

Knowledge Organisers

Y6: Autumn Term

Science

Y6: Autumn Term



Knowledge Organiser

Year 6 – Looking after our environment

Careers connected to Looking after our environment:
Environmental engineer, climate scientist, wildlife conservationist, aid worker



Lesson Sequence



1. Learn about climate change



2. Explore ways to reduce how much rubbish is sent to landfill



3. Explore ways to reduce energy consumption



4. Explore how climate change affects our planet



5. Explore what is being done to reduce climate change



6. Explore how data can demonstrate climate change

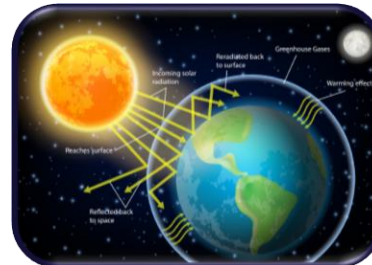
Greenhouse Gases

Some human activities produce greenhouse gases (carbon dioxide, methane, nitric oxide):

- Cutting down trees means more carbon dioxide stays in the air.
- Farming animals produces methane gas.
- Transport – fuels such as diesel and petrol produce carbon dioxide.
- Energy production: burning non-renewable sources such as coal, oil and gas produces greenhouse gases.

Climate Change

Greenhouse gases trap the heat from the sun and stop it leaving the Earth, causing the planet to become warmer. A warmer planet means the ice caps are melting, there is more flooding, heatwaves and droughts.



Energy Sources

Renewable	Non-renewable
Wind Solar Hydropower	Oil Coal Gas Nuclear power stations

How we can help

1. Recycle as much rubbish as possible so factories don't have to use coal and oil to make new products.
2. Buy products with recyclable packaging.
3. Switch off lights and electrical appliances when not in use.
4. Walk, cycle or car share.
5. Use renewable energy sources for power if possible.
6. Plant more trees as they use carbon dioxide to make food, so this helps reduce the amount in the atmosphere.
7. Eat less meat so fewer animals (who produce methane) are farmed.

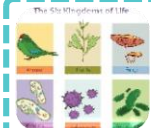




Lesson Sequence



1. Classify living things



2. Understand the Kingdoms of Life



3. Classify living things using the Linnaean system



4. Identify the characteristics of different types of microorganisms



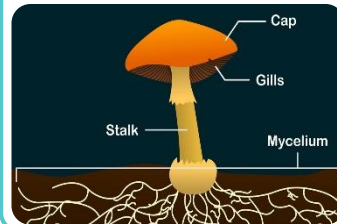
5. Investigate asexual reproduction through spore dispersal



6. Classify and describe a living organism

Fungi

Fungi gain energy from dead matter.

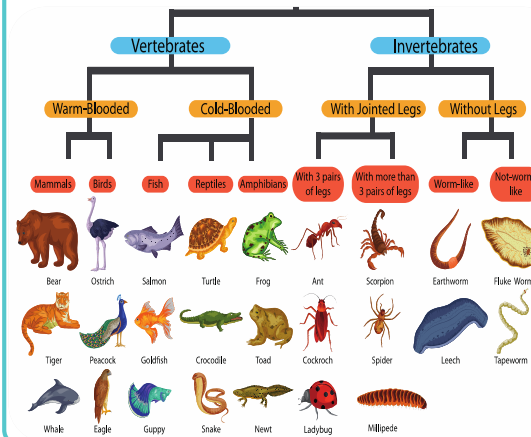


MRS GREN

M Movement
R Respiration
S Sensitivity
G Growth
R Reproduce
E Excretion
N Nutrition

Classification of Animals

Classification



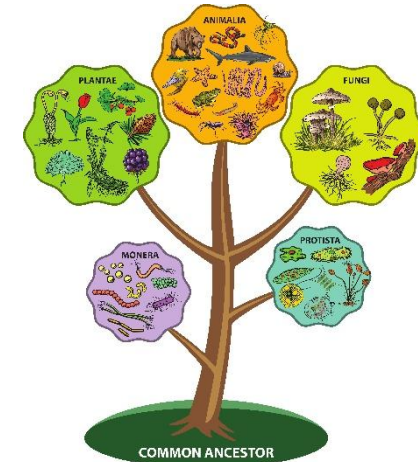
Carl Linnaeus

Carl Linnaeus created a system of classification, which ranks living things into groups in order to name their species.

DOMAIN	Eukarya
KINGDOM	Animalia
PHYLUM	Chordata
CLASS	Mammalia
ORDER	Primates
FAMILY	Hominidae
GENUS	Homo
SPECIES	Homo sapiens



Five Kingdoms of Life



Microorganisms

Antibiotics, yoghurt, cheese, wine and yeast are all **helpful bacteria**.

Mould, food poisoning and athletes foot are **harmful bacteria**.





Knowledge Organiser

Year 6 – Evolution & Inheritance

Careers connected to Evolution and Inheritance: geneticist
DNA analyst, biological Researcher, conservationist



Lesson Sequence



1. Understand how offspring vary and are not identical to their parents



2. Learn about animal adaptations



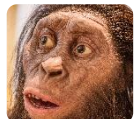
3. Learn about plant adaptations



4. Explore what we can learn from fossils



5. Explore the theory of evolution by natural selection



6. Explore human evolution

Characteristics and variation

A characteristic describes how something looks or how it behaves. Characteristics can be passed on from parents to their offspring, meaning that they can be inherited. They can include hair colour, eye colour and height. Environmental factors can also affect a person's characteristics



Adaptations

Plants and animals have numerous adaptations which help them to survive in their habitats.

- Camels have humps to store food, two rows of eyelashes and small slits for nostrils
- Epiphytes are plants which can grow on the surface of another plant
- Some plants contain toxic minerals to protect themselves from predators
- Other plants can store water, trap insects and smother other plants

Charles Darwin, the Galapagos Islands and human evolution

Charles Darwin was a famous naturalist who studied finches and tortoises on the Galapagos Islands. He suggested that some species may share a common ancestor and evolve to suit their habitats. Those who cannot adapt to their environment become extinct. He called this process natural selection. Humans have also gone through stages of evolution, evolving from primates to Homo sapiens.



Fossils

Mary Anning was a palaeontologist who found and collected many fossils along the Jurassic Coast in Dorset. She was the first person to uncover a full ichthyosaurus skeleton. Scientists use fossils to study how a creature has evolved over time by comparing bone structures.



Geography

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Year 6 – The Amazon Rainforest

Careers connected to this unit: climate scientist, meteorologist, wildlife conservationist



Lesson Sequence



1. Which climate zones and biomes are located in South America?



2. What would a geographer say about Brazil?



3. What are the features of the Amazon rainforest?



4. Why is the Amazon rainforest important?

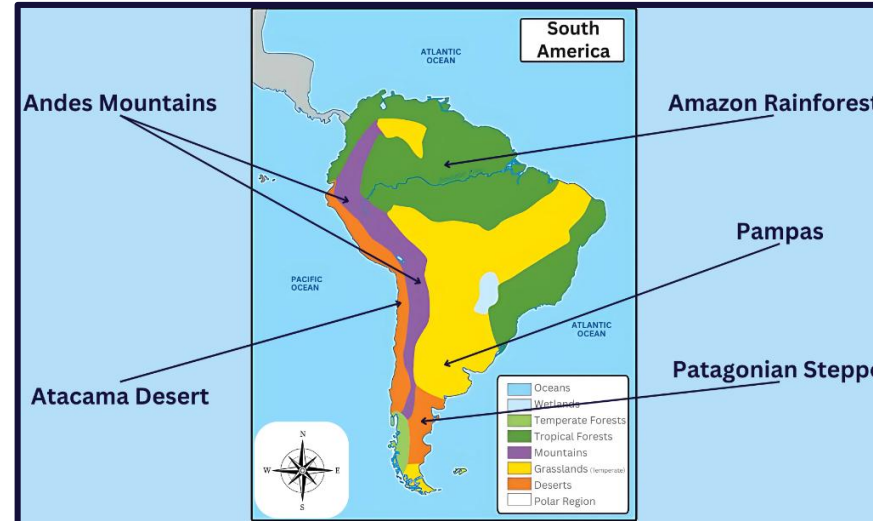


5. What challenges does the Amazon rainforest face?



6. Assessment: Why is the future of the Amazon rainforest uncertain?

Climature Zones and Biomes



A climate zone is a region that has a particular pattern of weather over a long time. South America is known for its diverse climate zones.

A biome is an area where specific plants and wildlife live in a certain type of climate. South America is home to several unique biomes, all depending on a particular climate for plants and animals to thrive.

Biodiversity in the rainforest

The rainforest has over 10% of the world's animal and plant life living within it.



Challenges faced by the Amazon



Deforestation: trees are being cut down for farming, animal grazing and logging.



Climate change: rising temperatures and less rain are harming plants and animals.



Pollution: many animals and plants are losing their homes and could disappear forever.



Knowledge Organiser

Year 6 – North America

Careers connected to this unit: climate scientist, seismologist, tour guide



Lesson Sequence



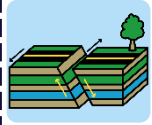
1. Which physical geographical features are located in North America?



2. What human geographical features are located in North America?



3. What is the climate like in North America?



4. What is the San Andreas fault line?



5. How are wildfires a challenge in California?



6. Assessment: What are the key features of North America?

Physical Features



Niagara Falls



Rocky Mountains



San Andreas Fault Line



Grand Canyon



Mississippi River



Human Features



Toronto



New York City



Mount Rushmore

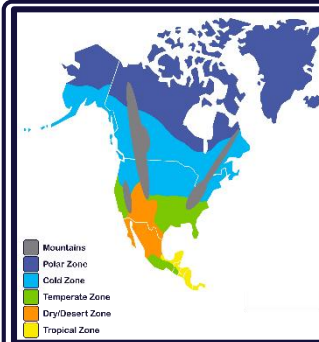


Golden Gate Bridge



Mexico City

Climate Zones in North America



polar: very cold temperatures and permafrost

cold/continental: very low temperatures and short, cool summers

temperate: a place with mild temperatures and four seasons

arid: to have no or little rain

tropical: hot and humid at the same time

San Andreas Fault

The San Andreas Fault is a long crack along the Earth. It is a strike-slip fault line.



History

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Year 6 – The Industrial Revolution Knowledge Organiser

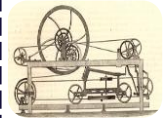
Careers connected to this unit: historian,
mechanical engineer, economist



Lesson Sequence



1. What was the Industrial Revolution?



2. Which invention caused the greatest change in Britain?



3. How did the railway transform Britain?



4. How did towns change during the Industrial Revolution?



5. How did life for children change during the Industrial Revolution?



6. Assessment: What was the most significant change of the Industrial Revolution?

The Industrial Revolution

The Industrial Revolution was a time when Britain changed from farming and producing goods by hand to using machines and factories. Many people moved from the countryside to cities to work.



It began around the 1750's and continued through the Victorian period.

Changes to towns and cities

Industrialisation caused rapid growth as people relocated to towns and cities. Cities became overcrowded, polluted, and brought dangerous working conditions for people in factories and mines.



Inventions

<u>Invention</u>	<u>Date</u>
Spinning Jenny	1764
Water Frame	1767
Steam engine	1778
Spinning Mule	1779
Steamboat	1807
Steam train	1814

Railways



The first major railway lines were built in the 1800's. Trains carried coal, goods, and passengers quickly. The railway made holidays and travel possible for more people.

Children



Working-class children had dangerous jobs in factories and mines until the Factory Acts meant they could attend school and work shorter hours in safer roles.