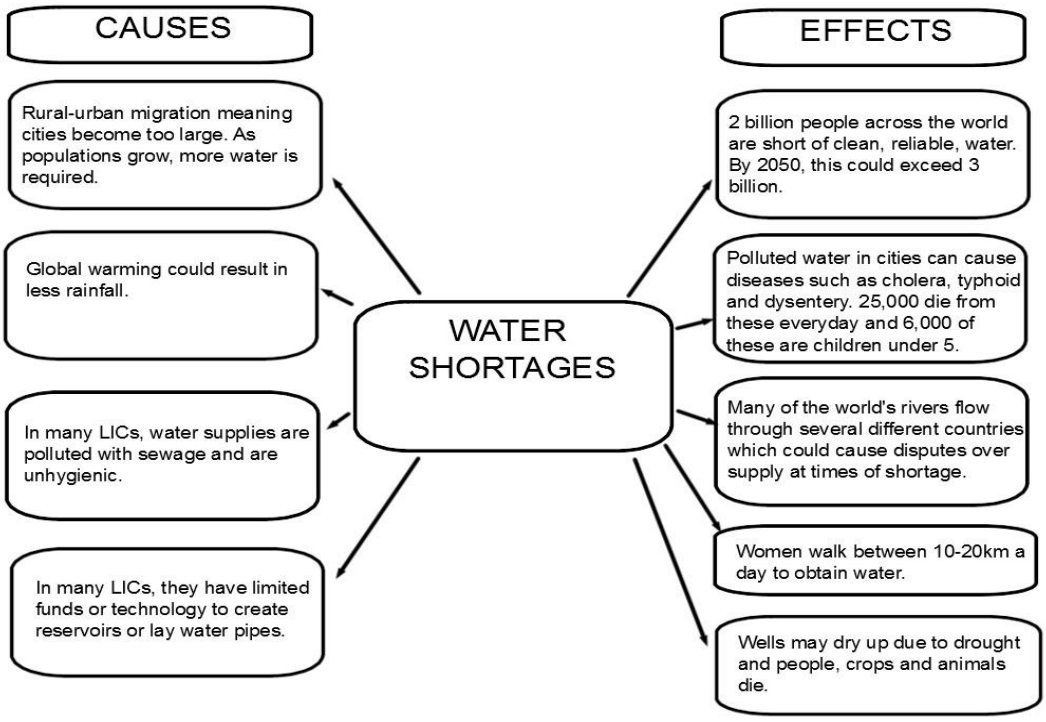
In 50 years…

…the age of fossil fuels will be over. Renewables like solar and wind power will meet most of the world's energy needs. This will have a positive effect on the environment reducing the impact of global warming.

3. Water scarcity

We are very fortunate in Britain to have a reliable supply of water. This is because a) we get rain spread very evenly throughout the year and b) we have the money and technology to create reservoirs which means that water can be stored and piped to our homes.

Not all countries are this fortunate. 2 out of every 5 of the earth's population lack a safe and reliable water supply. This is despite the fact that there is enough fresh water to support 5 times the earth's population. (Source: UN). The causes and effects of water scarcity are given below.



Solutions to water shortages include building **dams** to create **reservoirs** or relying on aid agencies like **WaterAid**.

WaterAid is an organisation dedicated to providing safe; clean water through improved sanitation. It is a charity funded by donations from the UK population. You can view their website at www.wateraid.org/uk

KEY IDEA	IDENTIFY & KNOW
4. **Food scarcity**	For a satisfactory diet people need to eat the correct **quantity** and **quality** of food with the right balance of proteins, carbohydrates and vitamins. Diet is a problem in rich and poor countries.  **Poor countries** • By 2050 half the world's population will be underfed and suffering from **malnutrition** • Poverty means people do not have enough money to buy the food they need so they suffer from diseases like kwashiorkor, marasmus and rickets e.g. Kenya and the Sudan  **Rich countries** • In rich countries people eat the wrong types of food high in fats and sugars • As a result, many people are **obese** (overweight) suffering from diabetes, heart problems or breathing difficulties e.g. UK and USA **Why do some countries suffer from food shortages?** • **Corruption** means foods are retained by the people in authority and not shared • In some countries **populations are too large** • Crops may be ruined or animals killed in **civil war** • Some countries rely on **imports** of food which can be **expensive** **Climate change** reduces the crops available. • **Drought** can be a major problem reducing crop yields • **Pests** like locusts may destroy the crop 
5. Poverty	In the UK, we live a privileged lifestyle with good access to education; healthcare; jobs and food. This is not the case in many of the poor countries in the world. 1 in 6 of the world's population live in **extreme poverty**. Many are caught in a **cycle of poverty** (see below) which makes it impossible for them to catch up with rich countries. Many face a daily battle to survive. The causes and effects of poverty are given in the table below: **Causes of poverty** • There are too many people for the resources available • Few exports mean the country has little money to buy essential goods that it needs • Lack of transport makes the movement of people and goods very difficult • Lack of schools means people are poorly educated **Effects of poverty** • Lack of jobs means little or no income • People are weak when not enough food is grown to provide a good diet • There is a shortage of hospitals and medical care which means people are in poor health • Housing is poor quality without electricity, clean water or the disposal of sewage  **Solutions – attempts are being made to end world poverty by:**

	Donating aid	This can be **short term** or **long term** aid. Short term is medical equipment, food or human resources donated in the aftermath of a disaster such as an earthquake. Long term aid is monetary donations provided by either rich countries or the World Bank. This is usually given in the form of a loan where interest is added. Usually the countries who borrow the money cannot afford to pay off the loan widening the gap between rich and poor.

Reducing debt	Debts accumulated can be reduced by reducing interest payments on loans, adjusting the price paid for imports and exports or making sure aid goes to the people who need it and not government officials. Alternatively, the debt can be cancelled altogether.
Self-help schemes	British charity **Practical Action** assists poverty stricken countries by enabling them to look after themselves. For example, providing them with more reliable building materials, developing sustainable forms of energy and educating local people with the basic skills to enable them to make a decent living. This allows these people to gain self-respect and independence whilst discouraging over-reliance on unreliable outside aid. See https://practicalaction.org/