



Birchfield
PRIMARY SCHOOL

Year 6 Curriculum Overview
Term 1.2

Teaching Team:

Miss Fowler, Miss Shakespeare and Mr Chapman

Teaching assistant: Miss West

SLT: Mr J Aldred

PE Days: Tuesday

Homework: Every Tuesday and Friday

Please see below an overview of the main themes, knowledge and skills we will be covering this half term.

Enquiry Question	How do circumstances in Brazil affect humans and the environment?
Significant People	Al Jahiz Mohammed Rezwen
Class Texts	The Explorer
Reading	<p>Reading domain:</p> <p>2a – give/explain the meaning of words in context.</p> <p>2b – retrieve and record information/identify key details from fiction and non-fiction.</p> <p>2d – make inferences from the text/explain and justify inferences with evidence from the text.</p> <p>2e – predict what might happen from details stated and implied.</p> <p>Test techniques:</p> <p>This half term, pupils will cover the following test techniques:</p> <ul style="list-style-type: none"> - True or false - Matching - Find and copy - Multiple choice - Short constructed responses
Writing	<p>This half term, the children will begin by completing their non-chronological reports. Whilst writing these, the children shall learn to include the following features:</p> <ul style="list-style-type: none"> - Technical Vocabulary - Formal Language

	<ul style="list-style-type: none"> - Facts & Statistics - Parenthesis - Co-ordinating & Subordinating Conjunctions. <p>The next unit they will cover will be writing narratives. During this, children will learn how to include the following features in their writing:</p> <ul style="list-style-type: none"> - Figurative language - Similes - Personification - Metaphors - Pathetic fallacy - Coordinating and subordinating conjunctions - 5 senses - Descriptive language - Shades of meaning - Colons - Semi-colons - 'Show not tell' <p>Following this unit, the children will then begin writing persuasive speeches. They will learn how to include the following persuasive devices:</p> <ul style="list-style-type: none"> - Rhetorical Questions - Repetition - Rule of Three - Passive Verbs - Modal Verbs - Emotive Language
Maths	This half term, the children will move on to learning about fractions – simplifying,

	<p>comparing, and ordering, adding and subtracting with the same denominators and different denominators. Once secure with adding and subtracting mixed numbers and proper fractions they will move on to multiplying fractions by whole numbers, pairs of fractions and division of fractions by whole numbers. They shall then consider the relationships between fractions, decimals and percentages and how to convert from one to the other. Finally, they will look at recognising, reading and writing all metric measures for length, mass and capacity and the relationship between metric and imperial units.</p>
Geography	<p>During this half term, Year 6 will be studying South America, with a focus on Brazil, the Amazon Basin, River and Rainforest. They will be locating and identifying countries and different human and physical features within the continent, contrasting and comparing between those in Brazil and the U.K. They will learn about the causes of river erosion and the key features of a rainforest biome, including its climate and species. Finally, they will focus on the impact that deforestation has on humans and the environment, considering ways this could be stopped.</p>
Science	<p>In Science, the children will resume their learning of the circulatory system. During these lessons, the children shall explore the types of blood vessels, heart rate during exercise and proving a hypothesis. They will then continue their learning about evolution focusing on the theory of evolution</p>

	<p>by Charles Darwin and Alfred Wallace. Building on this, the children will explore inheritance: looking at natural selection and survival of the fittest, whilst investigating such theories in regard to the adaptations of both animals and plants.</p>
Mandarin	<p>Children will be learning about these topics, this half term:</p> <ul style="list-style-type: none"> • Countries • Places • Feelings
D&T	<p>This half term, year 6 will be designing and making a bag. This process will begin with an exploration of existing products, investigating how they are made. They will then practise the skills needed to make their product focussing on stitching techniques to join materials and for decorative purposes. Next, they will design and communicate ideas through Computer Aided Design, choose their materials and consider the dimensions of their design. They will begin the making process, creating a product that is strong and fit for purpose, refining their work and techniques as they progress. When their product is finished they will test and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</p>
Music	<p>In music, pupils will begin to understand and explore how music is created, produced, and communicated, including through the inter-related dimensions: pitch, duration, dynamics, tempo, timbre, texture, structure</p>

	<p>and appropriate musical notations. The learning will be focused on the song: 'Happy' by Pharrell Williams - a Pop song with a soul influence about being happy. What makes you happy?</p> <p>Children will continue to find the pulse or 'heartbeat' of songs. They will also build upon their learning of playing glockenspiels to begin composing their own pieces of music, with an ambition to perform and share their work alongside learning to perform a rendition of Wade in the Water for our exhibition.</p>
Computing	<p>This half term, the children will be introduced to creating websites for a chosen purpose. They will identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, the children will pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.</p>
PSHE	<p>Pupils will be exploring how we can keep healthy as we grow. Following on from our learning in the first half term, mental wellbeing, the children will consider what constitutes a healthy lifestyle with a focus on five key areas (sleep, screen time, sun, physical activity and healthy food). They will look at the negative impacts an unhealthy lifestyle can have on the body and learn about strategies to help change or break an unhealthy habit or take up a new healthy one. They will then look at the role of</p>

	hormones in our bodies and how these can affect us as we grow and our bodies change.
RE	Year 6 pupils will be taught about inclusion, identity and belonging. They will discuss how other religions share the same beliefs and values. It will also provide opportunities for children to identify their differences from others.
PE	Pupils will be taught the skills required for either basketball or football, focussing on attacking and defending. They will develop the importance of fair play and honesty, learning and abiding by the game's rules. Year 6 will also continue their yoga lessons in which they are learning mindfulness and body awareness. This unit aims to improve their strength, flexibility and balance.

Knowledge Organisers:

Reading

BOOK KNOWLEDGE ORGANISER - THE EXPLORER BY KATHERINE RUNDSELL

Important Information

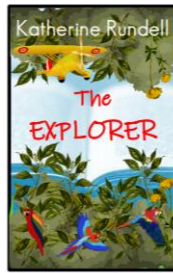
Plot
When a plane crashes in the Amazon Rainforest, the group of survivors try to work their way out of the treacherous conditions and back to Manaus. Battling encounters with deadly creatures, plants, insects, rain and constant hunger, they stumble across a map which leads them to a secret they must hold onto forever.

Themes
Environment, Conservation, Friendship, Family, Loyalty, Survival, Trust and Honesty.

Setting
The entire story is set in the Amazon rainforest, the biggest rainforest in the entire world, spanning the northwest of Brazil, Colombia and Peru. It is 5.5million km² and contains the longest river in the world, the Amazon River. The story contains vivid descriptions of the dense forest and the creatures and plants within it. The story itself seems to be set in the 20th century but it has a timeless feel and, therefore, is empty from the interference of technology.

Characters

pilot	man who piloted the six-seater plane and crashed it
Fred	young, aspiring explorer with scientist parents
Con	young girl who was orphaned as a young child, raised by her great-aunt and sent to live with nuns each summer
Lila	Brazilian older sister of Max
Max	naive but loveable Brazilian five-year-old boy who is the brother of Lila
Explorer	mysterious person living in the Amazon
Boca	an orphaned sloth who is rescued and cared for by Lila



What Can the Book Teach Us?
Some things are better left undiscovered.
Finding ourselves is the greatest exploration of them all.

Quotes
"Heroes don't exist, boy - they're inventions made up of newsprint and quotable lines and photogenic moustaches."
"People think it means brave - and it does - but it also means a heart with claws. That's you. Con the Lion Heart."



Name of Book: The Explorer
Date Published: 2017
Author: Katherine Rundell
Reading 'Reconsidered'
Spine: Year 5/6 appropriate
Genre: Adventure



Key Vocabulary

throttle	device controlling the flow of fuel or power to an engine
grimacing	to frown or sneer in disagreement or pain
luminous	giving off light; brightly or shining
devoured	eat (food/prey) hungrily or quickly / destroy completely
brusquely	abrupt or curt in manner, seeming rude and rather blunt
indignantly	a manner indicating annoyance at something unfair
psychoanalyse	to analyse someone's thoughts and motives
concussion	a violent shock as from a heavy blow / to knock out
iridescent	luminous colours that seem to change at different angles
impenetrable	impossible to pass through or enter
canopy	uppermost branches of the trees in a forest
tributary	a river or stream flowing into a larger river
altitude	the height of an object in relation to sea/ground level
adrenalin	a hormone released in the body increasing heart rate
topography	the arrangement of physical features of a certain area
indistinguishable	not able to be identified as different or distinct
eavesdropper	listening in on someone else's conversation
ignition	mechanism for starting an engine
scandalising	shock/horify someone by doing/saying something immoral
gangplank	moveable plank to enter or leave a boat/ship
hesitated	pause in indecision before saying or doing something

Context - Katherine Rundell uses the real explorer Percy Fawcett as inspiration. He spent much of his life searching for the 'City of Z', a city he believed was rich with gold and highly sophisticated. After travelling across the Upper Xingu, a tributary of the Amazon River, he disappeared in 1925, never to be seen again. Many explorers searched for him but to no avail. There are as many as 65 uncontacted, indigenous tribes still left in the Amazon. In the 1500s when Christopher Columbus and the Europeans arrived, there were as many as 2000. Western diseases and the removal of habitats and forest (deforestation) have caused the deaths of most of these indigenous tribes and sadly, few remain. The Mayans were a group of people who formed a large civilisation in Mexico and Central America around 1000 B.C. and built huge temples and cities in the rainforest. Their cities began to decline by 800A.D., possibly due to clearing of the rainforest which led to desertification (when fertile land turns to desert). War or shifting trade routes may also have contributed and, when Europeans arrived in the 1500s, disease spread and killed many more. The idea that people are now clearing the forests at an alarming rate plays an important role in the book too and Katherine Rundell points out that 600,000km² of the Amazon has been destroyed so far.

Writing

Spellings...I need to know some of these:			
accommodate	correspond	hindrance	recognise
accompany	criticise	individual	recommend
according	curiosity	interfere	relevant
achieve	definite	interrupt	restaurant
aggressive	desperate	language	rhyme
amateur	determined	leisure	rhythm
ancient	develop	lightning	sacrifice
apparent	dictionary	marvellous	secretary
appreciate	embarrass	mischievous	shoulder
attached	environment	muscle	sincere
available	equip(-ped)	necessary	sincerely
average	equipment	neighbour	soldier
awkward	especially	nuisance	stomach
bargain	exaggerate	occupy	sufficient
bruise	excellent	occur	suggest
category	existence	opportunity	symbol
committee	explanation	parliament	system
communicate	familiar	physical	temperature
community	foreign	prejudice	thorough
competition	forty	privilege	twelfth
conscience	frequently	profession	variety
conscious	government	programme	vegetable
controversy	guarantee	pronunciation	vehicle
convenience	harass	queue	yacht

Punctuation Reminders:	
A	Capital letters for sentences, initials and proper nouns.
.	Full stops
!	Exclamation marks for exclamations or surprise.
?	Question marks
'	Apostrophes for possession and missing letters.
,	Commas in lists, and to mark parenthesis, fronted adverbials and clauses.
...	Ellipsis to show a long pause for tension.
" "	Inverted commas for speech (Don't forget the commas too!).
-	Hyphen to connect words together.
-	Dashes to show longer pauses or parenthesis.
()	Brackets for parenthesis.

Splendid Subordination!
Use these conjunctions in varied places in your multi-clause sentences:
if because as
before after until
unless since when
Can you use a subordinate clause in different places in your sentences?

Writing Mat Working towards Year 6

Active and Passive
Use active and passive sentences appropriately:
Active: In front of millions of screaming fans, the star striker missed a vital penalty.
Passive: In front of millions of screaming fans, a vital penalty was missed by the star striker.

Use a mixture of simple, compound and multi-clause sentences.
Use a thesaurus to up-level your vocabulary choices.

Important Links!
Link your sentences and paragraphs using adverbials:
Time
Subsequently, Later that day, Finally,
Place
Deep inside the forest, Below the sea,
Frequency
Occasionally, Often,
Contrast/ Cause
On the other hand, In contrast, As a result, Consequently,
Manner/ Behaviour
Breathing heavily, Waiting anxiously, Without warning, Suspecting the worst,

It's All Relative!
Use a relative pronoun to add a relative clause.
who, which, where, when, whose, that
The Queen, who has reigned for 60 years, has four children.
Hedgehogs eat garden snails, which is important within the food chain.
The stench was so putrid that it made her eyes water.
They had ventured deep into the forest where they began to feel uneasy.



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Deep inside the forest, Below the sea,
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Occasionally, Often,
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On the other hand, In contrast,
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As a result, Consequently,
Breathing heavily, Waiting anxiously, Without warning,

Creating Cohesion Top Tip: Not only can you use pronouns like he, she, it or they instead of repeating a name or names but how about other names or titles too? Here's some examples: the teacher, she, Mrs Smith, the lovely woman or the lady with the long hair.

Be a Punctuation Professional!

A	Capital letters for sentences, initials and proper nouns.
.	Full stops
!	Exclamation marks for exclamations or surprise.
?	Question marks
'	Apostrophes for possession and missing letters.
,	Commas in lists, and sentences.
...	Ellipsis to show a long pause for tension.
" "	Inverted commas for speech (Don't forget the commas too!).
-	Hyphens to connect words together.
-	Dashes to show longer pauses or parenthesis.
()	Brackets for extra information or asides.
:	Colon to separate clauses.
;	Semi colons to separate clauses.

Writing Mat
Expected Year 6

Perfect Parenthesis!
Use brackets, commas or dash punctuate extra information and

The tomb of Tutankhamen (the Ancient Egyptian pharaoh) was discovered by Howard Carter.

The advancing alien, who was speaking a Martian language, looked dangerous.

The daffodils – my favourite sign of spring – swayed gently in the woodland breeze.

Use a thesaurus to look for more ambitious synonyms. Why use 'frightened' when you could use...
startled alarmed apprehensive

Or 'show' a character's feelings:
his breathing quickened her heart raced
sweat trickled gasping for air

Spellings... I need to know all of these:

accommodate	correspond	hindrance	recognise
accompany	criticise	individual	recommend
according	curiosity	interfere	relevant
achieve	definite	interrupt	restaurant
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attached	environment	muscle	sincere
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bruise	excellent	occur	suggest
category	existence	opportunity	symbol
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Check for:
• consistent tense and person
• subject/verb agreement
• paragraphs with cohesive links
• genre features
• layout devices

Splendid Subordination!
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before after until
unless since when

Writing Mat
Greater Depth Year 6

Spellings... I need to know all of these:

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ac	inite	interrupt	restaurant
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Check for:
• consistent tense and person
• subject/verb agreement
• paragraphs with cohesive links
• genre features
• layout devices
• pronouns/ nouns for cohesion

Active and Passive
Use active and passive sentences appropriately:
Active: In front of millions of screaming fans, the star striker missed a vital penalty.
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Create a Mood!
Where appropriate, in formal writing, use the subjunctive mood:
If I were The Queen, ...
Were there to be a change in my circumstances...

Splendid Subordination!
Use these conjunctions in varied places in your multi-clause sentences:
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unless since when

Use a thesaurus to look for more ambitious synonyms. Why use 'frightened' when you could use...
startled alarmed apprehensive
Or 'show' a character's feelings:
his breathing quickened her heart raced
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Perfect Parenthesis!
Use brackets, commas or dashes to punctuate extra information and asides:
The tomb of Tutankhamen (the Ancient Egyptian pharaoh) was discovered by Howard Carter.
The advancing alien, who was speaking a Martian language, looked dangerous.
The daffodils – my favourite sign of spring – swayed gently in the woodland breeze.

Be a Punctuation Professional!
Use semi colons, colons and dashes to mark independent clauses:
It felt like forever- the longest six weeks holiday of all time.
Jack's eyes slowly opened; there was no one to be seen.
They all knew his secret: he was a specialist secret agent.

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Punctuation Reminders:
A . ! ? ' , " " () ... : ; -
Use a full range of punctuation.

Geography

Knowledge Organiser Amazon: River and Rainforests

Where is the Amazon?

Both the Amazon River and the Amazon Rainforest are located in South America. South America is one of the 7 continents of the world and is located in the Southern Hemisphere. On the image below you can see the continent which has the Andes mountain range running down the western side. The Amazon Rainforest can be seen in the north of the continent, it is the dark green colour you can see across the top. The Amazon River can be seen flowing through the rainforest, also in the north of the continent, moving from west to east.

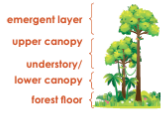


What is it like in the Amazon Rainforest?

The Amazon Rainforest is the largest tropical rainforest in the world and it is responsible for producing 40% of the oxygen in the world. A tropical rainforest experiences a large amount of rainfall and has a very warm and humid climate for most of the year. It also has many, many tall trees and a huge number of different plant and wildlife species. The rainforest is located mostly in Brazil but also in parts of Peru, Ecuador and Bolivia. There are only a small number of cities found in the rainforest and many tribes live there.

What does the Amazon Rainforest look like?

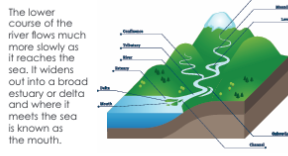
The Amazon, like other rainforests, has different layers: the forest floor at the bottom; the understory layer above; the canopy layer; the emergent layer at the very top. Each layer is home to different plants and animals and because of the huge number of trees and their leaves, different amounts of sunlight reach each of them.



What are the features of a river?

The water in a river comes from rainfall, snow, melting ice and from water inside the Earth. Each river has a source, usually found in mountainous areas, where different streams flow downhill and join together to form a river. A small stream or smaller river which flows into the main river is called a tributary. This is the upper course of the river.

The river has a middle course, where the channel of the river is wider and it flows across land and through valleys. The river here meanders because the flow of the river causes erosion of the land. Sometimes meanders form oxbow lakes which are cut off from the river.



Significant Places			
Andes A mountain range which runs along the western side of South America. The second highest peak is found here as well as the three sources of the Amazon River.	Amazon Rainforest The largest tropical rainforest in the world, producing important oxygen that humans across the world need to breathe. The majority is located in Brazil and one in ten known species of animal lives there.	Amazon River The second longest river in the world (after the Nile) but the largest in terms of the water it carries to the sea. The river flows through the rainforest and has many different tributaries.	Brazil The largest country in South America and where most of the Amazon Rainforest is found. The capital city of Brazil is Brasilia and the main language is Portuguese.

Glossary	
1	South America one of the 7 world continents — found in the Southern Hemisphere
2	Amazonia the area within the Amazon Rainforest and around the Amazon River
3	climate the general weather conditions in an area over a long period of time
4	rainfall how much rain falls in an area
5	rainforest a dense forest found in tropical areas with high levels of rainfall
6	river a natural stream of water which flows in a channel to the sea or a lake
7	oxygen a colourless gas that we breathe and need for life
8	forest floor the bottom layer of the rainforest which receives small amounts of light
9	understory layer the layer found above the forest floor and under the main canopy
10	canopy layer the layer above the understory and below the emergent layer
11	emergent layer the highest layer of the rainforest, found above the canopy
12	indigenous meaning something is naturally from that place
13	tribe a group of people who live in a traditional way
14	tributary a smaller stream or river which feeds into a larger river
15	confluence the point where two rivers (of near equal size) meet and join
16	meander the winding curve or bend of a river
17	estuary the mouth of a river — where it meets the sea
18	erosion the process of being worn away by water or wind
19	deposition the process of depositing something — leaving it behind
20	deforestation the cutting down of a large area of trees by humans

Who lives in the Amazon?

The Amazon is home to many plants and animals but also people. There are a small number of towns and cities — Manaus is the most major city in the rainforest and is known as 'the heart of the Amazon'. The rainforest is also home to a large number of indigenous tribes who still follow a traditional way of life — the largest is the Yanomami.

Amazingly however, some tribes have never been contacted and we know very little about them and the way they live.



What is the Amazon River?

The Amazon River is the second longest river in the world but carries the largest volume of water to the sea. The source of the river is located in Peru, in the Andes mountains — there are three smaller rivers which come together to create the Amazon. The Amazon has a large number of tributaries which spread through the rainforest but the main course of the river runs through Peru and Brazil. The mouth of the river is in the east of the continent and feeds into the Atlantic Ocean.

Significant Places			
Manaus A city located in the centre of the Amazon Rainforest and known as 'Heart of the Amazon' and 'City of the Forest'. The National Institute of Amazonia Research is found here.	Peru A country found to the east of Brazil. Parts of the Andes, Amazon Rainforest and Amazon River are found here. The capital city of Peru is Lima and the main language is Spanish.	Madidi National Park A national park found in Bolivia which is part of one of the largest protected areas in the world. There are more than 1,000 bird, 12,000 plant and 2,000 vertebrate species here.	Manu National Park A national park found in Peru. It has a restricted zone for native people and researchers, a cultural zone for human settlement and a recuperation zone for rainforest life recovery.

Geographical Vocabulary	
rainforest	A dense forest, normally found in tropical areas with high rainfall. They generate much of the world's oxygen.
country	A nation with its own government e.g. UK, USA, Germany
continent	The world's main continuous pieces of land - Africa, Asia, Australasia, Europe, North America, South America, Antarctica
equator	Imaginary line through the middle of the Earth that receives the most sunlight.
Tropic of Cancer/Capricorn	Imaginary lines north and south of the equator. Most rainforests can be found between these two lines.
climate	The weather and temperature usually found in an area over a long period of time.
biome	A large region of Earth that has a certain climate and certain types of living things.
temperate	Places where it is neither very hot nor very cold. Usually has warm summers and cool winters.
tropical	Around the middle of the world in the region called the Tropics where it is warm all year.
biodiversity	The wide range of living things on Earth.
ecosystem	A community of plants and animals that rely on each other to survive.
indigenous	A living thing that belongs naturally to an area.
deforestation	The action of clearing a wide area of trees.
human features	Areas of land which are man-made/synthetic. They are there because of human ideas and actions.
physical features	These are the physical characteristics of the land and are there naturally (mountains, rivers etc.)

Key Information about Brazil			
Continent	South America	Capital city	Brasilia
Surrounding waters	Atlantic ocean	Main language	Portuguese
Religions followed in Brazil	Christianity, Judaism and Islam.	Population	209.3 million people (2017)
Currency	Brazilian real (BRL)	Other major cities	Sao Paolo, Rio de Janeiro, Porto Alegre, Manaus
		Famous for...	The Amazon jungle, Carnival and 2016 Olympics



Knowledge Organiser

Layers and Features of the Rainforest	
Emergent Layer	Giant trees that enjoy the most sun but high winds and cold.
Canopy	Dense layer of trees overlapping each other. Home to most animals in rainforests.
Understory	Relatively dark, open area below the canopy.
Undergrowth	Also known as the forest floor, mainly consisting of fallen leaves, fruit etc. that decomposes as food for trees.
Flora & Fauna	Flora = plants; Fauna = animals
Camouflage	Blending in to hide in the natural environment.

Causes of Deforestation	
1	To clear space for farming; growing crops (e.g. soya beans & palm oil) and space cattle to generate cheap beef.
2	Chopping down trees for wood.
3	To build roads to mine for metals, gold & diamonds.
4	To dig for oil.
5	To flood areas to make dams & generate electricity.

Impact of Deforestation	
1	An area the size of 20 football pitches is destroyed every 60 seconds.
2	1/3 of the tropical rainforests we had are gone.
3	28,000 species of animals are expected to become extinct in the next 25 years.
4	Local people's homes are destroyed.
5	Levels of carbon dioxide in the air are increasing and oxygen is decreasing.

Science

Circulatory System

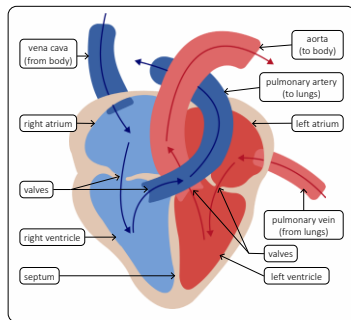
Circulatory system

The circulatory system is the system that moves blood around the body. It has three parts:

- the heart
- blood vessels
- blood



Heart



The heart is a muscular organ that acts as a pump. It pumps blood around the body through the blood vessels. Deoxygenated blood enters the right atrium through the vena cava. It passes through a valve and into the right ventricle. From there, it is pumped through a valve into the pulmonary artery. The pulmonary artery carries the blood to the lungs, where it absorbs oxygen. The pulmonary veins carry the oxygenated blood back from the lungs to the left atrium. It passes through a valve to the left ventricle and is pumped out through a valve into the aorta. Then the blood travels to the rest of the body.

Blood vessels

There are three types of blood vessels.

Arteries carry oxygenated blood from the heart to the body.

Capillaries connect arteries to the veins. They deliver oxygen and other nutrients to the body's tissues and carry deoxygenated blood and waste products to the veins.

Veins move blood back to the heart, where it is pumped to the lungs and oxygenated.

Structure of arteries

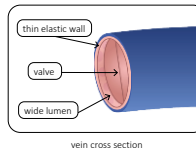
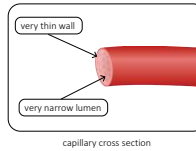
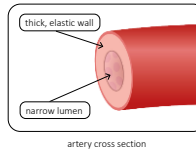
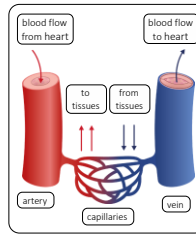
Arteries have thick walls and narrow tubes, called lumen, because the blood is under high pressure as it is pumped from the heart. The arteries are also tough and flexible to withstand this pressure.

Structure of capillaries

Capillaries are tiny and have very thin walls and narrow lumen so oxygen, other nutrients and waste products can move easily between the blood and the body's tissues.

Structure of veins

Veins have thin, elastic walls and wide lumen. The walls do not need to be thick because the blood is not under high pressure. Veins contain valves that prevent the blood from flowing backwards.



Blood

The main function of blood is to transport the things the body needs, such as oxygen, other nutrients, hormones, antibodies and heat, around the body. It also transports carbon dioxide and other waste products for excretion. Blood has four components: plasma, red blood cells, white blood cells and platelets.

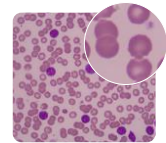
Plasma

Plasma is the yellowish liquid part of blood. It makes up about 55% of blood. It carries red blood cells, white blood cells and platelets around the body. It also helps to distribute heat.



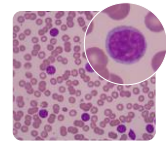
Red blood cells

Red blood cells make up about 45% of blood. Their main function is to carry oxygen from the lungs to other parts of the body and carry waste carbon dioxide from the body's tissues to the lungs so it can be excreted.



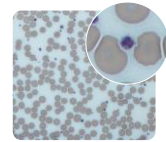
White blood cells

White blood cells only make up about 1% of blood. The main function of white blood cells is to fight infection and other diseases. They are part of the body's immune system.



Platelets

Platelets are small cell fragments that make up less than 1% of blood. Their main function is to clump together, or clot, to stop bleeding.



Pulse and heart rate

The pulse can be felt each time the arteries expand as blood is pumped through them from the heart. It is especially noticeable where the arteries are close to the skin's surface, such as at the wrist and neck.



Heart rate is measured in beats per minute (bpm). The resting heart rate is the number of times your heart beats per minute when you are at rest. Heart rate increases during exercise.

Exercise and a healthy heart

When the body exercises, it needs more oxygen and other nutrients, so the heart beats more quickly to pump more blood around the body. Regular exercise makes the heart stronger so it can pump more blood each time it contracts. As more blood is pumped out with each beat, there is a lower resting heart rate.



Smoking, alcohol and drugs

Smoking, alcohol and drugs have many negative effects on the human body. For example, they can cause high blood pressure, heart disease, cancer, stroke, bladder problems, fertility problems and respiratory problems. They can also affect mental health, such as causing anxiety and depression.



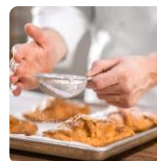
Sugar, salt and fat

Some foods, especially processed foods, such as crisps, ready meals and sweets, are high in sugar, salt or saturated fat. Too much of any of these types of foods can have harmful effects on the body.



Sugar

Sugar is added to many foods and drinks we consume, including sweets, cakes, biscuits, chocolate and some fizzy drinks. Eating too much sugar can cause weight gain and tooth decay. It can also cause the body to retain water and raise blood pressure, which can lead to a heart attack or stroke.



Salt

Salt occurs naturally in some foods, including meat and dairy products. It is added to others, including bread, breakfast cereals and ready meals. Too much salt can cause the body to retain water and raise blood pressure. This can lead to an increased risk of heart disease and stroke.



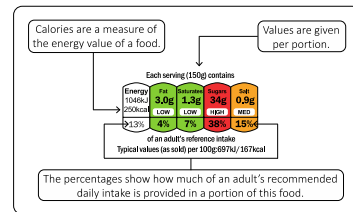
Fat

There are different types of fat in food, saturated fat and unsaturated fat. Saturated fat is found in butter, cheese, fatty meats and some processed foods. Too much saturated fat can cause weight gain and increase the risk of heart disease.



Nutrition labels

Nutrition labels on pre-packaged foods tell us what each food contains. Nutrition labels are often displayed using a traffic light system, so consumers can easily see whether the food has high (red), medium (orange) or low (green) amounts of sugar, salt and saturated fat. It also gives other useful information.



Glossary

antibody	A protein in the blood produced by white blood cells to fight infection and other types of disease.
excretion	The process of expelling waste.
hormone	One of many chemical messengers produced inside the body of an animal or plant that controls growth or other bodily processes.
immune system	The bodily system that offers protection from infections and other diseases.
oxygenated	Contains oxygen.
processed food	Food that has been changed during its preparation.
respiration	A process where oxygen is absorbed by the body and carbon dioxide is excreted.
valve	A structure in the body that prevents blood from flowing backwards.

Evolution and Inheritance

Classification

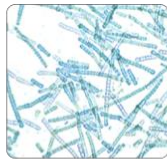
Grouping living things based on their characteristics is called classification. The first classification system developed by the Swedish scientist Carl Linnaeus (1707–1778) divided all living things into two kingdoms, animals and plants. Today, scientists classify all living things into five kingdoms. The members of each kingdom have specific features in common.

Kingdom	animal kingdom	plant kingdom	fungus kingdom	protista kingdom	monera kingdom
Features	<ul style="list-style-type: none"> multicellular cannot make food can move from place to place live on land or in water reproduce sexually 	<ul style="list-style-type: none"> multicellular make food using sunlight cannot move from place to place live on land or in water reproduce sexually or asexually 	<ul style="list-style-type: none"> unicellular or multicellular cannot make food cannot move from place to place live on land or in water reproduce sexually or asexually 	<ul style="list-style-type: none"> unicellular or multicellular some make food, others can not most can move from place to place live in water reproduce sexually and asexually 	<ul style="list-style-type: none"> unicellular make food most can move from place to place live on land or in water reproduce asexually

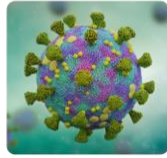
Microorganisms and viruses

A microorganism is a living thing. It is too small to be seen without a microscope. Microorganisms can be found in the fungus, protista and monera kingdoms. Most microorganisms are beneficial. For example, cyanobacteria make oxygen, and a unicellular fungus called yeast is added to bread to make it rise. Some microorganisms are pathogens, which means they cause disease in other living things.

Viruses are not microorganisms as they are not living and need a host to survive. They are not part of any of the kingdoms. Some viruses can be beneficial and others harmful. For example, the virus SARS-CoV-2 causes the illness COVID-19.



cyanobacteria



SARS-CoV-2 virus

Fossils and the fossil record

Fossils are the remains of once-living things or traces of life, such as footprints, tracks, dung or burrows, that have been preserved as rock. Preserved remains and traces of life are called fossils if they are over 10,000 years old.

The fossil record was created by scientists to group and make sense of the vast amount of fossils that have been discovered. It is ordered from the oldest fossils found deepest in the ground to the newest fossils found closest to the surface. It provides a history of the Earth.

The fossil record tells us about:

- the living things that have inhabited Earth
- the Earth's environment over time
- how species have evolved
- extinction events

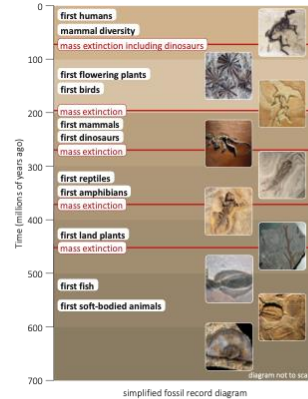
However, the fossil record is incomplete because soft-bodied animals decayed too quickly to be fossilised and fossils are still buried in the Earth's rocky layers.



fossilised turtle



fossilised footprint



The theory of evolution

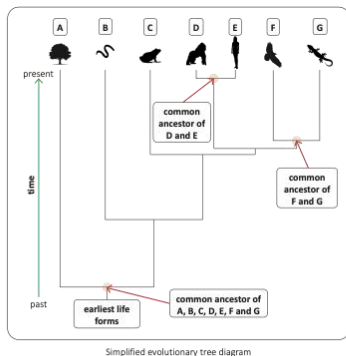
The theory of evolution was first developed by the naturalists Charles Darwin and Alfred Russel Wallace in 1858. The theory states three assumptions:

- All life on Earth has evolved from simple life forms to more complex ones over time.
- All life on Earth has common ancestors and is therefore related.
- Living things with characteristics most suited to their environment are more likely to survive and reproduce.

At first, the theory was controversial. Some saw it as an explanation for the variety of species on Earth, but others saw it as blasphemous as it challenged the Christian belief that God created the Earth and all living things. Today, the fossil record and DNA evidence support the theory of evolution.

Evolutionary tree diagrams

Charles Darwin sketched a branching tree diagram to help explain the theory of evolution. Evolutionary tree diagrams today represent what scientists think they know about the evolutionary relationships between different living things; however, they are not fact. Those living things with a more recent common ancestor, such as D and E, are said to be more closely related than those with a less recent common ancestor, such as F and G.



Inheritance

Living things that sexually reproduce pass on inherited characteristics to their offspring, such as skin colour and eye colour. Offspring inherit one copy of each gene from the female parent and one from the male parent. This mixing of genes means that offspring are unique, differing from their parents and each other.

Variation

Variation is the natural differences in characteristics between individuals of the same species. There are two types of variation: continuous and discontinuous. Continuous variation has a range of values, such as the height or mass of individuals of the same species. Line graphs display continuous variation. Discontinuous variation has a specific number of outcomes, such as eye colour or blood groups. Bar charts show discontinuous variation.

Natural selection, adaptation and survival of the fittest

Natural selection is the process behind the theory of evolution. Variation within a species is caused by small, natural changes in DNA between individuals and the random mixing of parent DNA following sexual reproduction. If a variation positively affects a living thing's ability to survive, they are more likely to live long enough to reproduce and pass on the attribute to their offspring. This process naturally selects those individuals who are better able to survive in their habitat, and is known as 'survival of the fittest.' Over time, positive attributes become common among a species and are seen as adaptations. For example, ancestors of the giraffe had shorter necks, but due to variation and natural selection, individuals with longer necks became common in the species.

There are three different types of plant adaptation:

Structural: Cacti have modified leaves called spines to deter animals from eating them.

Behavioural: Mature sunflowers face the rising Sun in the east because pollinators prefer warm flowers.

Chemical: Stinging nettles have hairs containing chemicals that sting when touched to deter animals.



Artificial selection

Artificial selection, also called selective breeding, is the process where humans breed animals and plants to produce offspring with what they consider to be desirable characteristics.

Examples include breeding cows that produce large quantities of milk or crops that are disease-resistant and produce lots of grain.



Glossary

adaptation	A physical or behavioural characteristic that allows a living thing to better survive in its habitat.
ancestor	A living thing from which others have evolved.
deoxyribonucleic acid or DNA	The inherited material inside all cells that carries the instructions needed for that living thing to develop and survive.
evolve	To change gradually over a long period of time.
gene	A small section of DNA that acts as instructions for a specific inherited characteristic, such as eye colour.
multicellular	Consisting of many cells.
species	A group of similar living things that can reproduce naturally.
unicellular	Consisting of a single cell.

Home Learning

Reading:

[Oxford Owl for School and Home](#)

[Reading and comprehension - English - Learning with BBC Bitesize - BBC Bitesize](#)

<https://schoolreadinglist.co.uk/reading-lists-for-ks2-school-pupils/suggested-reading-list-for-year-6-pupils-ks2-age-10-11/>

Writing:

<https://www.bbc.co.uk/bitesize/subjects/zv48a6f/year/zncsscw>

[Spelling and Grammar, English Games for 7-11 Years - Topmarks](#)

Maths:

<https://www.bbc.co.uk/bitesize/subjects/z826n39/year/zncsscw>

Science:

<https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zkq7wnb>

Computing:

[Is my child safe online? Parent's questions answered | Barnardo's \(barnardos.org.uk\)](#)

[Parents and Carers - UK Safer Internet Centre](#)

[Parental Controls & Privacy Settings Guides | Internet Matters](#)

PSHE:

[Talk PANTS & Join Pantosaurus - The Underwear Rule | NSPCC](#)

[How to make an emergency 999 call – West Midlands Ambulance Service University NHS](#)

[Foundation Trust \(wmas.nhs.uk\)](#)

PE:

[Nutrition Based Physical Activity Games - Action for Healthy Kids](#)

[Kids Active Learning & PE at Home – Think Active](#)

Useful Links:

[Rainforest Habitat facts and photos](#)

