Geography

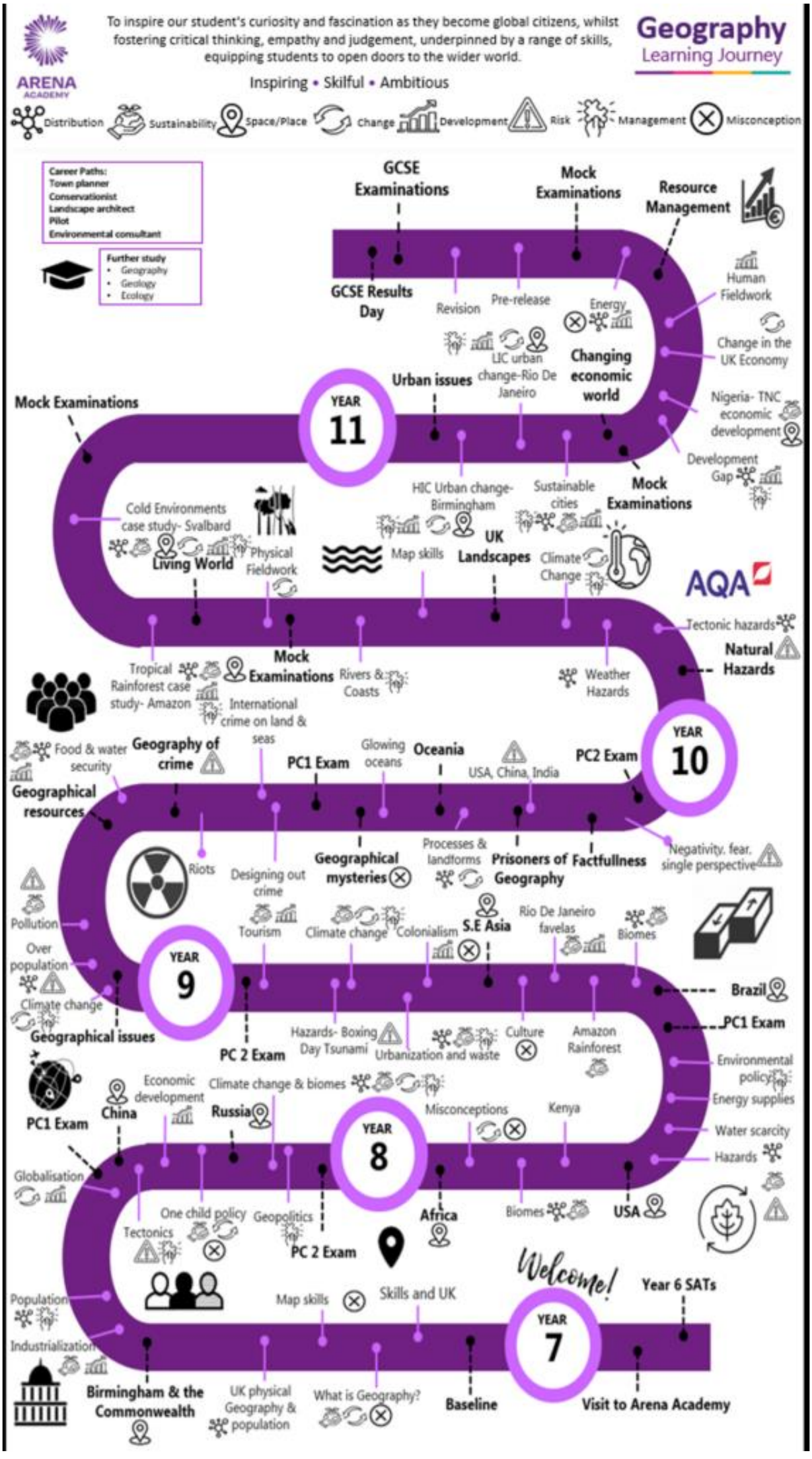
Topics covered from the beginning of the academy year to the end of this half-term.

AUT 1: Tectonic hazards

1. Structure of the earth
2. Earthquakes
3. Volcanoes
4. Management

AUT 2: Weather hazards

1. Global atmospheric circulation model
2. Hurricanes
3. Floods
4. Management



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The challenge of natural hazards: 1. The structure of the Earth

The Crust	Varies in thickness (5-10km) beneath the ocean. Made up of several large plates.
The Mantle	Widest layer (2900 km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.

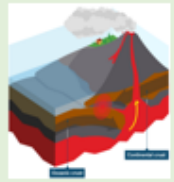
What is a Natural Hazard

Naturally occurring event that has the potential to affect people's lives and property.

2. Types of Plate Boundaries

Destructive Plate Boundary

When the denser, oceanic plate subducts beneath the lighter continental, friction and high temperatures in the mantle cause it to **melt and become molten magma**. The increased pressure forces the magma to the surface to form a volcano. This boundary is also responsible for **devastating earthquakes**.

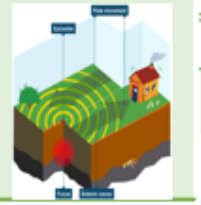


Constructive Plate Boundary

Two plates are **moving apart** causing new magma to reach the surface through the gap created in the mantle. Volcanoes formed along this fault.

Conservative Plate Boundary

A conservative plate boundary occurs where plates **slide past each other** in opposite directions, or in the same direction but at different speeds. The plates are jagged and get lodged building up seismic energy that is eventually released. This is responsible for earthquakes such as the ones happening along the San Andreas Fault, USA.



Convection Currents

The crust is divided into tectonic plates which are moving due to convection currents in the mantle.

Magma moves within the mantle due to **heating** and **cooling.** When magma is close to the outer core (heat source) it is heated to a liquid, becomes lighter and thus **rises** to underneath the crust. It then cools, becomes heavier and **sinks** back to its former position by the outer core. The crust floats on top of this circular movement. This is a **continuous** process.

3. LIC earthquake case study: Haiti

Location: Haiti is on the island of Hispaniola between the Caribbean and North Atlantic **ocean.** The capital is Port-au prince.
Background: 12th January 2010. Magnitude 7.
Cause: Conservative plate boundary, involving the Caribbean & North American plates.

Impacts:
- 220,000 people died and 1.3 million injured
- PTSD and stress
- Roads, buildings and businesses destroyed
- Homelessness
- Habitats destroyed
- Cholera and contaminated water supplies
- Fires

Responses:
- Search and rescue
- Simon Cowell produced a celebrity single to raise money
- Red cross paid civilians $5 a day to clear rubble
- Looting, theft and violence
- A telethon was held to raise money
- NGOs such as Oxfam sent money and food

4. HIC – Earthquake case study: L'Aquila (Italy)

Location: L'Aquila is a 13th century city 60 miles north of Rome, Italy.
Background: 6th April 2009. Magnitude 6.3.
Cause: Destructive plate boundary, involving the African and Eurasian plates.

Impacts
- 309 death and 1,500 injured
- People without power and phone lines for weeks
- PTSD and stress
- University dormitory, church and bell tower destroyed
- Homelessness
- Destroyed roads and bridges restricted travel

Responses
- Search and rescue
- State funeral held for victims
- A trial was held for 6 seismologists who failed to predict the hazard
- Italian government tried to raise money by encouraging foreign governments to 'adopt a building'
- Government suspended gas and electricity bills for 2 months

5. Volcanic Hazards

Ash cloud	Small pieces of pulverised rock and glass which are thrown into the atmosphere.
Gas	Sulphur dioxide, water vapour and carbon dioxide come out of the volcano.
Lahar	A volcanic mudflow which usually runs down a valley side on the volcano.
Pyroclastic flow	A fast-moving current of superheated gas and ash (1000°C). They travel at 450 mph.
Volcanic bomb	A thick (viscous) lava fragment that is ejected from the volcano.

6. Managing Volcanic Eruptions/ Earthquakes (M.P.P.P)

Prediction	Monitoring techniques
Gas samples may be taken, and chemical sensors used to measure sulphur levels.	Seismometers are used to detect earthquakes.
Thermal imaging and satellite cameras can be used to detect heat around a volcano.	 
A tiltmeter can detect ground deformation or vibrations.	

Planning	Protection
Creating an exclusion zone around volcanoes or earthquake hotspots. Search and rescuers.	Earthquake resistant buildings e.g., Shock absorbers
Having an emergency supply of basic provisions, such as food. Or practice drills.	Cross bracing, automatic window shutters, sprinkler system

Exam questions

1. 1. Suggest how the processes taking place at different plate boundaries can lead to tectonic activity (9)
2. Describe the impacts and responses to an earthquake you have studied within an LIC (9)
3. For an earthquake in a HIC that you have studied assess the impacts on both people and the environment (9)
4. Short term responses are more important than long-term responses following a natural hazard. Do you agree? Use a case study. (9)
5. Outline one impact associated with volcanic eruptions (2)
6. Volcanic eruptions impact people only. To what extent do you agree? (9)
7. Tectonic hazards cannot be managed. Discuss (9)
8. Suggest how the impacts of tectonic hazards can be reduced (9)

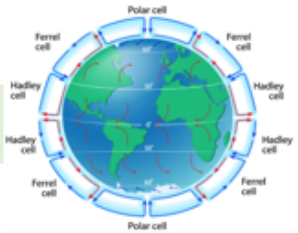
Key words

Plate boundary	Where two tectonic plates meet or touch
Tectonic plates	Large pieces of crust
Primary and secondary impact	Impacts directly caused by the hazard/ knock on effects
Short and long-term response	Responses in the hours, weeks and days/ responses months to years
HIC/ LIC	High income country/ Low-income country

7. Global pattern of air circulation

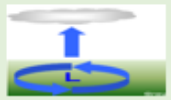
Atmospheric circulation is the large-scale movement of air by which heat is distributed on the surface of the Earth.

Hadley cell	Largest cell which extends from the **Equator** to between **30° north & south.**
Ferrel cell	Air flows **towards the poles** between **30° to 60°** latitude.
Polar cell	**Smallest & weakness** cell that occurs from **60° to 90>°**



High and Low Pressure

Low Pressure	High Pressure
Caused by hot air rising. Causes stormy, cloudy weather.	**Caused by cold air sinking. Causes clear and calm weather.**



8. Distribution of Tropical Storms.

They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia). They occur in equatorial regions.

Formation of Tropical Storms

1	The sun's rays heat large areas of ocean in the summer months. This causes **warm, moist air** to rise.
2	Once the **temperature is 27⁰**, the rising warm moist air leads to a **low pressure**. This eventually turns into a thunderstorm. This causes air to be sucked in from the **trade winds**.
3	With trade winds blowing in the opposite direction and the rotation of earth involved (Coriolis effect), the thunderstorm will eventually start to **spin**.
4	When the storm begins to **spin faster than 75mph**, a tropical storm (such as a hurricane) is officially declared.
5	With the tropical storm growing in power, **more cool air sinks** in the centre of the storm, creating calm, clear condition called the **eye of the storm**.
6	When the tropical storm hits land, it **loses its energy source** (land is cooler than ocean, land is drier and has obstacles that provide friction)and it begins to lose strength. **It will eventually stop.**

9. Hurricane case study: Katrina, USA

Location: Katrina occurred in New Orleans, Louisiana, USA
Background: 29th August 2005

Impacts
- Homelessness
- 1500 deaths
- $300 billion in damages
- Cholera and contaminated water supplies
- Environmental racism
- Crops destroyed by flood waters
- Oil rigs destroyed
- Habitats destroyed
- Major highways were flooded hindering search and rescue

Responses
- The Superdome provided temporary shelter
- Buses sent into New Orleans to evacuate civilians.
- Pumped flood water out of the city.
- Began rebuilding destroyed bridges to connect the city to the interstate (motorway)
- Helicopters and boats assisted with search and rescue.
- Government provided funding for flood recovery efforts.
- Remove cars and boats washed away

Management of Tropical Storms

Protection
Preparing for a tropical storm may involve reinforcing infrastructure.

Prediction
Can help to give advance warning of a tropical storm e.g. satellite data and radar.

Monitoring
Meteorologists monitor tropical storm formation.

Planning
Involves getting people and the emergency services ready to deal with the impacts- Evacuation routes, practice drills.

10. UK extreme weather- Boscastle flash flood

Location: Boscastle, fishing village in Cornwall.
Background: 16th August 2004.
Causes: 89mm of rain fell in 1 hour. Ground already saturated from prior shower. Steep V-shaped valley, narrow river channel and impermeable surfaces from neighbouring settlement.

Impacts
- 25 business destroyed
- 115 boats washed away
- Home insurance spiked
- People trapped in buildings
- Witchcraft museum destroyed

Responses
- Helicopters conducted search and rescue
- Car parks raised
- Afforestation
- River dredged
- Storm drains

11. Causes of climate change

Orbital Changes	Climate change is linked to how the Earth orbits the Sun; Eccentricity, Obliquity and precession of the equinoxes.
Sunspots	Dark spots on the Sun are called Sunspots. They increase the **amount of energy Earth receives** from the Sun.
Volcanic Eruptions	Volcanoes release large amounts of **dust containing gases**. These can **block sunlight** and results in cooler temperatures.
Enhanced GHG effect	There has been an increase in **humans burning fossil fuels** for energy. These fuels (gas, coal and oil) emit **greenhouse gases**. This is making the Earth's atmosphere thicker, therefore trapping more solar radiation and causing **less to be reflected**. As a result, the Earth is becoming warmer.

12. Evidence for climate change.

Global temperature	Average global temperatures have increased by more than **0.6°C since 1950**.
Ice sheets & glaciers	Many of the world's glaciers and ice sheets are melting. E.g. the Arctic sea ice has declined by **10% in 30 years**.
Sea Level Change	Average global **sea level has risen by 10-20cms** in the past 100 years. This is due to the additional water from ice and thermal expansion.

13. Managing Climate Change

Carbon Capture
Air masses are filtered, removing carbon, turning it into a liquid that is injected into bedrock.

Planting Trees
Planting trees increase the amount of carbon is absorbed from atmosphere (carbon sinks)

International Agreements
Countries aim to cut emissions by signing international deals and by setting targets.

Renewable Energy
Replacing fossil fuels-based energy with clean/natural sources of energy.

Exam questions

1. 1. Describe the formation of a tropical storm and explain the impacts. Use a case study (9)
2. Outline a flood management scheme in the UK and suggest why the scheme was required (9)
3. International agreements are the most effective method of combating the effects of climate change. Do you agree? (9)

Key words

Climate change	Long-term changes in temperature and precipitation
Adaptation	Ideas that respond to the effects of climate change
Mitigation	Actively attempting to reduce the causes of climate change through action

History

Topics covered from the beginning of the academy year to the end of this half-term.

AUT 1:

1. Medieval and Renaissance Medicine

AUT 2:

2. Medicine and Health in the Industrial Period

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To inspire our students' curiosity to discover their own story, to equip our students with the skills to open doors to the wider world and challenge our students to think critically, developing their perspective and judgement.

Inspiring • Skilful • Challenging

HISTORY Learning Journey

Power | Religion | War | Key individuals | Communication | People

Career Paths
- Academic researcher/archivist
- Heritage manager
- Historic building conservator
- Museum education officer
- Secondary school teacher

Further study
- History
- English
- Politics
- Economics
- Sociology

YEAR 11

Weimar & Nazi Germany
1918-1939
Nazi control & dictatorship 1933-39
The Weimar Republic 1918-29
Life in Nazi Germany 1933-39
Hitler's rise to power 1919-33

1941-1991
The end of the Cold War 1970-91
Cold War crises 1958-70
The origins of the Cold War 1941-58

Superpower Relations & the Cold War

Elizabethan society in the Age of Exploration 1558-88
Queen, government & religion 1558-69
1558-1588
Challenges to Elizabeth at home and abroad 1569-88
Early Elizabethan England

YEAR 10

Medicine in Britain
1250 to present day
'Medicine in modern Britain' c. 1900-Present Day
'Medicine in 18th & 19th century Britain' c.1750-1900
'The Medical Renaissance in England' c.1500-1700
'Medicine in medieval England' c.1250-1500

To what extent could ancient doctors heal the sick? 2nd - 5th c. BC
Has society learned lessons from the Holocaust? 20th c.

YEAR 9

What were the consequences of the Great War for Europe and the World?
20th c.
Why did the 'lights go out across Europe' in 1914?
20th c.
To what extent do the causes of WWII resemble those of WWI?
20th c.
What were the consequences of WWII for Europe and the World?

To what extent have women achieved equality since 1918?
20th c.
What does the Titanic tell us about society in the early 20th century?
18th – 19th c.
What role did the Industrial Revolution have on the health of the people?

YEAR 8

Why did 'brother fight against brother' in the 17th century?
17th c.
To what extent was everyday life different in Tudor England compared to medieval?
16th c.
To what extent was Britain changed by the Industrial Revolution??
18th – 19th c.
What was the impact of the trans-Atlantic slave trade on those enslaved?
16th – 19th c.
To what extent did Britain's imperialism shape the world?

YEAR 7

Welcome!
Why was there religious turmoil in Tudor England?
16th c.
Why was the Norman invasion of 1066 a success?
11th c.
To what extent did life change in the medieval period?
11th – 15th c.
Why did the Roman Empire collapse?
5th c.
6th c. BC

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Knowledge Organiser: Knowledge Organiser: 18th and 19th century Medicine (c1700-c1900)

In 1700, many people no longer believed that God was responsible for causing disease. Instead they focused on developing scientific explanations. By 1900, germs had been discovered, and there was ongoing work to create vaccines for diseases caused by them. The cleanliness of hospitals improved and surgery became less dangerous through the development of anaesthetics and antiseptics.

Summarise your learning

Causes	• Spontaneous generation was replaced by the Germ Theory • The development of work on identifying microbes – Koch identified germs like TB and cholera using industrial dyes
Diagnosis	• Observations and examinations of patients
Prevention	• Government action to improve the sanitary conditions of towns - The First Public Health Act, 1848 - The Second Public Health Act, 1875 • Compulsory vaccinations • Antiseptics – e.g. carbolic acid • Anaesthetics – e.g. chloroform • Blood loss was still a problem in surgery • Cleanliness – Nightingale lowered the death rate from 40% to 2%
Treatments	• Better hospitals and nursing • Improvements in surgical treatment because of anaesthetics and antiseptic surgery • Very little change except in surgery.

Chronology: what happened on these dates?

1796	Jenner discovered the vaccination for smallpox.
1847	James Simpson discovered chloroform.
1861	Pasteur identified that microbe's cause disease (Germ Theory).
1865	Joseph Lister discovered carbolic acid.
1875	The Second Public Health Act. City authorities had to provide clean water, dispose of sewage and employ a public office of health to monitor outbreaks of disease.

Who were these people?

Edward Jenner	Developed the vaccination to prevent smallpox, which became compulsory in 872.
Louis Pasteur	Pasteur's Germ Theory claimed that microbes that spread through the air caused decay. This disproved the idea of spontaneous generation.
Robert Koch	Koch used industrial dyes to stain and grow bacteria in a Petri dish. He was able to find which bacteria caused Anthrax (1876), septicaemia (1878), TB (1882) and cholera (1883).
Florence Nightingale	Following Nightingale's experience in the Crimean War she Improved hospital care in Britain in two different ways: the way hospitals were designed and the training for nurses.
Joseph Lister	Discovered the antiseptic carbolic acid, which surgeons used to spray the operating theatre, wash their hands and clean their instruments.
James Simpson	Discovered chloroform, the first effective anaesthetic. Queen Victoria used chloroform during the birth of her eighth child.
Edwin Chadwick	In 1842, Chadwick published his *Report on the Sanitary Conditions of the Labouring Classes*, which argued that disease was the main reason for poverty, and that preventing disease would reduce the poor rates.
John Snow	Snow discovered that cholera was transmitted by dirty drinking water.

Change and Continuity

Change	Continuity
• New technology - microscope • Germ Theory • Anaesthetics and Antiseptics • Greater government action – compulsory vaccinations and Public Health Acts	• Miasma (but was becoming less popular) • Spontaneous generation (early 18th century)

Vocabulary: define these words

The Enlightenment	A movement in Europe during the 18th century that promoted the idea that people could think for themselves and that traditional authorities, like the nobility and the Church, should not be able to control everyday life.
Microbes	Any living organism that is too small to see without a microscope, e.g. bacteria.
Decaying matter	Material, such as vegetables or animals, that has died and is rotting.
Organic	Something that is living or that has once been alive.
Culture	Bacteria grown under controlled conditions.
Bacteriology	The study of bacteria.
Spontaneous generation	Rotting material, e.g. meat, created microbes. These microbes spread throughout the air through miasma.
Anaesthetic	A substance that makes you unable to feel pain.
Chloroform	A colourless, sweet-smelling liquid used as an anaesthetic.
Aseptic surgery	Surgery where microbes are prevented from getting into a wound in the first place, as opposed to being killed off with an antiseptic.
Inoculate	Deliberately infecting oneself with a disease, in order to avoid a more severe case of it later on.
Cowpox	A disease causing red blisters on the skin, similar to smallpox. It can be transmitted from cows to humans.
Vaccinators	Doctors paid by the government to vaccinate people against smallpox.
Antibodies	Particles inside the body that identify and help to remove germs. The body creates them when it first encounters the germ, so that it can fight off the same disease more easily if it comes back.
Laissez-faire	This French term means 'leave be'. It is used to describe governments who do not get involved in the day-to-day lives of their population.
Dehydrated	When the body does not have enough water to keep the organs working properly.
Cesspit	A pit for storing sewage or waste.