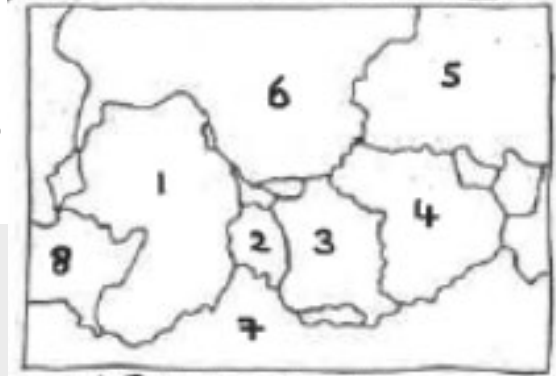
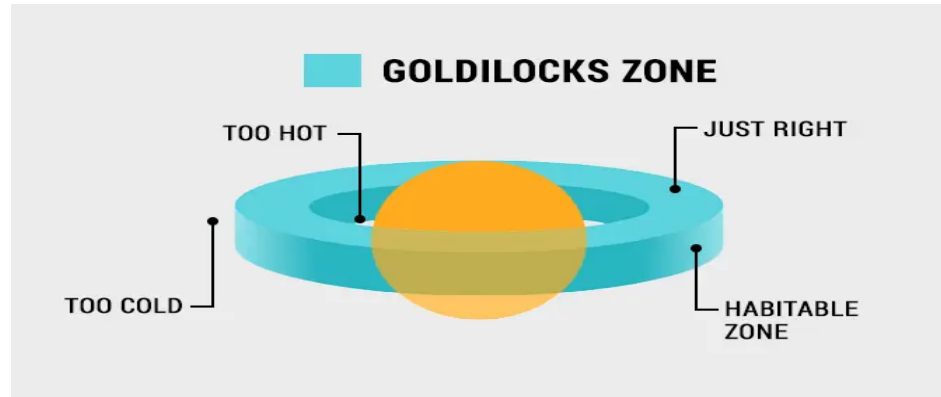


The Earth is around **4.6 billion** years old.
 Earth is **just** the **right** distance from the sun to have permanent **liquid water** on the surface



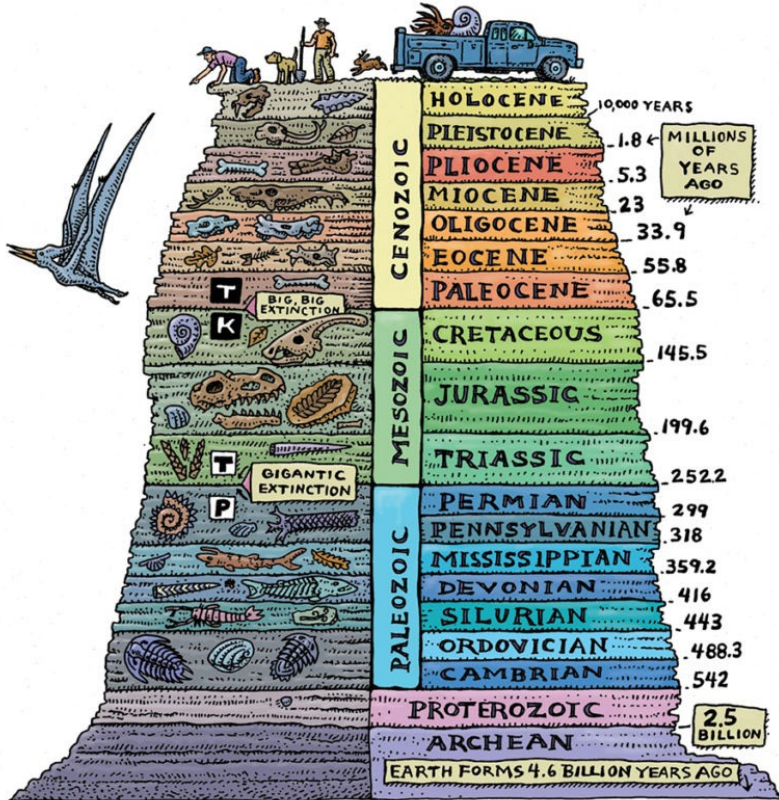
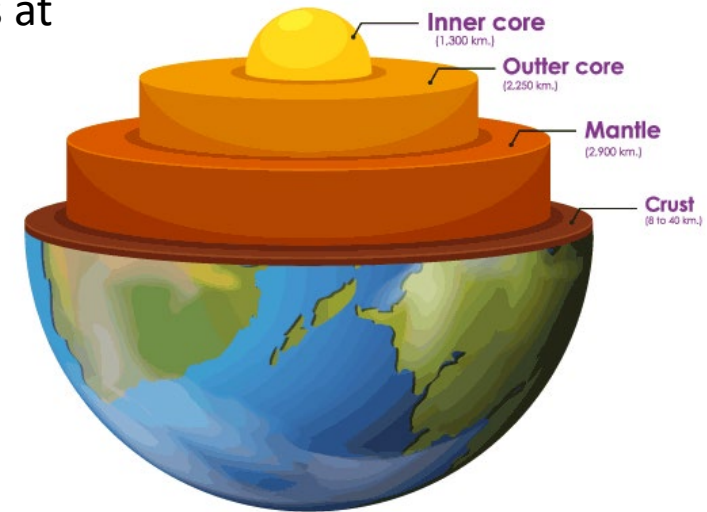
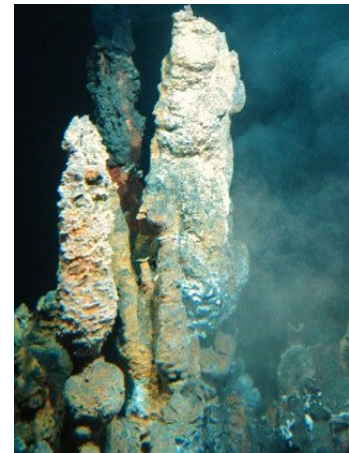
1. PACIFIC PLATE
2. NAZCA PLATE
3. SOUTH AMERICAN PLATE
4. AFRICAN PLATE
5. EURASIAN PLATE
6. NORTH AMERICAN PLATE
7. ANTARCTIC PLATE
8. INDO-AUSTRALIAN PLATE

<p>Igneous</p> <ul style="list-style-type: none"> • Forms from magma or lava solidification • Hard, no layers 	<p>Sedimentary</p> <ul style="list-style-type: none"> • Forms from sediment compaction • Crumbly, layered 	<p>Metamorphic</p> <ul style="list-style-type: none"> • Forms by transformation of other rocks
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Planet Earth

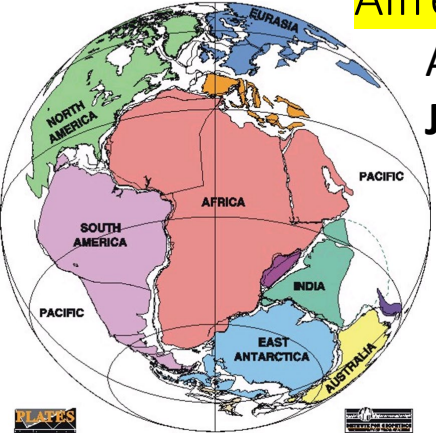
The **Anthropocene** is a proposed geological **epoch** defined by **human activity**

Life is thought to have originated in the oceans at **hydrothermal vents!**



PANGAEA

Alfred Wegner's theory of continental drift



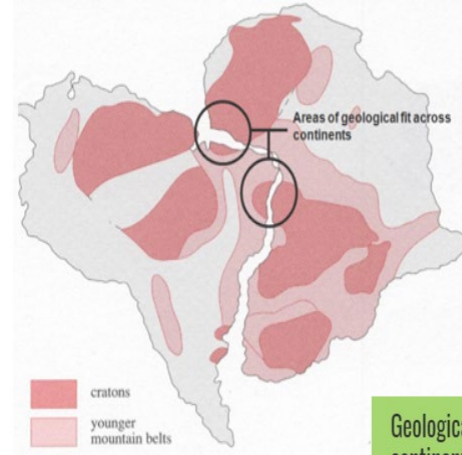
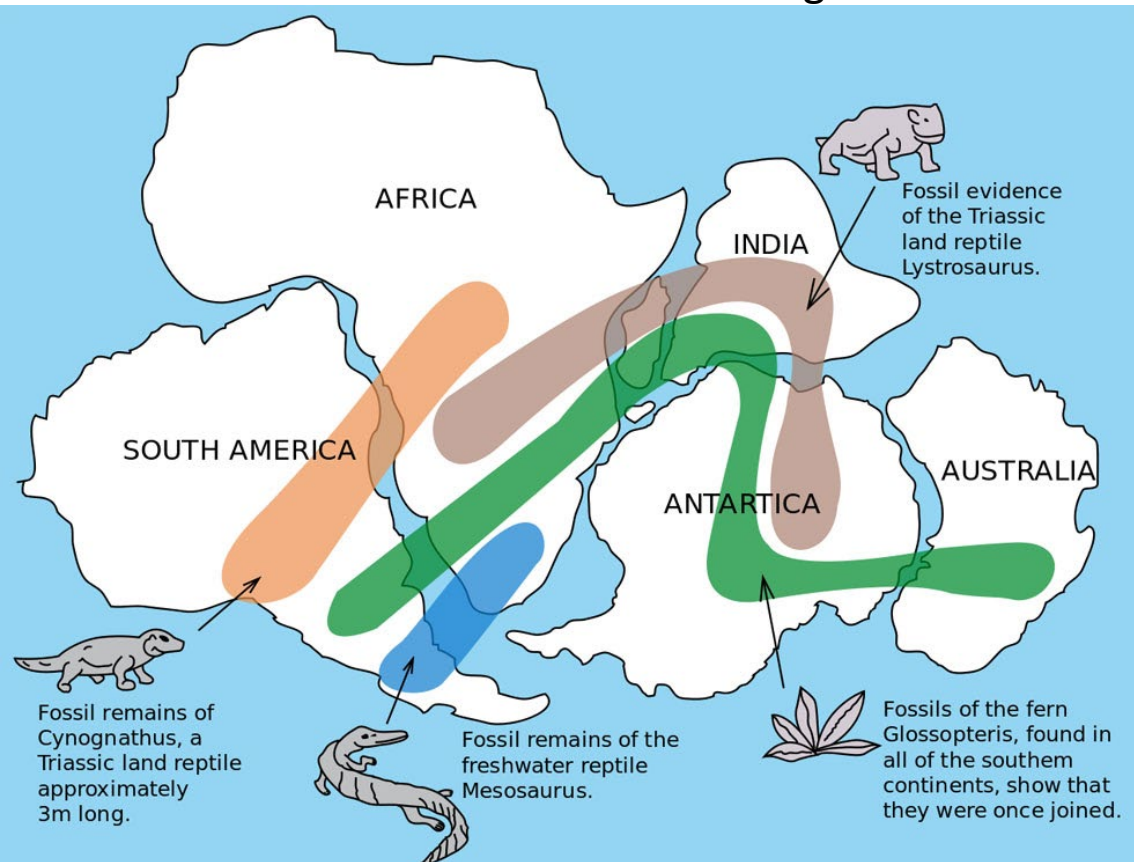
Alfred had **evidence** that the continents were once stuck together:

Jigsaw fit (outlines of South America and Africa match up)

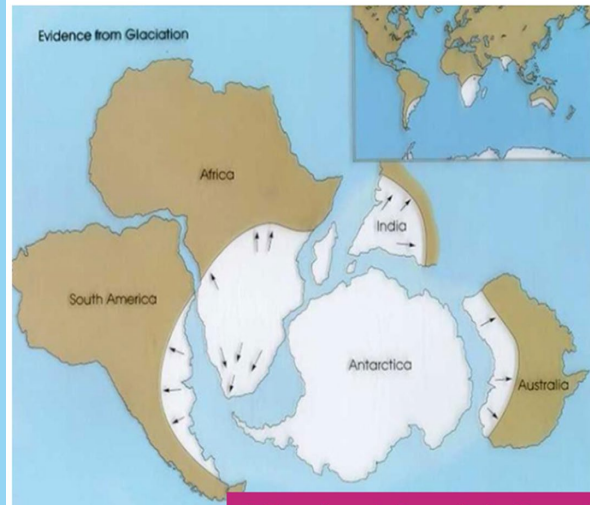
Fossils of the same species were found on different continents

Geology – the same rocks were found on different continents

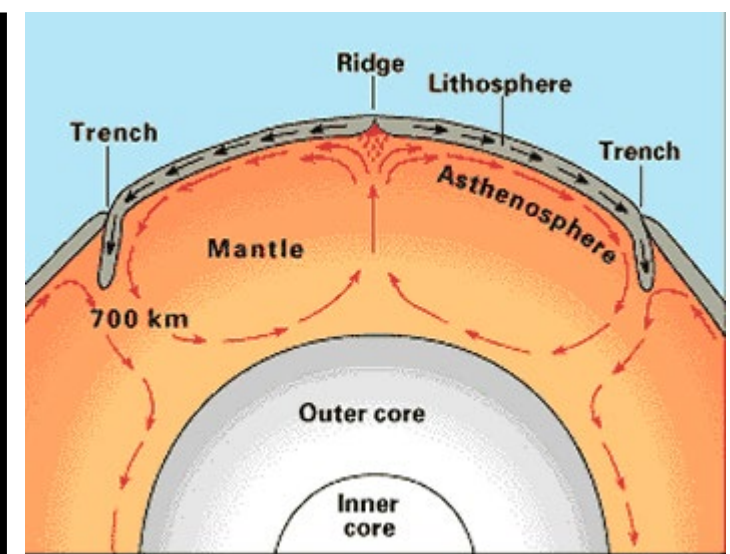
Glacial deposits showed that ice once stretched across continents that were stuck together



Geological fit of opposing continental coastlines



Evidence from the Permo-Carboniferous glaciation



He couldn't explain how the plates move, unlike the **theory of plate tectonics**. The plates in this theory move due to **convection currents** in the mantle.

Rocks and Plate Tectonics

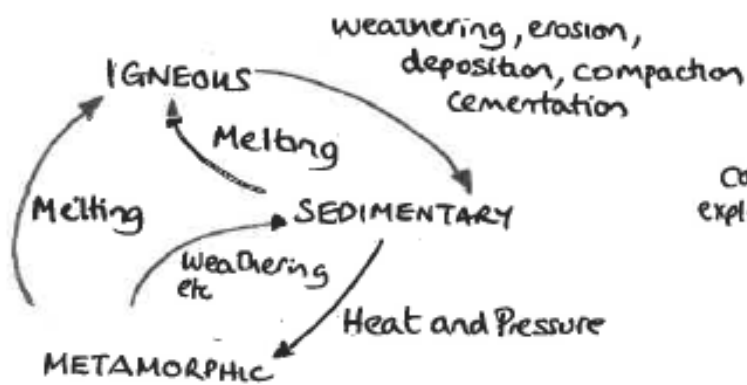
Students must be able to:

- Name and describe the characteristics of the three main rock groups.
- Appreciate the scale of geological time in relation to major changes in life on Earth.
- Name and locate the main structural features of the planet from core to crust.
- Know the broad sequence of occurrences and features at different plate boundaries.
- Label a diagram to show the structure of a volcano and describe volcanic hazards.
- Describe the causes and effects of earthquakes, including tsunamis.

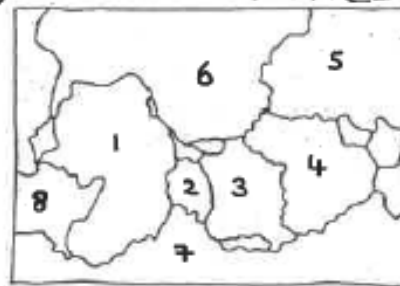
Key Knowledge:

1. **The Earth is around 4.6 billion years old. We as humans are insignificant on the geological timescale. Geological time is divided into Eras and Periods based on events in world history including changes in climate, sea level and geology.**
2. There are four main layers that are found within the Earth: crust, mantle, outer and inner cores. Each layer has different characteristics and properties. This is still supported by numerous pieces of evidence but as yet we can't prove it.
3. **The three main rock types: igneous, sedimentary and metamorphic are all connected together by the rock cycle. These rocks are constantly changing across geological time due to a number of geomorphological processes.**
4. The Earth's crust is divided into large chunks or sections called plates. These plates are moving slowly and being pulled around by convection currents (heat from inside the Earth's structure.) This internal heat and movement drives volcanoes and earthquakes at the edges of these plates.
5. **There are four main types of plate boundary: destructive, constructive, collision and conservative. They all involve different plate movements which determine if the boundary experiences earthquakes, has volcanoes or builds mountains.**
6. Earthquakes are a sudden movement in the earth's crust. They occur as pressure is released as seismic waves within the earth's crust. Their severity and impact can vary depending on a number of physical and human elements.
7. **Earthquakes in LICs can have disproportionately devastating effects. Nepal is one of the poorest countries in Asia, in 2015 it experienced a major 7.8 earthquake which killed over 9000 people and had serious long term impacts.**
8. The three Ps of surviving natural hazards are Predict, Prepare and Protect. The location of an event determines how people deal with hazards. There are several ways in which people reduce the impacts of an earthquake, including good emergency planning and earthquake-proof building design.
9. **Tsunamis are a significant secondary effect of earthquakes. In 2011 the Tohoku tsunami was triggered by a massive 9 on the Richter scale which caused significant damage to Japan. The earthquake and tsunami was the most costly tectonic event in the history of the Earth.**
10. There are different types of volcano, including shield and composite. The type of volcano depends on the location (plate boundary) and type of volcanic material within the volcano.
11. **Gunung Merapi (Fire Mountain) is a composite volcano on the Indonesian Island of Java. It has erupted 68 times since 1548.**
12. Volcanoes and earthquakes are natural hazards. Over 500 million people live in direct risk of volcanic eruptions. There are some positive opportunities provided by some environments but 'inertia' and a belief 'that it could never happen to them' could also be major factors.

Key term	Definition
Igneous:	a rock formed through the cooling of magma or lava. The slower the cooling, the larger the rock crystals and the harder the rock, although all igneous rocks are very hard.
Sedimentary	any rock formed from sediments under pressure from other overlying sediments
Metamorphic	rocks created by the chemical alteration of existing rocks under the influence of temperature, pressure, or both.
Crust	solid, outer layer of the earth, between 5 and 125km thick. It is either continental or oceanic and is divided into large segments called plates.
Mantle	the layer of the earth between the crust and the core. It extends to a depth of 2900km and is mostly made of silicates, iron and magnesium.
Core	central interior of the earth. Thought to be an inner core, mostly solid under extreme temperature and pressure, and an outer core, mostly liquid, both composed of iron and nickel.
Tectonic plate	large section of the Earth's crust.
Plate Tectonics	the theory concerning the structure of the earth and the processes occurring which explain the configuration of the continents and the location of earthquakes and volcanic activity.
Destructive plate boundary	a plate boundary where the plates move towards each other and where one is subducted beneath the other and so is destroyed as it returns to the <u>mantle</u> .
Constructive plate boundary	a plate boundary where the relative movement of the crustal plates is apart from each other allowing magma to rise from the mantle and solidify to construct new crust.
Conservative plate boundary	where the two crustal plates try to move past one another.
Collision plate boundary	where two continental plates move towards each other.
Epicentre	point on the surface directly above the focus of an earthquake.
Focus	the actual point within the crust where the energy was released.
Seismic waves	waves of energy released by an earthquake.
Seismometer	an instrument used to detect and record seismic waves.
Richter Scale	measures the energy released during an earthquake. Runs from 1 to 10 on a logarithmic scale i.e. each level increase is 10x stronger
Tsunami	a large wave(s), caused when an earthquake displaces the water above.



3) TECTONIC PLATES



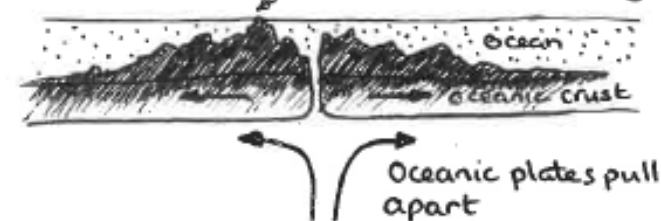
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4) PLATE BOUNDARIES

i) **DESTRUCTIVE MARGIN** eg South American and Nazca Plate



ii) **CONSTRUCTIVE MARGIN** eg Mid-Atlantic Ridge



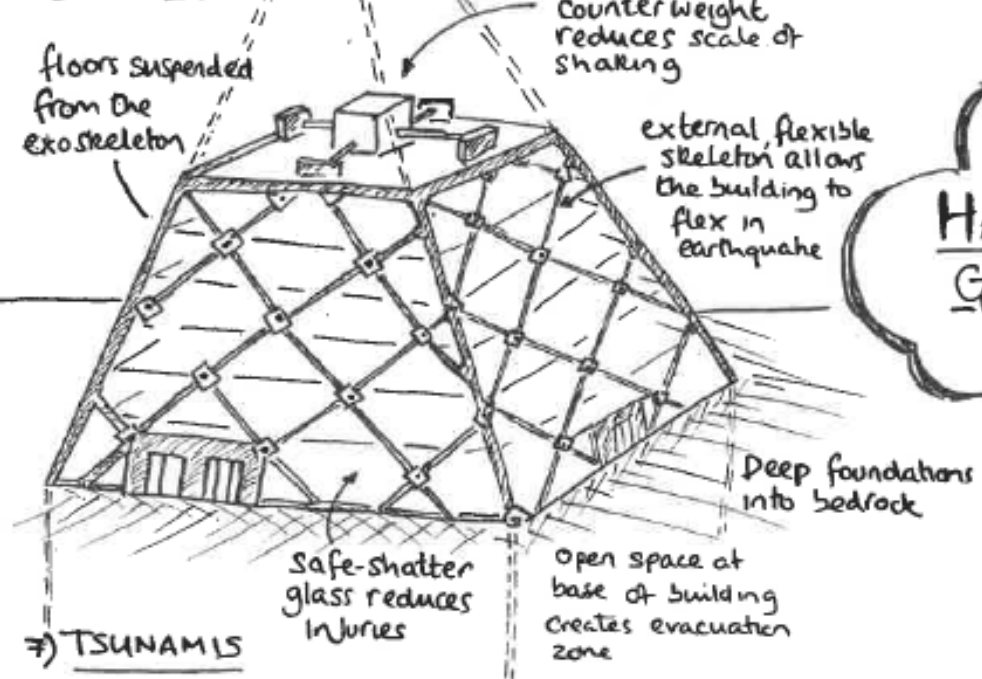
iii) **CONSERVATIVE MARGIN** eg San Andreas Fault



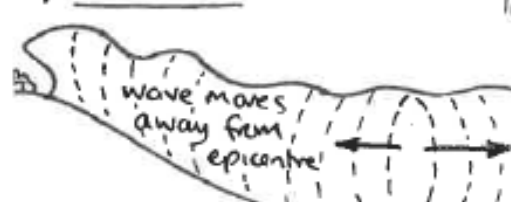
iv) **COLLISION MARGIN** eg Himalayas Eurasian and Indo-Pacific



8) EARTHQUAKE PROOFING



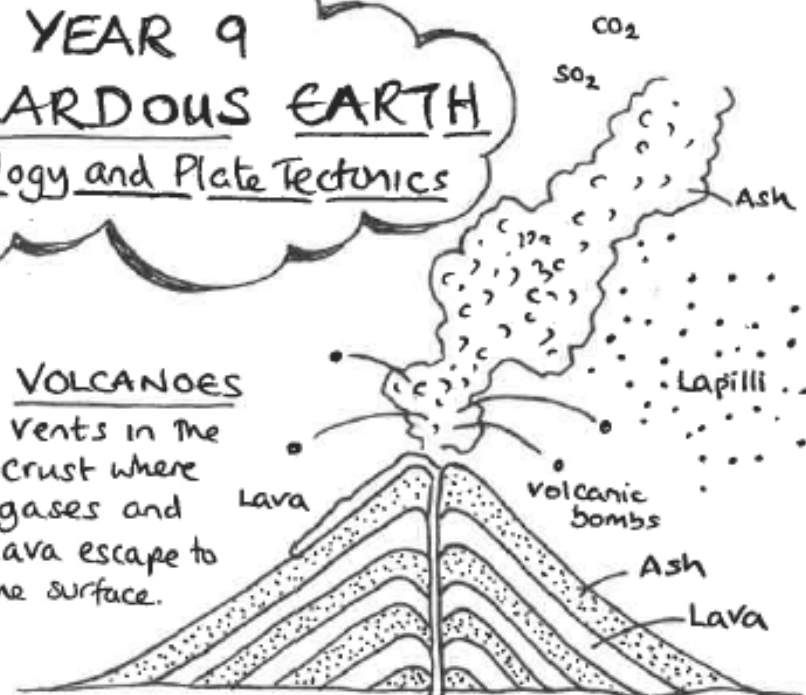
7) TSUNAMIS



YEAR 9 HAZARDOUS EARTH
Geology and Plate Tectonics

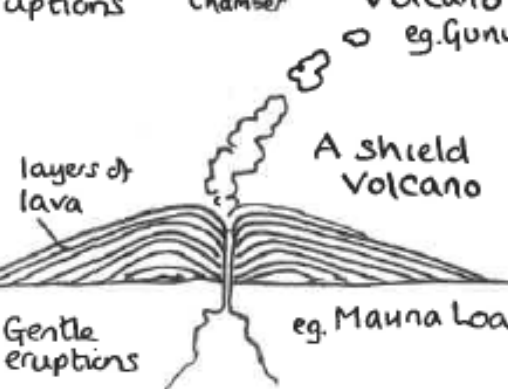
5) VOLCANOES

Vents in the crust where gases and lava escape to the surface.



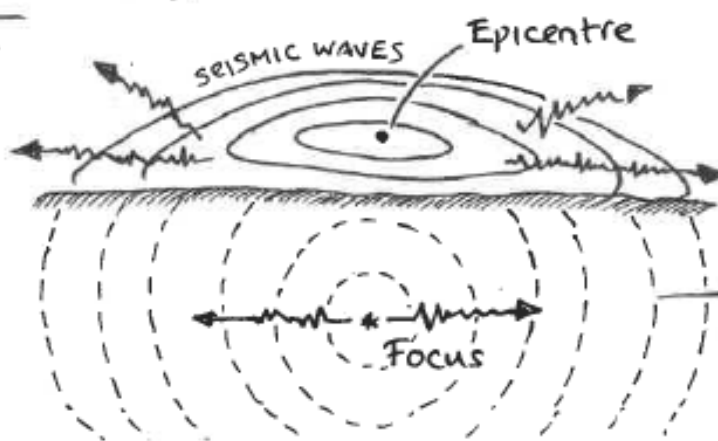
Violent eruptions

A composite volcano eg. Gunung Merapi



6) EARTHQUAKES

A sudden movement in the earth's crust.



EARTHQUAKES

PRIMARY EFFECTS

- Shaking
- Buildings collapse
- Burst water and gas pipes
- Destroyed infrastructure

Secondary effects

- Tsunamis
- Fires
- Disease from broken sewers
- Loss of jobs/industry

SUMMARY

	Volcanoes	Earthquakes	Crust types
DESTRUCTIVE	✓	✓	O + O or C
CONSTRUCTIVE	✓	✓	O + O
COLLISION	x	✓	C + C
CONSERVATIVE	x	✓	CoO + CoO

Crust types
C = Continental
O = Oceanic

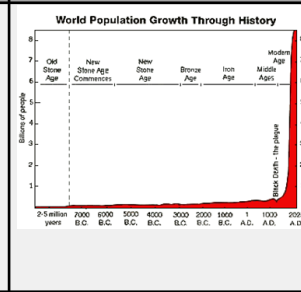
Population

Students must be able to:

- Identify causes for the changes in birth and death rates over time. This includes being able to describe and explain the changes as countries develop through the 5 stages of the Demographic Transition Model.
- To recognise how a population is structured and how it may change over time or by location.
- To be able to recognise and explain the different issues associated with a youthful and ageing population.
- Recognise the strengths and weaknesses of a number of different population policies e.g. the Chinese One Child Policy.
- Recognise factors that influence the different types of migration including “Lees” model of migration

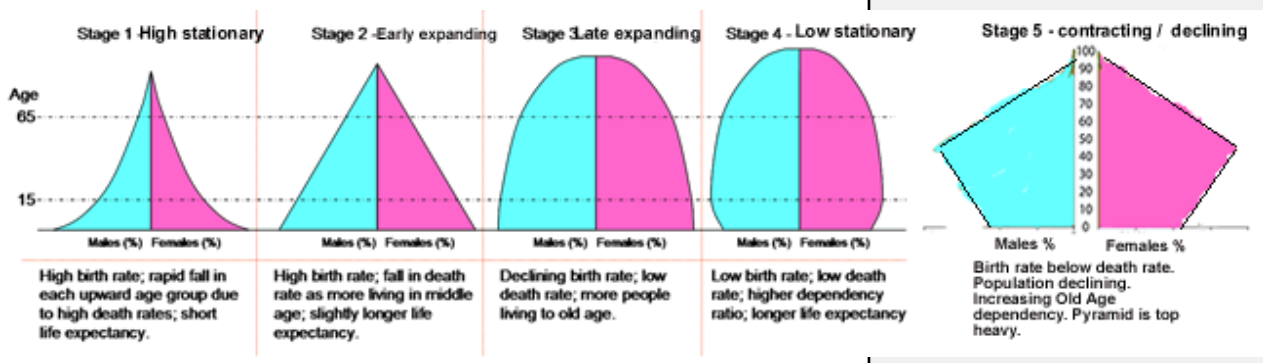
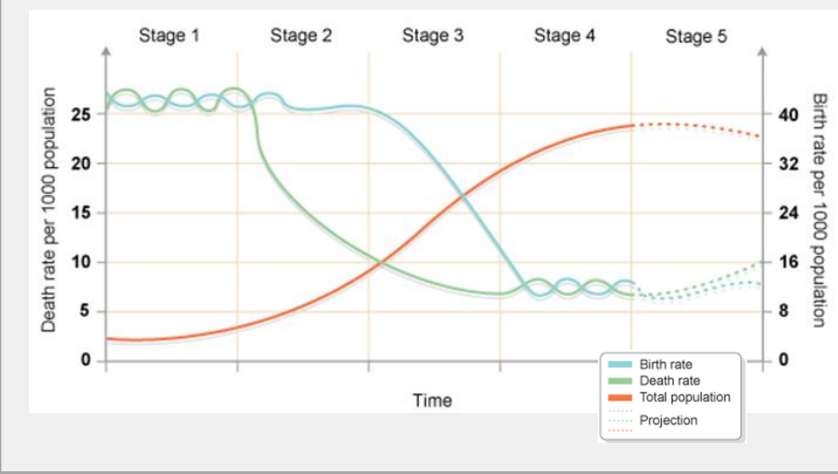
Key term	Definition
Birth rate	Number of births per thousand people per year.
Death rate	Number of deaths per thousand people per year.
Demographic Transition Model	A theory of population change over time. Seeks to explain population increases and decreases through variations in the <u>birth rate</u> and <u>death rate</u> .
Migration	The movement of people either within a country or between countries, lasting longer than one year. Generally classified by motivating reason: forced e.g. poverty, war, famine. voluntary e.g. looking for better work, education.
Infant mortality	The number of deaths of infants below one year of age as a proportion of every thousand live births in that population in that year.
Population Structure	The ratio of age groups, by sex, within a population.
Push-Pull Model	Push / Pull Factors. Push Factors: induce people to move out of their current location. Ex: poverty, political instability, religious intolerance. Pull Factors: induce people to move to new location. Ex. Democratic gov., thriving economies, job opportunities. Simple Migration Model.
Lees Model	a model that accounts for push/pull factors, intervening obstacles, in order to project migratory patterns.
Youthful Population	The high birth rate in LICs results in a high proportion of the population under 15. This youthful population gives a country specific problems. The problems include: Young children need health care - for example, immunisations.
Ageing Population	This involves an increase in the median age of the population, an increasing proportion of people living to old age (and in many cases extreme old age above 85 years), increasing life expectancies and decreasing numbers of children as a proportion of the population
Population policy	Government interventions to try and control high population growth, stimulate low population growth or control the distribution of people within a country.

Exponential Population Growth	
Population is increasing extremely fast Population size is determined by birth rate and death rate Birth rate = number of babies born per 1000 Death rate = number of deaths per 1000	



Impacts of Rapid Population Growth	
Social	<ul style="list-style-type: none"> Services can't cope Children have to work Not enough houses leads to shanty towns Food shortages
Economic	<ul style="list-style-type: none"> Not enough jobs so increased unemployment Increased poverty
Political	<ul style="list-style-type: none"> Government focuses on policies for the younger population Population policies to bring population under control

The Demographic Transition Model



POPULATION CHANGE KNOWLEDGE ORGANISER

Birth Control Policy	A case study of China
What was the Policy and why was it needed?	<ul style="list-style-type: none"> 1.3 billion in China Population resource imbalance 1979 introduced the one child policy. Strong encouragement to have one child by benefits such as better housing, longer maternity leave and free education
Changes to the policy	<ul style="list-style-type: none"> Young couples who are both only children can have two children. As people become wealthier, some choose to have more children and pay the fines. Couples don't need to obtain permission to have their first child. In 2014 it was relaxed to allow 2 children
Consequences	<ul style="list-style-type: none"> Women have been able to concentrate on having a career With boys being favoured more than girls China has a serious gender imbalance. There are now 60 million more young men than young women. There are over 15million orphans in China, mainly girls, abandoned as a result of the One Child Policy and Chinese society's economic and social preference for boys. Missionary run orphanages are usually very good but in state run ones the girls are often neglected and badly treated. 400 million births have been prevented

Non Birth Control Policy	Case Study : Kerela, Southern India
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How has population growth been managed?	<p>Key focus has been on social changes</p> <ul style="list-style-type: none"> improving education standards and treating girls as equal with boys providing adult literacy classes in towns and villages educating people to understand the benefits of smaller families reducing infant mortality so people no longer need to have so many children improving child health through vaccination programmes providing free contraception and advice encouraging a higher age of marriage allowing maternity leave for the first two babies only providing extra retirement benefits for those with smaller families following a land reform programme
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Ageing population	UK case study
Impacts	<ul style="list-style-type: none"> People living longer. Over 16% of the UK's population over 65 years Need more money to pay for the ageing population More older people living in poverty Economy grows more slowly Health service is under pressure People work as unpaid carers
Strategies	<ul style="list-style-type: none"> Raise the retirement age so people will pay tax and fewer claiming a pension Encourage immigration of young people to the UK – 80% immigrants from EU under 34 years old Encourage women to have children with working family tax credits Encourage people to take out private pensions

Migration	Case Study : Polish to the UK
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Key definition	<ul style="list-style-type: none"> Immigration : people moving into an area (known as immigrants) Emigration : people leaving an area (known as emigrants) International migration : people moving from one country to another
Push factors from Poland	<ul style="list-style-type: none"> High unemployment – 19% Low average wage – it is 1/3 of the EU average wage Housing shortages – just over 300 houses for every 1000 people
Pull factors to the UK	<ul style="list-style-type: none"> The EU allowed unlimited migrations in 2004 when Poland joined the EU More work and higher wages in the UK – high demand for tradespeople Good exchange rate – pound worth a lot compared to the Polish currency
Impacts in Poland	<ul style="list-style-type: none"> Poland's population fell as did the birth rate (young people had migrated) Shortage of workers in Poland Polish economy boosted by money sent home by emigrants (Euros 3 billion a year)
Impacts in the UK	<ul style="list-style-type: none"> UK population increased slightly Boosted UK economy as more paying taxes New shops selling Polish products open up Attendance at Catholic churches increased Racial tensions in some areas