Falmouth Primary Academy

Topic: How did Darwin change the world?	Year 6 —Basking Sharks	Strand: Science—Evolution and Inheritance

What should I already know?

Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.

Describe the life process of reproduction in some plants and animals.

Recognise that living things can be grouped in a variety of ways.

Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.

Science Knowledge and Skills

Identify scientific evidence that has been used to support or refute ideas or arguments.

Describe and evaluate your own and other people's scientific ideas (including ideas that have changed over time), using evidence from a range of sources.

Group and classify things and recognise patterns.

Find things out using a wide range of secondary sources of information.

Use appropriate scientific language and ideas to explain, evaluate and communicate methods and findings

What is evolution and how and why does it happen?

Living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago.

Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Offspring inherit 'traits' or characteristics from parents. Lots of physical characteristics are inherited from parents but not all traits can be inherited, such as a good singing voice/ability to play football/drawing skills.

Some traits can make things better suited or adapted to their environment, meaning that they are more likely to survive and reproduce. Adaptation may eventually lead to evolution. For example, Camels have long eyelashes to protect their eyes from the sand. They also have large, wide, flat feet to help them walk on the sand without sinking.

People such as Charles Darwin/Mary Anning/Alfred Wallace contributed to our understanding of how life on Earth has changed over time.

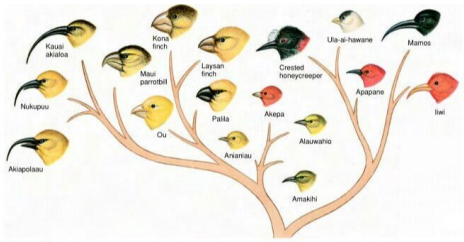
Charles Darwin was an English Naturalist born on February 12, 1809 in Shrewsbury, England. He is best known for developing a theory of evolution to explain biological change. He went on a voyage to study animals on the Galapagos Islands.

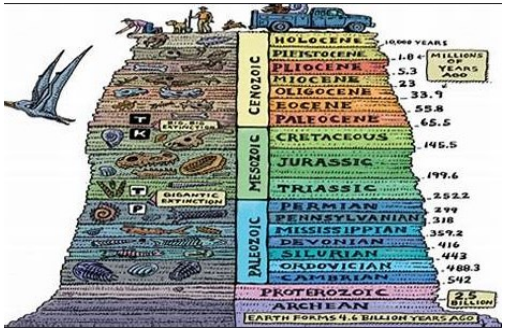
Natural selection is when organisms that are best suited to their environment survive and pass on their genetic traits. The fittest, most adapted organisms survive and reproduce whilst the least adapted die out. The peppered moth is a good example of this.

Vocabulary

environment	The surroundings in which a person, animal or plant lives
adaptation	The way individuals and species change to better fit their environment and survive.
Characteristic/trait	The particular features an offspring inherits from its parents, such as eye colour.
evolution	The way that living things change over time.
extinction	The process of a particular thing ceasing to exist
fossil	The remains or impression of a prehistoric plant or animal embedded in rock
fossil record	History of life on Earth as documented by fossils
genetics	The properties or features of an organism, characteristic inherited from their parents
DNA	Carries specific genetic information inside every living thing.
inheritance	When living things reproduce, they pass on characteristics to their offspring
naturalist	An expert in natural history
offspring	An animal's young
paleontologist	A scientist who specializes in the study of life forms that existed in previous geologic periods, as represented by their fossils
variation	The name given to differences between individuals of the same species. Can be due to genetic or environmental causes.
natural selection	When organisms that are best suited to their environment survive and pass on their genetic traits.

Diagrams/Images





Falmouth Primary Academy

Topic: How did Darwin change the world?	Year 6 —Basking Sharks	Strand: Science—Evolution and Inheritance

Question 1: In science, what is a characteristic?	**Start of unit:**	**End of unit:**
A part of your personality		
A physical feature		
A character in a story		

Question 2: Tick one column to show whether the statement is true or false.	**Start of unit**		**End of unit**	
	True	False	True	False
Adaptation is when a plant or animal has changed in some way, over a long period of time, to be better suited to its environment.				
You can inherit football skills from your parents.				
You inherit your eye colour from your parents.				
Camels have long eyelashes to protect their eyes from sand.				
Cacti have spines to protect them from the wind.				
Natural selection is when organisms that are best suited to their environment survive and pass on their genetic traits.				
An organism is a non – living thing.				

Question 3: Match the word to its definition using a line drawn with a ruler. At the end of the unit, draw a red line.

adaptation	When organisms that are best suited to their environment survive and pass on their genetic traits.
evolution	When a plant or animal has changed in some way, over a long period of time, to be better suited to the environment in which they live.
natural selection	The theory that states that all species that exist today developed from previous species.
inheritance	When parents have offspring, they pass on their physical traits.

Question 4: If an animal has a beneficial adaptation, its population is likely to:	**Start of unit:**	**End of unit:**
increase		
decrease		
Stay the same		

Falmouth Primary Academy

Topic: How did Darwin change the world?	Year 6 —Basking Sharks	Strand: Science—Evolution and Inheritance

Question 5: Explain Darwin's theory of evolution in your own words	Start of unit:	End of unit:

Question 6: Give an example of how an animal has evolved and how adaptations helped it.	Start of unit:	End of unit:

Question 7: How do fossils provide evidence of evolution?	Start of unit:	End of unit:

Falmouth Primary Academy

Topic: Would you like to live in Japan?	Year 6—Basking Sharks	Strand: Science

What should I already know?

(Year 1) That the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

(Year 3) That some forces need contact between two objects, but magnetic forces can act at a distance

(Year 3) Recognise how things move on different surfaces

Science Knowledge and Skills

Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

Identify the effects of air resistance, water resistance and friction, that act between moving surfaces

Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

How do different forces act on objects?

Gravity is a force that pulls objects down towards a mass.

Different planets have different amounts of gravity, depending on how big they are and their mass.

In space there is gravity but it is offset by the speed at which we are moving compared to Earth, which causes 'weightlessness'.

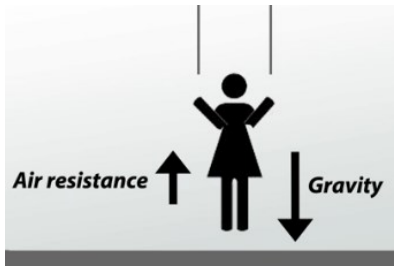
When objects fall through air they can experience air resistance, which slows their descent.

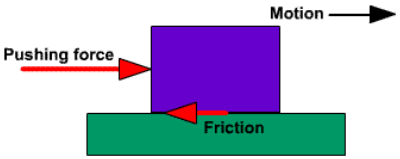
To know that friction is caused by two surfaces rubbing together and it can be increased or decreased as required

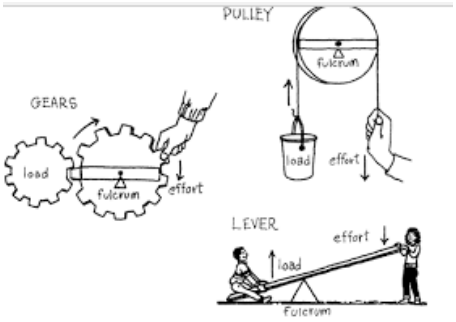
To understand how water resistance can act upon objects, how it can be reduced and why this is important

To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect

Diagrams







Vocabulary

Gravity	The force that pulls things to the ground on Earth (or other planets)
mass	The quantity of matter which an object contains
weightlessness	The complete or near-complete absence of the sensation of weight
Air resistance	The drag force that acts opposite to a falling object, thus slowing the object down
Descent	To fall down
friction	The resistance that one surface or object encounters when moving over another
Newton Meter	A tool used to measure the amount of force acting on something
Newton	Equal to the force that would give one kilogram an acceleration of one metre per second
Water resistance	Water resistance is a type of friction between water and another material
levers	a simple machine made of a beam that moves at a fixed hinge, or fulcrum
pulleys	a small wheel with a rope or chain used to change the direction and point of use of a pulling force. It can increase the applied force for lifting weights
gears	a toothed wheel that works with others to alter the speed of a driving mechanism (such as an engine) and the speed of the driven parts (the wheels)
fulcrum	the point against which a lever is placed to get support
load	An object that is being lifted or moved
effort	The energy required to move a load

Falmouth Primary Academy

Topic: Would you like to live in Japan?	Year 6—Basking Sharks	Strand: Science

Question 1: Which of these statements are true?	Start of unit:	End of unit:
In space there is no gravity		
Earth is the only planet that experiences gravity		
Friction is bad and needs to be reduced as much as possible		
To lift heavy objects you must use more effort		

Question 2: Match these statements:		Start of unit:	End of unit:
1. Friction can	A. slow how quickly an object falls.		
2. Air resistance helps	B. be reduced by streamlining.		
3. Water resistance can	C. slow an object down and cause heat.		
4. A lever, gear or pulley can	D. lift heavier loads without increasing effort		

Question 3: Label the forces acting on Michael's boat	
Start of unit:	End of unit:

Question 4 What is similar/different about friction, air resistance and water resistance?	
Start of unit:	End of unit:

Falmouth Primary Academy

Topic: Would you like to live in Japan?	Year 6—Basking Sharks	Strand: Science

Explain what happens to an object experiencing gravity on Earth compared to another planet:	Start of unit:	End of unit:

Friction is always bad. Do you agree? Why?	Start of unit:	End of unit:

Give an example of an object that uses streamlining and explain how they achieved it.	Start of unit:	End of unit:

Falmouth Primary Academy

Topic: Space	Year 6—Basking Sharks	Strand: Science

What should I already

(Year 1) Discuss how day length varies (using vocabulary like longer and shorter, mid-summer and mid-winter).

Science Knowledge and Skills

Describe the movement of the Earth, and other planets, relative to the Sun in the solar system

Describe the movement of the Moon relative to the Earth

Describe the Sun, Earth and Moon as approximately spherical bodies

Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.

How do the sun and moon affect Earth's days and years?

The Earth orbits the Sun, a star at the centre of our solar system. This orbit is an elliptical shape, which affects the amount of light that reaches us each day throughout the year (meaning more daylight in summer and less in winter).

As the Earth orbits, it also rotates on its axis which causes day and night. The tilt of the axis also causes seasons.

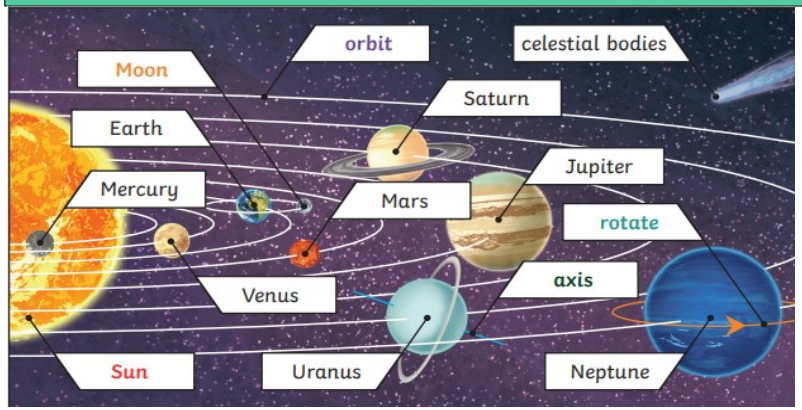
The Moon is a smaller spherical body that orbits the Earth. The speed at which the Moon rotates on its axis matches the speed at which it orbits Earth, which means we only ever see one side of the Moon. Some planets have no moons and some have multiple moons.

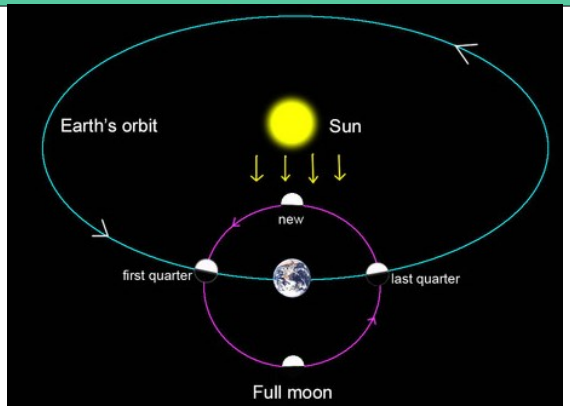
The Moon orbits Earth in an oval- shaped path while spinning on its axis. At various times in a month, the Moon appears to be different shapes. This is because as the Moon rotates round Earth, the Sun lights up different parts of it.

The orbit and gravitational pull of the moon around Earth causes tides on Earth.

In our solar system, there are eight planets. Each planet has a distinct set of features. Only Earth is currently inhabitable permanently.

Diagrams



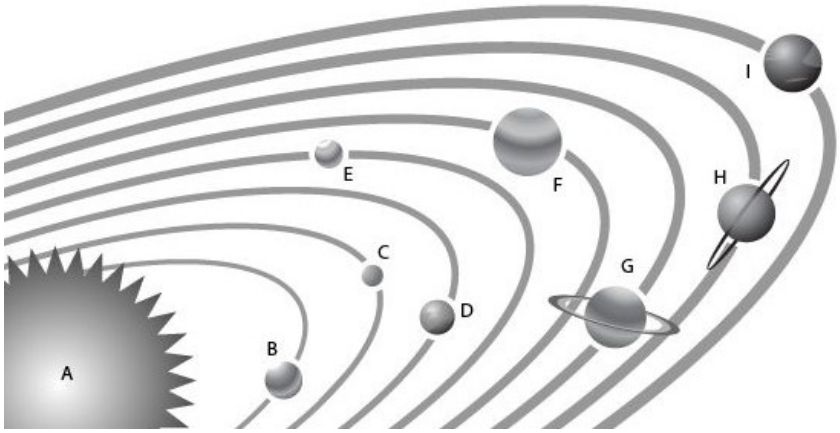


Vocabulary

Earth	The planet we live on
sun	A yellow dwarf star that is around 110 times bigger than Earth
moon	A spherical body of rock orbiting Earth, it is around 4.6 billion years old
elliptical orbit	The shape of a stretched circle. An orbit is when one object goes around another.
axis	A real or imaginary straight line going through the centre of a object that is spinning
day	The time when sunlight reaches us on the surface of Earth
night	The time when we are facing away from the Sun and light does not reach us
anti-clockwise	To turn the opposite way to a clock
gravitational pull	The invisible force that causes massive objects to pull other objects towards them
solar system	A solar system is a group of planets and other bodies that revolve around a star
inhabitable	Somewhere humans can live permanently
spherical	A spherical shape is rounded in three dimensions, like a ball.
dwarf planet	A spherical object that has its own gravity but does not affect other objects around it
moon phases	The change in the Moon's apparent shape based on where it is between Earth and the Sun
atmosphere	A protective layer around Earth
celestial	Something that is positioned in or relating to the sky.

Falmouth Primary Academy

Topic: Space	Year 6—Basking Sharks	Strand: Science



Label the planets	Start of unit	End of unit
A		
B		
C		
D		
E		
F		
G		
H		
I		

Question 2: Match these statements:		Start of unit:	End of unit:
1. Day and night is caused by	A. the position of the Sun and Earth relative to the Moon.		
2. Moon phases are caused by	B. elliptical in shape.		
3. The Earth's orbit is	C. how long they take to travel around the Sun.		
4. Each planet's orbit is	D. the anti-clockwise rotation of Earth		

Question 3: True or False	Start of unit:	End of unit:
1. Earth's year is 360 days long		
2. We only ever see one side of the Moon from Earth		
3. Pluto is a dwarf planet		
4. The Sun rises in the west		

Falmouth Primary Academy

Topic: Space	Year 6—Basking Sharks	Strand: Science

Explain why Earth experiences day and night.	Start of unit:	End of unit:

Why does Earth experience seasons?	Start of unit:	End of unit:

Why does the sun appear to move across the sky throughout the day?	Start of unit:	End of unit:

Explain why the moon appears to be different shapes throughout the month.		

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Topic: Why are the Aztecs famous?	Year 6—Basking Sharks	Strand: Science—Animals including humans

What should I already know?

You should be able to identify, name and label the basic parts of the human body.

The basic needs of animals for survival (water, food and air).

The importance for humans of exercise, eating the right amounts of different types of food, and

Science Knowledge and Skills

Plan different types of scientific enquiries to answer questions

Take measurements, using a range of scientific equipment

Record data and results using scientific diagrams, tables and graphs

What is the circulatory system's role in the human

The circulatory system is made of the heart, lungs and the blood vessels. Arteries carry oxygenated blood from the heart to the rest of the body. Veins carry deoxygenated blood from the body to the heart. Nutrients, oxygen and carbon dioxide are exchanged via the capillaries.

What blood is comprised of and the function of different blood cells.

The relationship between the circulatory and respiratory systems, including some of the main functions of the lungs.

Recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function. You will be able to describe some of the affects of legal and illegal drugs on the body.

Diagrams

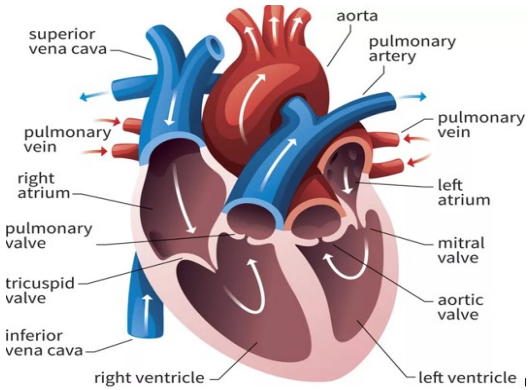
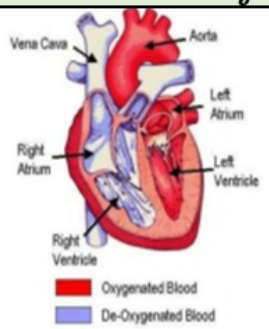


Diagram - The Heart



- The **heart** is composed of four chambers; the right **atrium**, the right **ventricle**, the left **atrium** and the left **ventricle**.
- How often your **heart** pumps is called your **pulse**.

Vocabulary

aorta	The main artery through which blood leaves your heart before it flows through the rest of your body.
arteries	Tubes in your body that carry oxygenated blood.
atrium	One of the chambers of the heart. The plural is 'atria'.
blood vessels	The narrow tubes through which your blood flows.
capillaries	Tiny blood vessels.
carbon dioxide	A gas and waste product produced by animals when breathing out.
circulatory system	The system responsible for circulating blood through the body.
deoxygenated	Does not contain oxygen.
heart	The organ in your chest that pumps blood around the body.
lungs	Two organs inside your chest which fill with oxygen when you breathe in.
nutrients	Substances that help plants and animals to grow.
oxygen	A colourless gas that humans and other animals need to survive.
oxygenated	Contains oxygen.
pulse	The regular beating of blood through your body. How fast or slow your pulse is depends on the activity you're doing.
respiration	The process of respiring: breathing in air and breathing out waste products.
veins	A type of blood vessel which carries deoxygenated blood to your heart from the rest of your body.
ventricle	A chamber of the heart. There are 2 ventricles in

Falmouth Primary Academy

Topic: Why are the Aztecs famous?	Year 6—Basking Sharks	Strand: Science—Animals including humans

Question 1: The heart, blood vessels and lungs make up the…? (Tick one)	**Start of unit**	**End of unit**
digestive system		
circulatory system		
skeletal system		
muscular system		

these is not an organ?	**unit:**	**unit:**
Heart		
Lungs		
Blood		

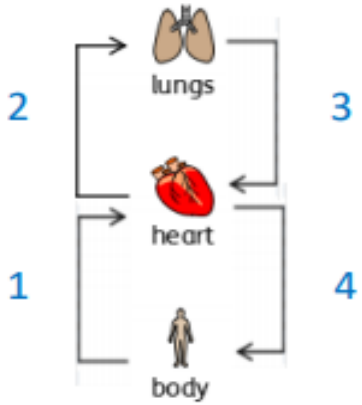
Question 3: The veins usually carry _____ blood.	**Start of unit:**	**End of unit:**
Deoxygenated		
Oxygenated		
Blue		

Question 4: The function of the blood is to provide the body with…(tick all that apply)	**Start of unit:**	**End of unit:**
nutrients		
water		
carbon dioxide		
oxygen		

Question 5: Capillaries are examples of	**Start of unit:**	**End of unit:**
blood		
blood vessels		
blood type		
nutrients		
exercise		

Falmouth Primary Academy

Topic: Why are the Aztecs famous?	Year 6—Basking Sharks	Strand: Science—Animals including humans

Explain what is happening at each stage of the process	Start of unit:	End of unit:
		

Explain the effect diet, exercise, drugs or lifestyle can have on your body	Start of unit:	End of unit:

How are nutrients and water transported around your body?	Start of unit:	End of unit: