

Science Year A

	Puffin	Swift	Eagle
Autumn 1	Animals including humans	Rocks and Fossils	Properties of Materials
Autumn 2	Seasonal Changes (Autumn and Winter)	Fair Testing	Habitats
Spring 1	Working Scientifically / The Environment	Sound	Light
Spring 2	Plants	Electricity	Electricity
Summer 1	Everyday Materials	Plants	Earth and Space
Summer 2	Seasonal Changes (Spring and Summer)	Environmental and Sustainability	

Science - Year A - Autumn

Puffin

Swift

Eagle

Focus: Animals including humans

Focus: Rocks and Fossils

Focus: Properties of Materials

- Animals can be classified and sorted in different ways.
- Fish, amphibians, reptiles, birds and mammals are groups of animals.
- The names of common animals.
- Mammals are animals that breathe air, grow hair or fur and feed on their mother's milk as a baby.
- Fish live and breathe under water. They have scaly skin, fins to help them swim and they breathe through gills.
- Amphibians live in the water as babies and on land as they grow older. They have smooth, slimy skin.
- All birds have a beak, two legs, feathers and wings.
- All reptiles breathe air. They have scales on their skin.
- Animals eat different things to get energy.
- Animals that mostly eat other animals (meat) are carnivores.
- Animals that only eat plants are herbivores.
- Animals that eat both plants and other animals are omnivores.
- The names of parts of the human body.
- Humans have 5 senses, sight, touch, smell, taste and hearing.

- I can name the three different types of rocks.
- I can explain the difference between natural and human-made rocks.
- I can use the appearance of rocks to group and compare them.
- I can name the different types of rocks. I can identify features of different rocks. I can group rocks by specific criteria.
- I can handle and examine rocks carefully.
- I can use systematic observations to identify the properties of rocks.
- I can explain the difference between a bone and a fossil.
- I can order the steps of how a fossil is formed.
- I can explain what a palaeontologist does.
- I can understand why Mary Anning's fossil findings were important.
- I can describe how palaeontology has changed our understanding of prehistoric animals.
- I can explain that soil is composed of different things.
- I can describe the 4 processes of soil formation.
- I can identify how to make careful observations.
- I can observe how much water has filtered through different types of soil.
- I can use the same equipment and length of time for each observation.
- I can record my observations accurately in a table.
- I can use simple scientific language accurately in my presentation.

- To know the main properties of common materials.
- To know why some materials are used for certain tasks.
- That some liquids dissolve in water to form solutions.
- To know that mixtures can be separated by filtering, sieving and evaporating.
- That some changes are reversible, whilst others are irreversible.

Focus: Seasons (Autumn and Winter)

Focus: Fair Testing

Focus: Habitats

- There are four seasons in a year, Spring, summer, autumn and winter.
- In Autumn the weather begins to get colder. The leaves start to fall from the trees. The amount of daylight becomes less. This means the daytimes are shorter and the night times are longer.
- In Winter the weather is much colder. Sometimes it is cold enough to freeze, leaving frost and ice on the ground. It sometimes snows. Many trees have bare branches as all their leaves have fallen off. The daytimes are the shortest in the year and the night times are the longest.
- The weather includes the temperature outside, the wind direction and strength as well as rain, cloud, snow and sun.
- Daylight is when it is light outside. The amount of daylight changes with each season.
- Animals can hibernate, migrate and adapt to winter weather.
- We can observe seasonal changes by looking outside.
- In Autumn you can see conkers and red leaves.

- Set up simple practical experiments.
- Recognise and set up a simple fair test.
- Pose own scientific questions to answer.
- Independent variable - what we will change.
- Controlled variable - what we will keep the same.
- Dependent variable - what we will measure
- Measure time using a timer in minutes and seconds.
- Make predictions.
- Record findings in tables.
- Record findings and observations in drawings.
- Present results in bar charts.
- Use results to draw simple conclusions.

- To know the characteristics of different types of living things.
- How animals and plants reproduce.
- How to classify living things.
- To know how living things are given their scientific names.
- To know the life cycle and habitat of an otter.

**Science
Year A - Spring**

Puffin

Swift

Eagle

Focus: Working scientifically / the environment

Focus: Sound

Focus: Light

- Hypothesis can be tested in different ways (comparison, observation, research and surveys)
- Greenhouse gases contribute to climate change.
- Energy is used to power are lights, heaters and other electronics.
- Energy can come from fossil fuels or renewable sources
- Most of the water on earth is salt water.
- Fresh water can be saved by turning off the taps

- Sound travels as vibrations.
- Sound sources - knowing different sources of sound.
- Slow vibrations = low musical note = low pitch
- Quick vibrations = high musical note = high pitch
- Sound travels through a medium
- Sound travels faster in water than air
- Sound travels faster in solids than liquids
- Sounds het quieter the further you are from the sound source
- Sound can be absorbed
- We hear sound - vibration travel down the ear canal to the eardrum.

- That light travels in a straight line.
- That objects can be seen because they select light.
- That light travels from light sources, or by reflecting from off of an object and this allows us to see things.
- That shadows are caused by light being unable to travel through an object.
- That shadows often have the same shape of the object they are caused by.

Focus: Plants

Focus: Electricity

Focus: Electricity

- Plants need light, water and the right temperature to grow.
- Most plants come from seeds and bulbs.
- Parts of plants and seeds.
- The lifecycle of a sunflower/beanstalk.
- The names of planets in our local area.
- Plants can grow in different habitats.
- Germination is when a plant begins to grow.
- Seed dispersal is when a plant spreads its seeds. This can happen in lots of different ways.

- Electricity is the flow of an electric current or charge through a material.
- Some appliances are mains powered and some are battery powered.
- A circuit needs a power supply.
- A circuit is a pathway that electricity can flow around. It includes wires and a power supply and may include bulbs, switches and buzzers.
- A conductor is a material / object that allows electricity to flow through easily.
- An insulator is a material / object that does not allow electricity to flow through easily.
- Switches can break or complete a circuit.

- Who Isaac Newton was and why he is important.
- That an increase in the voltage of a circuit makes lights brighter and buzzers louder.
- To know what parallel and series circuits are.
- To know the standard symbols used in circuit diagrams.

**Science
Year A - Summer**

Puffin

Swift

Eagle

Focus: Everyday materials

Focus: Plants

Focus: Earth and Space

- An object is a thing that can be used. (E.g. a table)
- Materials are what the object is made of.
- Names and appearance of common materials.
- Know some objects that are made of these materials.
- Know some properties of the materials such as bendy, smooth, stretchy, absorbent.
- A comparative test can be used to test these properties.

- The different parts of plants and discuss their function including roots, stem/trunk, leaves and flowers.
- That plants need air, light, water, nutrients from soil and room to grow.
- How scientists record their findings through observations and measurements.
- That water is transported within plants from the roots through the tubes in the stems to the tip of the plant.
- The different parts of flower and their function including pollination, seed formation and seed dispersal.
- The life cycle of flowering plants.

- That gravity forms planets into roughly spherical shapes.
- That the Earth is an oblate spheroid.
- That the Earth orbits the sun.
- That the other planets in the solar system orbit the sun.
- How the moon orbits the Earth and that one rotation of the moon matches one orbit.
- That the moon has different phases based on the sunlight we can see reflecting from it.
- That due to the Earth's rotation we have day and night.
- The names of the planets in the solar system and what type of planet they are.

Focus: Seasonal Changes (spring and summer)

Focus: Environmental and Sustainability

- There are four seasons in a year, Spring, summer, autumn and winter.
- The weather includes the temperature outside, the wind direction and strength as well as rain, cloud, snow and sun.
- Daylight is when it is light outside. The amount of daylight changes with each season.
- In Spring the weather starts to get warmer. The leaves begin to grow on the trees and some trees may blossom (have flowers). Plants begin to grow and you may see baby animals like lambs around. The daytimes start to get longer.
- In Summer the weather gets hotter. The daytime is long and the nights are short. Summer has the longest days. The trees are full of leaves and there are lots of flowers, bees, butterflies and other insects.
- The Sun and heat in summer can be dangerous. You should wear sunscreen, drink water and cover your head.

- The ways that we can protect living things and the environment.
- How people can improve an environment or destroy it.
- How and why people may seek to manage environments sustainably.
- Positive and negative effects that humans have on the environment.
- That an ecosystem is a natural environment in which animals, plants and organisms work to support life.
- That plastic is one of the most problematic materials which have a negative effect on the environment.
- Recycling can have a positive effect on the environment.

Science Year B

	Puffin	Swift	Eagle
Autumn 1	Animals	Skeltons	Forces
Autumn 2	Materials	Teeth	
Spring 1	Forces	Forces and Magnets	Animals including humans
Spring 2	Living Things and their Habitats	Light	
Summer 1	Scientists and Inventors	States of Matter	Evolution and Inheritance
Summer 2	Plants	Living Things and Their Habitats	

Science - Year B - Autumn

Puffin	Swift	Eagle
Focus: Animals	Focus: Skeltons	Focus: Forces
<ul style="list-style-type: none"> • An adult is a fully grown animal or plant. • A life cycle is the changes living things go through to become an adult • The offspring is a child of a animal • Live young means the animal does not come from an egg • Carnivores, omnivores, herbivores • Exercise keeps your body healthy • Animals need food, water and air to live • There are different types of food and we need different amounts of each to keep us healthy (carbohydrates, proteins, dairy and alternatives, fruits and vegetables, oils and spreads) • Grouping animals - bird, reptile, mammal, amphibian, fish • Keeping clean - germs (wash hands, clothes, body and teeth) 	<ul style="list-style-type: none"> • Living things need food to grow and to be strong and healthy. • Plants can make their own food, but animals cannot. • To stay healthy, humans need to exercise, eat a healthy diet and be hygienic. • Animals, including humans, need food, water and air to stay alive. • Skeletons do three important jobs: protect organs inside the body; allow movement; support the body and stop it from falling on the floor. • Skeletal muscles work in pairs to move the bones they are attached to by taking turns to contract (get shorter) and relax (get longer). • An endoskeleton - a skeleton on the inside of the body that supports and protects it • exoskeleton - a skeleton on the outside of the body that supports and protects it • hydrostatic skeleton - a skeleton made up of a fluid-filled compartment in the body called a coelom, mainly found in soft- bodied animals 	<ul style="list-style-type: none"> • That unsupported objects fall towards the Earth, because of gravity. • The effects of air resistance. • The effect of water resistance. • The effects of friction. • That pulleys, levers and gears allow a smaller force to have a greater effect. • To know simple versions of Isaac Newton's laws of motion.
Focus: Materials	Focus: Teeth	
<ul style="list-style-type: none"> • An object is a thing that can be used. (E.g. a table) • Materials are what the object is made of. • Names and appearance of common materials. • Know some objects that are made of these materials. • Objects can be sorted by there materials • Materials have different properties and this makes them better for different things • Solid objects can be changed by squashing, bending, twisting and stretching • Recycling is when an waste material is turned into a new material • Know which materials can commonly be recycled • Know why recycling is important • New materials are still being made - John McAdam, Charles Macintosh Dunlop, 	<ul style="list-style-type: none"> • The teeth of an animal are designed to eat different foods depending on the diet of the animal. • The arrows in a food chain show the flow of energy. • A herbivore is an animal that eats plants. • A carnivore is an animal that feeds on other animals. • An omnivore is an animal that eats plants and animals. • A producer is an organism, such as a plant, that produces its own food. • A predator is an animal that hunts and eats other animals. • Prey is an animal that gets hunted and eaten by another animal. • Know there are canine, molar, incisor and pre-molar teeth. And their definitions. • To help prevent tooth decay: limit sugary food and drink; brush teeth at least twice daily using a fluoride toothpaste; spit toothpaste out (rather than rinsing) after brushing your teeth because rinsing can stop the fluoride in the toothpaste from working as well; visit your dentist regularly. 	

**Science
Year B - Spring**

Puffin

Swift

Eagle

Focus: Forces

Focus: Forces and Magnets

Focus: Animals including Humans

- To know that push and pull are forces.
- Identify pushes and pulls
- Experiment with different pushes and pulls.

- Understand that force is a push or a pull.
- Know that force is measure in Newtons.
- Explain the force of friction.
- Make a prediction about which surface creates the most friction for a toy car.
- Take measurements and record my results in a table.
- Explain my results.
- Know what a magnet is.
- Know what a magnetic field is.
- Understand which materials are magnetic.
- Know that air resistance is a type of friction.
- Moving objects will always experience air resistance.
- Air resistance is a pushing force.

- To know the main parts of the human circulatory system.
- The function of the heart, blood vessels and blood.
- How nutrients and water are transported in animals (including humans).
- The purpose of villi and how the body transports nutrients.
- The impact of diet, exercise. drugs, alcohol , vaping and smoking on health.
- The changes that humans develop old age.

Focus: Living things and their Habitats

Focus: Light

- Know the difference between living, dead and never alive
- We live in the countryside, our local habitats include farms, ponds, woods and villages (urban, coastal, pond, woodland)
- Microhabitats are where mini beasts live (stones, grass etc)
- Ocean, rainforest, desert and the arctic are world habitats
- Know some animals that live in these habitats.
- Animals are adapted to their habitats so they can survive better
- A food chain shows us how plants and animals get the nutrients they need to survive.
- Camouflage is where an animal has a certain colour or pattern on their fur or skin that helps them to blend into their environment.

- Light is a form of energy that travels in a wave from a source.
- A light source is an object that makes it own light.
- Dark is the absence of light.
- Reflection is the process where light hits the surface of an object and bounces back into our eyes.
- Waves of light are called light rays.
- Mirrors reflect light very well, so they create a clear image.
- We need light to be able to see things.
- Light travels in a straight line.
- A shadow is caused when light is blocked by an opaque object.
- A shadow is larger when an object is closer to the light source.

Science - Year B - Summer

Puffin

Swift

Eagle

Focus: Scientists and Inventors

- Describe properties of plastic (e.g. Lego)
- Name some sensory plants.
- Know which materials will keep us warm.
- use a thermometer to take temperatures.
- Measure rainfall (rain gauge)
- Mae Jemison - Famous for being the first black woman in space.
- Five senses - taste, smell, touch, hear, see
- Wind power (energy)
- Doctors use science

Focus: States of Matter

- Sort materials into solids, liquids or gases.
- Describe the properties of solids, liquids and gases.
- Show the difference between the particles in solids, liquids and gases.
- Identify solids, liquids and gases.
- Explain some uses of gases.
- Investigate the weight of a gas.
- Understand how heat can cause solids to change to liquids and vice versa.
- Identify materials that melt at different temperatures.
- Investigate the melting and freezing temperature of a material.
- Identify the different states water can be in.
- Identify the temperatures at which water changes state.
- Identify and observe the processes that cause water to change state.
- Explain the effect of temperature on the process of evaporation.
- Plan and carry out a comparative test using equipment accurately and display my results.
- To identify the main stages of the water cycle

Focus: Evolution and Inheritance

- To know how living things have changed over times.
- How animals and plants adapt to their environment in different ways.
- How adaptation can lead to evolution.
- To know the work and Charles Darwin, and Alfred Wallace.
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- To know that fossils provide information about living things from millions of years ago.
- That offspring vary from their parents.
- The work of Mary Anning.

Focus: Plants

- A wild plant seed grows where it falls. It doesn't need to be planted or cared for as it grows.
- Garden plants are plants that people choose to grow in their gardens.
- Weeds are wild plants that grow in places where people don't want them.
- A deciduous tree loses its leaves each year.
- An evergreen tree keeps its green leaves all year round, even in the winter.
- Roots take in water and nutrients from the soil and keep the plant in the ground.
- The stem holds the plant up and carries the water and nutrients from the roots to the leaves and flowers.
- Leaves catch sunlight to help the plant to make its own food.
- Flowers attract insects and birds.
- Petals are the colourful part of the flower.
- Fruit contains the plant's seeds. Sometimes humans try to grow fruit without seeds because it's easier to eat.
- Seeds grow into new plants.
- Bulbs grow into new plants.

Focus: Living Things and Their Habitats

- Sort living things into groups.
- Generate criteria to sort living things.
- Sort living things into a Venn diagram.
- Sort living things into a Carroll diagram.
- Generate questions about animals.
- Use questions to sort animals in a key.
- See similarities and differences between vertebrates.
- Use these to identify vertebrate groups.
- Answer the questions in a key by looking closely at invertebrates.
- Use a key to name the invertebrates I have found.
- Identify invertebrates by looking at their characteristics.
- Explain how I have used evidence to do this.
- Identify dangers to wildlife in the local environment.
- Suggest how to have a positive effect on the local environment.
- Record my observations on a map. I can record my observations in a table.