

Science Policy

Jotmans Hall Primary School



Approved by: Governing Body of Jotmans Hall
Primary School

PENDING

Date approved: September 2026

Review due: September 2028



Mission Statement

We believe that all children matter and that learning should be fun, purposeful and challenging.



Eric the Owl

Ethos

The values of Jotmans Hall School underpin all the work we do:

E.R.I.C.

Effort, Respect, Independence, Communication

The children are at the heart of every decision we make to ensure that they are happy, confident and that the opportunities that are provided for them are relevant to their needs both now and in the future.

Aims

All children should:

1. Learn from a curriculum that is broad and balanced, as well as stimulating, effective and challenging.
2. Have their work and contribution to the school recognised and valued.
3. Have the right to enjoy and learn from a curriculum that fosters equal opportunities.
4. Be encouraged to develop a sense of citizenship through learning about their own religion and culture, and through learning about those of others.
5. Be helped to have respect for themselves and their environment and to develop respect for, and responsibility towards others in school and in the wider community.

Jotmans Hall Primary School aims to be an energetic school where children are enthusiastic and motivated to achieve their full potential.

Everybody at Jotmans Hall Primary School works hard to reach the highest standards in everything we do and this is further embedded through our successful relationships with parents, the local community and the other schools in the local area.

Equality Statement

At Jotmans Hall Primary School we are committed to:

- Promoting equality of opportunity
- Eliminating discrimination and harassment
- Valuing diversity and promoting positive relationships
- Providing an inclusive education which enables all pupils to develop their full potential meeting the requirements of the Equality Act 2010.



Metacognition

Metacognition can be defined as 'pupils' ability to monitor, direct, and review their learning'. Effective metacognitive strategies get learners to think about their own learning more explicitly, usually by teaching them to set goals, and monitor and evaluate their own academic progress. The ultimate aim is for children to become 'self-regulated learners' – being aware of their own strengths and weaknesses, and the strategies that they use to learn.

(Education Endowment Foundation – 'Metacognition and Self-Regulated Learning Guidance Report)

At Jotmans Hall Primary School, we are working to become a Thinking School. Through every subject in our curriculum, children are being taught to become more active participants in their learning. They are finding out how to think deeper, remember more and to learn in the most effective ways for them.

We believe that the best way to transform life chances is to actively shape the minds, attitudes and habits of young people through a framework of cognitive education that enables them to become the master of their own destinies.

We aim to create independent thinkers and learners who develop the attitudes and dispositions to succeed in an ever-changing future.

Inclusion Statement

At Jotmans Hall Primary School our vision is 'to unlock the potential in every child' We aim to create a happy, safe and secure environment, where members of our school community are healthy, enjoy learning, achieve their potential, respect and value each other and themselves.

Jotmans Hall Primary School aims to:

- set suitable learning challenges;
- respond to pupils' diverse needs; and
- overcome potential barriers to learning for individuals and groups of pupils.

As an educationally inclusive school the teaching and learning, achievements, attitudes and well-being of every young person matters. We take into account pupils' varied life experiences and needs, providing equal opportunities for all pupils, whatever their age, disability, race, religion or belief, gender / gender identity or socio-economic background, to ensure that every child really does matter.



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1. Purpose of the policy

This policy reflects the aims and values of Jotmans Hall Primary School. It ensures all stakeholders, including staff, governors, parents and pupils, are working towards the same goals.

Ensure you consider the potential audience for your policy and what information they will want. Your audience may include teaching and non-teaching staff, governors, parents and Ofsted inspectors.

The purpose of this policy is to:

- Set out a framework for all teaching and non-teaching staff, giving guidance on planning, teaching and assessment
- Demonstrate adherence to the National Curriculum objectives and guidelines (if appropriate)
- Provide clear information to parents and carers about what their children will be taught
- Allow the governing board to monitor the curriculum
- Provide Ofsted inspectors with evidence of curriculum planning and implementation

This policy will be available on our school website www.jotmanshall.co.uk

2. Subject Intent

At Jotmans Hall Primary School, we recognise the importance of Science in every aspect of daily life. As one of the core subjects taught in Primary Schools, we give the teaching and learning of Science the prominence it requires.

The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.



3. Aims and outcomes

Early Years Foundation Stage (EYFS)

In EYFS at Jotmans Hall Primary School, we aim to offer our children a stimulating, exciting and challenging curriculum and environment, which inspires them and motivates them to learn. We engage the children through opportunities for purposeful play, both indoors and out. Our goal is to develop the whole child, in order to sow the seeds for a love of learning.

Through the seven areas of the EYFS curriculum: Communication and Language; Physical Development; Personal, Social and Emotional Development; Literacy; Mathematics; Understanding the World and Expressive Arts and Design, we lay the foundations for our children to access the subjects of the National Curriculum, once they move into Year 1 and beyond.

National Curriculum

The programmes of study for science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for science on a year-by-year basis and make this information available online.

The national curriculum for science aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

4. Teaching and learning

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

- Whole-class teaching
- Small group discussions
- Reading from textbooks
- Planning, conducting and evaluating experiments



- > Individual projects/research
- > Role play
- > Field trips
- > External speakers
- > Science Fairs

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

6. Curriculum Implementation

EYFS	Through practical activities, play and exploration, the children in EYFS work towards the skills needed to achieve these elements of the Early Learning Goals, by the end of their Reception year:						
	Understanding the World – People, Culture and Communities: - Children describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.						
	Understanding the World - The Natural World: - Children explore the natural world around them, making observations and drawing pictures of animals and plants. - They know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. - They understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.						
	Personal, Social and Emotional Development – Managing Self: - Children manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.						
	The Characteristics of Effective Learning: Playing and Exploring (engagement) / Active Learning (motivation) / Creating and Thinking Critically (thinking).						
		Autumn		Spring		Summer	
Year 1/2	Year A	Seasonal Changes – Autumn/Winter	Everyday Materials	Plants	Scientists and Inventors	Animals Including Humans	Seasonal Changes – Spring/Summer
	Year B	Living Things and their Habitats	Use of Everyday Materials	Plants	Scientists and Inventors	Animals Including Humans	The Environment



Year ½ - Year A	What are we learning? (Key Questions)	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn 1 – Year A Seasonal Changes – Autumn/Winter	What is a season? Does the whole world have the same seasons? Where are we? What are the seasons called?	Weather Seasons Leaves Temperature Autumn September October November Winter December January February	Weather and daylight during the seasons Autumn • Temperatures get progressively colder • The weather is very changeable • 12 hours of light per day on average Winter • Temperatures are at their coldest • The weather is generally wet, windy and cloudy at the start of the season becoming drier and much colder in the later part of the season • 8 hours of light per day on average The year is divided into four parts according to the weather and daylight hours. Each part is called a season. The seasons happen at different times in the top half of the world (Northern Hemisphere) compared with the bottom half of the world (Southern Hemisphere). Where are we? In England, we are in the Northern Hemisphere. What are the seasons called? Autumn, Winter, Spring and Summer.	Predict the weather for the next day based on wind direction and cloud conditions Chart the weather daily and produce recorded weather reports focusing on type of weather, daylight hours and temperature Investigate animal behaviours during the seasons	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



Autumn 2 – Year A Everyday Materials	What does material mean? Hard or Soft? Stretchy or Stiff? Shiny or Dull? Rough or Smooth? Bendy or Not Bendy? Waterproof or Not waterproof? Absorbent or Not Absorbent? Transparent or Opaque?	Properties Material Liquid Surface Object Metal Water Rock Wood Plastic Glass	Some common properties of materials Hard - Not easily broken Soft - Easy to cut, fold or change shape Stretchy - Can be made longer or wider without breaking Stiff - Doesn't change shape easily Shiny - Reflects light easily Dull - Not very bright or shiny Rough - Has an uneven surface Smooth - An even surface with no lumps or bumps Bendy - Can be bent easily Waterproof - Keeps out water Absorbent - Soaks up liquid easily Transparent - Easy to see through Opaque - Not able to see through	Identifying materials suitable for making a boat, testing it out on water Comparing and grouping together a variety of everyday materials using a simple key Working in pairs describe the simple physical properties of a variety of everyday materials in a 'feely bag'. Partner to question "Is the object hard or soft?..." Finding the best materials to design and make an umbrella (predict which materials will be suitable)	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Spring 1 – Year A Scientists and Inventors	What is a scientist? What is an inventor? What are senses?	Scientist Inventor Astronaut Biologist Veterinarian (vet)	Learning about the following pioneers... Ole Kirk Christiansen Mae Jemison George Mottershead George James Symons Linda Brown Buck	Choose, draw and write about your favourite invention. Make contact with a vet or zookeeper to find out about their job. Visit a sensory garden	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Spring 2 - Year A Plants	What are the main parts of a plant? Can you name common plants found in the UK? What are the main parts of a tree? Can you name	Seed Plant Evergreen Deciduous Flowers Leaves Stem Roots Crown Leaves Twigs	A plant is a living thing that usually grows from the ground. 5 common plants to identify - Tulips, daffodils, roses, bluebells, and foxgloves. 5 common trees to know – Ash, Beech, Birch, Maple, and Oak. Diagrams of plants and trees. Pictures of common plants and trees.	Planting and growing flowers or trees to record changes in growth Using time-lapse photography to record how deciduous trees change Investigate changing the colours of flowers by using different coloured water to feed	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



	common trees found in the UK?	Branches Trunk Roots		Finding ways to prove that plants are alive	
Summer 1 – Year A Animals Including Humans	How do we touch? How do we taste? How do we smell? How do we see? How do we hear?	Pet Fish Birds Mammals Reptiles Invertebrates Amphibians Carnivores Herbivores Omnivores	Human beings - We are called humans We are from the family of animals called mammals Basic parts of the human body - Hair, head, ears, eyebrows, eyes, nose, mouth, chin, neck, shoulder, chest, elbow, arm, wrist, hand, tummy, knee, leg, ankle and foot There are 5 basic human senses - Touch, taste, smell, sight and hearing	Identifying, grouping and classifying animals in the school environment using magnifying glasses Testing senses through taste tests, feely bags, colour blindness tests etc. Identifying the basic parts of the human body and say which part of the body is associated with each sense Using a block graph to record the number of children in the class with certain hair and eye colours and say what you found out	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 2 – Year A Seasonal Changes – Spring and Summer	What is a season? Does the whole world have the same seasons? Where are we? What are the seasons called?	Weather Seasons Leaves Thunderstorm Temperature Spring March April May Summer June July August	Spring - Early spring can be quite cold, and occasionally the lowest temperatures of the year can occur in March There is a fair chance of snow earlier in the season often in March Temperatures get progressively warmer throughout the season 13 hours of light per day on average Summer - The warmest and sunniest of the seasons Thunderstorms are more likely in the Summer 16 hours of light per day on average	Predict the weather for the next day based on wind direction and cloud conditions Chart the weather daily and produce recorded weather reports focusing on type of weather, daylight hours and temperature Investigate animal behaviours during the seasons	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



Year 1/2 - Year B	What are we learning? (Key Questions)	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn 1 – Year B Living Things and Their Habitats	What is a habitat? What is a food chain? How do we know that something is alive?	Cells Webbed Excess Environment Move Reproduce Nutrition Growth Cold habitat Hot habitat Dry habitat Wet habitat Energy	Things can be split into three groups: • Things that are alive • Things that were alive but are now dead • Things that have never lived Animals get their food from plants and other animals. A food chain shows how energy from food is passed along. Only green plants make their own food, so every food chain starts with a green plant. Most living things live in an environment they are suited to. This is their habitat. Habitats can be very different. For example they can be: • Hot or cold • Wet or dry • On the ground or up high Animals live in habitats that suit them best. • For example, a fish can breathe in water and can swim well so it lives in water	Investigating habitats in the school environment (such as hedgerows and trees) - investigate micro-habitats such as under stones and under logs Investigating what habitats animals like using 'choice chambers' Constructing food chains using given plants and animals and explain reasoning for the order Investigating the range of impacts should one aspect of the food chain die out	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Autumn 2 – Year B Use of Everyday Materials	What are the properties of materials? What are the common uses of materials? How can material change shape?	Various Rubber Inflatable Fabric Wood Plastic Glass Metal Water	Some objects can be made from various materials For example, a spoon can be made from: plastic, wood or metal. Wood can be used for: Doors, tables Plastic can be used for: Pens, rulers Glass can be used for: Windows, glasses Metal can be used for: Cars, coins Rock can be used for: Garden walls, old buildings Brick can be used for: Houses, walls Paper can be used for: School books, wrapping paper	Rocket mice experiment - Links to changing shape of materials and pushing forces Using knowledge and understanding of properties of materials to compare suitability for waterproof rain coats.	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key



		Rock	Card can be used for: Folders, birthday cards Squashing - Crush something so that it becomes flat, soft, or out of shape Bending - Changing a straight object so that it is curved Twisting - Change the shape of an object by turning it Stretching - Made longer or wider without tearing or breaking	Materials investigation - hunt around the classroom/ outdoor area to find materials and record them in categories based on their properties Cupcake parachutes experiment - To investigate the effect of materials on flight	Questions. On-going formative assessment by class teacher.
Spring 1 – Year B Scientists and Inventors	What is a scientist? What is an inventor? What is a biome? What is a botanist? What is a doctor? What is a germ?	Scientist Inventor Biome Botanist Doctor Germ Turbine Waterproof	Learning about the following pioneers... Tim Smit Nicholas Grimshaw Jane Colden Elizabeth Garrett Anderson Louis Pasteur Charles Macintosh Rachel Carson James Blyth	Creating small biomes in the school environment. Study different types of plants and how their needs differ? A visit to a doctors surgery or invite a doctor in to answer questions. Test how waterproof different materials are and if there is anything we can do to make something waterproof.	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Spring 2 - Year B Plants	What do seeds need to germinate? What are the main parts of a plant? How do plants grow? What do they need to survive? What is the life cycle of a plant?	Survive Life Cycle Scattered Germination Warmth Air (oxygen) Water Light Water Carbon dioxide	When seeds start to grow, this is called... Germination To germinate, seeds need: • Warmth • Air (oxygen) • Water Seeds don't need light. This is because they have a store of food inside them already. Once the Stem breaks through the soil it is then a plant. • The plant grows • The flower comes and then dies • A fruit with seeds is left behind • The seeds get scattered	Observing over time how seeds and bulbs grow into mature plants commenting on their physical changes Experimenting with different ways to make a seed germinate by changing one variable e.g. soil Experimenting with ways to prove that plants need water and light to stay healthy	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by



			• The process begins again • This is called the life cycle of a plant		class teacher.
Summer 1 – Year B Animals Including Humans	What do humans need to be healthy? What is a balanced diet? What is regular exercise? What is good hygiene?	Pupa Baby Adult Teenager Toddler Child Fluids Offspring Growth	Animals become older and change as time passes 3 examples of animal growth Egg > chick > chicken Egg > caterpillar > pupa > butterfly Spawn > tadpole > frog Example of Human growth Baby > toddler > child > teenager > adult Survival Things humans and animals need to survive Water, food, air and shelter Things humans need to be healthy • To have a balanced diet of the right amount of different types of food and drink • To exercise regularly • To be hygienic What is a balanced diet? • See the Eatwell Guide NHS • Drink 6-8 cups/glasses of fluids each day What is regular exercise? • Adults needs to be active for at least 150 minutes each week • Children aged 5 to 16 need to be active for at least 60 minutes each day • Children under 5 need 3 hours of activity a day What is good hygiene? To maintain daily personal hygiene, you should make sure: • Your hands are washed after you've used the toilet • Your private parts are washed every day • Your face is washed daily • You're fully bathed or showered at least twice a week • Your teeth are brushed twice a day	Observing over time caterpillar eggs in class and taking time lapse photography of their cycle of life Investigating the effects of exercise on the body and describing its benefits Observing what happens to a tooth left in various types of drinks over a period of time Identifying, grouping and classifying adults animals with their offspring	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 2 – Year B	What is climate change? What are the effects	Environme nt Climate Climate	Our planet provides everything that we and all living things need. We call it our environment. Climate is the weather. The earth's climate is just right, meaning that things can live on the planet.	Produce posters and arguments to convince people to use renewable sources of energy.	Students will be assessed on the key skills



The Environment	of climate change? What is renewable energy? What is non-renewable energy?	change Atmosphere Greenhouse gas Energy Power Non-renewable Renewable Endangered Extinct	Climate change is a change in the overall weather and temperature on Earth. (Not the day-to-day weather). The Earth is getting warmer due to some of the things humans are doing. This means it will be more difficult for living things to survive. Energy makes everything work. Electricity, gas and oil are all sources of power. They give us energy to make things work. Non-renewable power sources such as coal, oil and gas can't be replaced once they have been used. Scientists think these are running out. Renewable power sources can be replaced. This means they will never run out. Solar power, wind power, geothermal power, biomass and wave power are all renewable power sources. Being endangered means that scientists think that a type of animal or plant is at risk. Extinct means that there are none of that type of animal or plant left alive.	Research an animal that is facing extinction. Research Greta Thunberg and her movement.	in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
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		Autumn		Spring		Summer	
Year 3/4	Year A	Light	Forces and Magnets	Plants	Scientists and Inventors	Animals Including Humans	Rocks
	Year B	States of Matter	Electricity	Sound	Scientists and Inventors	Animals Including Humans	All Living Things and Their Habitats

Year 3/4 - Year A	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn 1 - Year A Light	What is a light source? How is a shadow formed? How does the size of the shadow change?	Opaque Warning Source Electric Reflection	We need light in order to see things. When there is no light we say it is dark. A light source is something that makes its own light Light bounces off some materials better than others. Shiny objects reflect light well Light travels in straight lines Light travels very, very fast - 186,282 miles per second (that's like travelling around the world over 7 times in a second)	Finding patterns in the way that the size of shadows can change Experiment to find out how the length of shadows can change with the seasons (caused by the earth's tilt) Recognising that light is needed in order to see things and notice that light is reflected from	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions.



			If something gets in the way of light, a shadow is formed	surfaces	On-going formative assessment by class teacher.
Autumn 2 – Year A Forces and Magnets	What is a force? Why is magnetism different? Can magnets only attract magnets?	Squeezed Contact Magnetic Attract Repel South Pole North Pole	A force is either: a push or a pull. Forces can make things... • Speed up • Slow down • Change shape • Change direction All of the forces above needed contact between two objects for them to happen. Magnetic forces can act at a distance. Magnets have a North Pole and a South Pole Magnets attract or repel each other	Exploring the strength of magnets by comparing how close a paper clip needed to be before it was attracted to the magnet Planning an investigation to test if different surfaces made a difference to the distance the plastic margarine tub would travel down the ramp Using a Newton meter to investigate how shoes moved on different surfaces Releasing a car down a ramp and measure the distance it travelled on different surfaces at the bottom.	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Spring 1 – Year A Plants	How does a plant get water? How does Pollen get from one plant to another? How do the new seeds get to the soil to grow?	Petal Stamen Carpel Fertilisation Dispersal Pollen Nectar	To grow and survive, plants need: • Light • Water • Carbon Dioxide This is so that they can make their own food. • Warmth This is because if plants get too hot or too cold then they will die Fruit is the part of the plant we often eat but its main job is to keep the seeds safe The roots take up water from the soil. The water travels through the stem of the plant to the leaves. • The flower exists to make new plants • The flower contains the pollen and eggs which make seeds • The seeds grow into new plants	Investigating the different ways to speed up pollination with flowers planted at the beginning of the unit. Comparing the factors that effect plant growth, e.g. the amount of light, amount of water etc. Using microscopes to explore parts of flowers and classifying them into groups Experimenting with a range of fruit and trying to grow them from seeds	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



			Parts of the flower • Petal • Stamen (the male part of a flower) • Carpel (the female part of a flower) For a plant to grow a new seed, pollen needs to get to its carpel from another plant.		
Spring 1 – Year A Scientists and Inventors	How do we discover species of plants? How are X-Rays used? What are fossils? How are earthquakes caused?	Scientists Inventors Seismology Geology Botanist Magma	Learning about the following pioneers... Sir Joseph Banks Jeanne Baret Baret Tom Hart Dyke Marie Curie George Washington Carver William Smith Inge Lehmann	Classify some plants found on the school grounds. Invite a radiologist in to answer questions about their job. Investigate fossils borrowed from a local museum. http://www.earthquakes.bgs.ac.uk/	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 1 – Year A Animals Including Humans	What is Nutrition? Can we make our own food? What is meant by growing food? What is meant by hunting food? What is	Contract Tissue Skull, Clavicle Scapula Rib cage Humerus Spinal column Pelvis Ulna Radius Femur Fibula Tibia Shoulders Biceps	Nutrition means animals getting the food they need to grow and be healthy. Humans and animals can't make their own food. They get food by either growing it, hunting it or gathering it. A skeleton is a structure of bones that supports the body of a person or animal. A muscle is a soft tissue in the body that contracts and relaxes to cause movement of the skeleton.	Identifying that humans have skeletons for support, protection and movement Classifying food by how the human 'gets' them Experimenting to find out which is the strongest muscle group Testing relationships in the body, and looking for relationships e.g. does wingspan = height?	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



	meant by gathering food? What is a skeleton? What is a muscle?	Triceps Pectorals Deltoids Abdominals Calves Quadriceps			
Summer 2 – Year A Rocks	What are the different types of rocks? How to spot each type of rock? How fossils are formed? How is soil made?	Erosion Magma Tectonic plates Solidify Dissolve Sedimentary Metamorphic Igneous Sandy soil Clay soil Chalky soil Peat	Sedimentary rocks are formed from particles of sand, shells, pebbles, and other fragments of material. Together, all these particles are called sediment. Gradually, the sediment accumulates into layers and over a long period of time hardens into rock. Metamorphic rocks are formed under the surface of the earth from the metamorphosis (change) that occurs due to intense heat and pressure (squeezing). Igneous Igneous rock is formed when magma cools and solidifies, it may do this above or below the Earth's surface. How are fossils made... An animal dies, its skeleton settles on the sea floor and is buried by sediment. The sediment surrounding the skeleton thickens and begins to turn to stone. The skeleton dissolves and a mould is formed. Minerals crystallise inside the mould and a cast is formed. The fossil is exposed on the Earth's surface. Soil is made from... Minerals (small stone fragments: clay, silt or sand) • Organic Matter (decaying plants and animals) • Water (which the nutrients in the minerals and the organic matter dissolve into) • Air (which fills the gaps between the mineral and organic matter parts)	Describing in simple terms how fossils are formed when things that have lived are trapped within rock Comparing and grouping together different kinds of rocks on the basis of their simple physical properties Making systematic and careful observations, gathering and recording data when eroding rocks	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



Year ¾ - Year B	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn 1 – Year B States of Matter	How do you group materials? What does changes of state mean? What are the changes of state? At what temperature does each happen?	Temperature Celsius Boils Container Solids Liquids Gases Melting Evaporation Condensation Freezing	Solids stay in one place and can be held Most solids keep their shape - they do not flow like liquids (Some solids like sand or salt can be poured) Solids always take up the same amount of space - they do not spread out like gases Liquids can flow or be poured easily - they are not easy to hold Liquids change their shape depending on the container they are in Gases are often invisible Gases do not keep their shape - they spread out and change their shape and volume to fill up whatever container they are in When a solid melts it changes to a liquid. A liquid evaporates into a gas when it is heated. When a gas it cooled it condenses into a liquid. Liquid to Solid When a liquid freezes it turns into a solid. Water boils at exactly 100°C (A hot bath is about 40°C) Different solids melt at different temperatures: Ice melts at 0 degrees Celsius (0°C) (Chocolate melts at about 35°C) Water freezes at 0 degrees Celsius (0°C) Water can evaporate and condense at any temperature. But, the warmer it is the faster the evaporation takes place.	Testing the rate of evaporation by drying various materials Experiment with varying melting points of food items (Do healthy foods melt quicker/slower?) Experiment to determine if hot or cold water freezes quicker	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Autumn 2 – Year B Electricity	What is Electricity? What are common appliances that run on electricity? What is a switch?	Generator Component Circuit Current Connected Conductors Insulators	Electricity is created by generators which can be powered by gas, coal, oil, wind or solar The electrical energy can be converted into other types of energy such as light, heat, movement or sound Electricity is dangerous, so be careful when using electrical appliances. Electricity can flow through the components in a complete electrical circuit A circuit always needs a power source, such as a battery, with wires connected to both the positive (+) and negative (-) ends (a battery is made from a collection of cells connected together) A circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through Electricity will only travel around a circuit that is complete, that means it has no gaps.	Constructing a working circuit then test a range of items to see which would let electricity pass through Applying knowledge of circuits and switches by creating a switch	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



			You can use a switch in a circuit to create a gap in a circuit - this can be used to switch it on and off When a switch is open (off), there is a gap in the circuit - electricity cannot travel around the circuit When a switch is closed (on), it makes the circuit complete. Electricity can travel around the circuit. Some materials let electricity pass through them easily - they are known as electrical conductors Many metals, such as iron, copper and steel, are good electrical conductors Some materials do not allow electricity to pass through them - they are known as electrical insulators Wood, glass, plastic and rubber are good electrical insulators - that is why they are used to cover materials that carry electricity.	for a purpose e.g. house alarm, light house model Setting up circuits and predict whether the bulb will get brighter, light up or not light up Experimenting to test materials that are conductors or insulators	
Spring 1 – Year B Scientists and Inventors	How is sound transmitted long distances? What is solar power? How are circuits used in everyday things? How is electricity central to our life today? How has tooth care changed over the ages?	Conservationist Solar Power Oxygen Temperature Electricity Dentist	Learn about the following pioneers... Gerald Durrell Alexander Graham Bell James West and Gerhard M. Sessler West Maria Telkes Garrett Morgan Antoine Lavoisier and Joseph Priestley Lord Kelvin William Thomson Thomas Edison Washington Sheffield	Research the conservation of an endangered species. Create string telephones to talk to a friend. Using circuits, create a repeated signal, such as a traffic light system. Explore what happens to our bodies at different temperatures.	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



Spring 2 – Year B Sound	What is a sound? How is a sound made? How do sounds travel? How do we hear these vibrations?	Vibrates Obvious Material Recognise Initial Pitch Volume	A noise that can be heard by someone A sound happens when something vibrates Sounds can travel in two ways: • Through the air - like from a TV speaker across the room to your ears • Through an object/material - like stone, brick, water and glass - if someone moves furniture upstairs, the sound can travel through the floor to you • The vibrating air hits our ear drums and makes them vibrate • The vibration is picked up by our brains and converted to sounds we recognise • The closer we are to the sound source, the louder the sound will appear to us • The further away we are from the sound source, the quieter the sound will appear • The more energy in the initial vibration the louder the sound will be The pitch is how high or low a sound is. • The shorter the vibrating object, the higher the pitch of the sound • The longer the vibrating object, the lower the pitch of the sound With string instruments, the tighter	Exploring string telephones by recognising that vibrations from sounds travel through a medium to the ear Using household objects (such as a saucepan) and try and create a scale of sounds by manipulating it Using string instruments in school (such as violins) to experiment with pitch	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 1 – Year B Animals Including Humans	What is digestion? What are the Main Parts of the digestive system? What is the digestive journey of food? What are Molars and Pre-Molars? What are	Energy Waste Mouth Tongue Pharynx Oesophagus Liver Stomach Gallbladder Pancreas Large intestine Small intestine Incisors Canines	Digestion is the way the body breaks down the food we eat into smaller parts that can be used to give the body energy The Main Parts of the digestive system... Mouth, tongue, pharynx, oesophagus, liver, stomach, gallbladder, pancreas, large intestine, small intestine The digestive journey of food. • Humans put food into their mouth • Food is chewed by the teeth • Food is swallowed and passed through the pharynx and oesophagus to the stomach • In the stomach, it is mashed into a mixture like soup and mixed with acid • The mixture passes into the small intestine, where tiny bits of food pass into the bloodstream	Researching simple functions of the basic parts of the digestive system in humans Comparing the teeth of animals and discuss if they are carnivores or herbivores based on taught knowledge	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



	Canines? What are Incisors? What is a food chain? What is a producer? What is a consumer? What is a predator? What is prey?	Pre-Molars Molars	• The food that is still left goes into the large intestine • Finally, waste products leave the body Teeth grow in babies when they are about 6 months old 20 teeth grow by the time you are about 2.5 years old From about age 6 you start to lose teeth till about the age 12 These teeth are replaced by 32 permanent teeth A food chain is a diagram that shows a producer and consumers. A consumer can be a predator, prey or both The arrow means - 'is food for'	Designing and creating the longest food chain possible, predicting how long it will take for the largest predator to eat Experimenting with what can go wrong with the digestive system such as: hiccups and vomiting	
Summer 2 – Year B All Living Things and Their Habitats	How do we spot a Fish? How do we spot an Amphibian? How do we spot a Reptile? How do we spot a Bird? How do we spot a Mammal? How do we spot an Insect? How do we spot an Arachnid? How do we spot a	Gills Fins Scales Lungs Body Temperature Section Deciduous Coniferous (Evergreen) Algae Vertebrates Invertebrates Fish Amphibian Reptile Bird Mammal Insect Arachnid Mollusc	Animals can be put into one of two groups, Vertebrates or invertebrates. Vertebrates - Are animals with a backbone. There are 5 ways Vertebrates can be grouped... Fish, amphibians, reptiles, birds and mammals Invertebrates - Invertebrates are animals with no backbones. There are 3 ways Invertebrates can be grouped • Insects • Arachnids • Molluscs Plants can be put into one of two groups... Flowering plants or non-flowering plants Flowering plants are made of four groups • Grasses/cereals/garden shrubs/deciduous trees (lose their leaves) • Non-Flowering plants are made of three groups • Algae/coniferous (evergreen) trees/ferns The seasons can change habitats with the weather and plant life in the habitat changing. Humans can change habitats, for example by dropping litter or chopping down trees.	Identifying and naming a variety of living things in the local (school) and wider environment Exploring and using classification keys to help group, identify and name a variety of living things in their local and wider environment Designing own keys and branch diagrams to identify animals and plants	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



	Mollusc? What is a habitat? How can habitats change? What is classifying? How can we group?	Habitat				Creating an online database of animals and plants on the school site (invite other users of the school grounds to update with sightings)	
		Autumn		Spring		Summer	
Year 5 / 6	Year A	Properties and Changes in Materials	Forces	Earth and Space	Scientists and Inventors	Animals Including Humans	Living Things and Their Habitats
	Year B	Light	Electricity	All Living Things	Scientists and Inventors	Animals Including Humans	Inheritance and Evolution

Year 5 / 6	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn 1 – Year A Properties and Changes in Materials	What is a reversible change? What is an irreversible change? How can we separate a mixture? How can we separate a solution? How can we	Dissolved Separating Evaporation Properties Hard Soft Soluble Insoluble Transparent Opaque Electrical conductor	Materials can be grouped by their properties (is it hard or soft?) or by more than one of their properties (is it hard and magnetic?) A mixture • Where substances are mixed together, but dissolving hasn't taken place (for example, mixing, cucumber slices, egg slices and tomato slices to make a salad) A solution • Some substances dissolve in a liquid, when this happens the liquid is called a solution (for example, when gravy granules dissolve in water, this is a solution) We can separate a mixture by sieving and/or filtering • Sieving - sorting out the big bits from the small bits, e.g. stones from	Experiment with irreversible changes, e.g. vinegar and bicarbonate of soda Experiment to find properties of materials, e.g. does it attract to a magnet, can heat pass through it? Using knowledge of solids, liquids and gases to decide how mixtures might be	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative



	compare properties of materials?	Electrical insulator Thermal conductor Thermal insulator Magnetic Not magnetic	soil • Filtering - separating solid bits from a liquid, e.g. sand from sand and water We can separate a solution by evaporation • Because the soluble substance is too mixed into the water, it can't be removed by sieving or filtering • Evaporation - A liquid evaporates into a gas when it is heated (this removes the liquid and leaves the substance behind) What is a reversible change? • A change that doesn't last forever What is an irreversible change? • Lasts forever • Usually caused by heat	separated, including through filtering, sieving and evaporating e.g. sand and water	assessment by class teacher.
Autumn 2 – Year A Forces	What is a force? What is gravity? What types of force are there?	Streamlined Surface Grip Drag Centre Magnetism Gravity Air resistance Water resistance Friction	A force is either: push or a pull Forces can make things... Speed up, slow down, change shape and change direction A force that speeds something up - The child is pushing the car to speed it up A force that slows something down - The girls is pulling the dog to slow it down A force that changes the shape of something - The can is being squeezed so that it changes shape and becomes smaller A force that changes the direction of something - When the ball is hit with the racket, it will change direction Magnets attract or repel each other or other objects Air resistance slows down moving objects, because air slows you down as you move through it. To travel faster through the air, things need to be streamlined Water resistance slows down moving objects, because water slows you down as you move through it. To travel faster through the water, things need to be streamlined Friction happens when two surfaces touch each other. Friction gives us grip. Friction produces heat. Rougher surfaces slow things down a lot. Smoother surfaces don't slow things down as much	Identify the effects of air resistance by designing and testing a parachute which would slow a car down a ramp Testing water resistance when swimming (during Year 5 swimming lessons) Recognising the impact of mechanisms on forces when using pulleys, levers and gears during technology lessons Choosing a feature of a spinner to investigate, for example, size of wings, height dropped or number of paper clips	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



			Gravity is the forces that pulls objects down towards the centre of the Earth. Gravity stops things from floating away into space. When things go into the air (like a football) gravity pulls them back down.		
Spring 1 – Year A Earth and Space	What is the Sun? What is the solar system? How is the Earth related to the Sun? What is a moon? How is the Moon related to the Earth? Why does the Moon change shape? How else does the Earth move? What causes day and night? What causes Sunrise and Sunset?	Solar Orbit Axis Rotating Gravitation al Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune	The sun is a star at the centre of our solar system The solar system has eight planets; Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune The Earth orbits (goes around) the Sun The Earth takes one year to orbit the Sun The Earth is held in its orbit round the Sun by the Sun's gravitational pull A moon is a celestial body that orbits a planet The Earth has one moon; Jupiter has four large moons and numerous small ones The Moon orbits the Earth It takes about 28 days for the Moon to orbit the Earth The Moon is held in its orbit round the Earth by the Earth's gravitational pull The moon appears to change shape because we cannot always see the side of the Moon that's in sunlight or we can only see part of the sunlit side of the Moon as it orbits Earth	Using balls as a model to investigate and describe the movement of the Earth in relation to the Sun Investigate making shadow clocks and sundials Children to question other group's designs based on subject knowledge Using secondary resources to establish that the time of day is different in different places in the world	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Spring 2 – Year A Scientists and Inventors	What is biology? What is chemistry? What is DNA?	Biology. Chemistry Chromatography DNA Genetic Geology Naturalist Physicist	Learning about the following pioneers... David Attenborough Eva Crane Stephanie Kwolek Leonardo da Vinci Margaret Hamilton Margaret Neil deGrasse Tyson	Make their own documentary on an animal of their choice.	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 1 – Year A Animals Including	What is puberty? What are the Changes for girls? What are the	Fertilised egg Foetus Baby	Average UK life expectancy Men: 79 Women: 82 Puberty is when the body develops • Puberty usually happens between the ages of 10 and 18 • During puberty, the bodies of boys and girls begin to change	Researching and describing the changes as humans develop into old age	Students will be assessed on the key skills in the National



Humans	Changes for boys?	Toddler Child Teenager Adult Old age Death Testicles Sperm Fertilisation	Changes for girls • Hair starts to grow on their bodies • Breasts develop and hips widen • Periods start Changes for boys • Hair starts to grow on their bodies • Hair starts to grow on their faces • Testicles start to produce sperm	Using statistical analysis to determine the average age/height of our school; children, parents etc. Comparing the differences in the life cycles of a mammal, an amphibian, an insect and a bird Identifying patterns in data to determine if the average UK life expectancy has increased or decreased in the last 10 years	Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 2 – Year A Living Things and Their Habitats	What is a life cycle? What are the stages of a life cycle? What is reproduction?	Reproduce Young Egg Born Metamorphosis Sexual Asexual	A life cycle shows how things are born, how they grow and how they reproduce Life cycle of a mammal Live young born > grow from babies to adults > reproduce > live young born Life cycle of an insect Egg > growth to adult or transformation to adult > reproduce > egg Life cycle of a bird Egg > growth to adult > reproduce > egg Life cycle of an amphibian Egg in water > growth to adult > reproduce > eggs in water Reproduction in animals Living things creating other living things • Animals have babies • Plants have seeds which turn into new plants Reproduction in plants Sexual reproduction (Two parents) When the pollen from one flower joins the egg of the new flower and a seed or many seeds are formed. Asexual reproduction (One parent) This is when a small part of a plant breaks off and it starts to grow until it is the same size as the plant it	Investigating the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Studying live chicks (in school) and watching them grow. Investigation into growing new plants from different parts of a parent plant (e.g. seeds, stem, root cuttings etc.) Comparing life cycles with the most and fewest parts and comparing them to their average life span	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.



			came from and this is repeated (flowers are not needed). Examples of plant reproduction Sexual • Apple tree Asexual • The spider plant Reproduction in animals is most commonly sexual involving two parents. Examples of animal reproduction Sexual • Lion Asexual • Starfish		
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Year 5 / 6	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn 1 – Year B Light	What is a light source? How is a shadow formed? How does the size of the shadow change?	Light Light Source Reflection Incident Ray Reflection Ray The Law of Reflection Refraction Visible Spectrum Prism Shadow Transparent Translucent Opaque	We need light in order to see things. When there is no light we say it is dark. A light source is something that makes its own light Light travels in straight lines Light travels very, very fast - 186,282 miles per second (that's like travelling around the world over 7 times in a second) If something gets in the way of light, a shadow is formed If an object is moved closer to the light sources, the shadow gets bigger If an object is moved further away from the light source, the shadow gets smaller When a light is shone through a transparent prism, it separates the light into the colours of the spectrum. All the colours together make visible light. The law of reflection states that the angle of incidence is equal to the angle of reflection. Whenever light is reflected from a surface, it obeys this law. The angle of reflection is the angle between the normal line and the reflected ray light. The angle of incidence is the angle between the normal line and the incident ray of light.	Explaining that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes Investigating what happens to a shadow when the torch is moved. Using prisms to separate light.	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Autumn 2 – Year B Electricity	What is Electricity?	Generator Component	Electricity is created by generators which can be powered by gas, coal, oil, wind or solar	Investigating what happens	Students will be assessed



	What is a switch? What are the components of a circuit?	Voltage Circuit Symbol Cell/Battery Current Amps Resistance Electrons	The electrical energy can be converted into other types of energy such as light, heat, movement or sound Electricity is dangerous, so be careful when using electrical appliances Electricity can flow through the components in a complete electrical circuit A circuit always needs a power source, such as a battery, with wires connected to both the positive (+) and negative (-) ends (A battery is made from a collection of cells connected together) A circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through Electricity will only travel around a circuit that is complete (that means it has no gaps) What is a switch? You can use a switch in a circuit to create a gap in a circuit (this can be used to switch it on and off) When a switch is open (off), there is a gap in the circuit - electricity cannot travel around the circuit When a switch is closed (on), it makes the circuit complete - electricity can travel around the circuit Increasing the brightness of a bulb or the volume of a buzzer. The more cells that are used in a circuit, the brighter the bulb or louder the buzzer If one cell is used, the higher its voltage, the more powerful the cell is	when components in a circuit are changed, recording each circuit and what has been observed Comparing and giving reasons for variations in how components function by exploring a range of equipment (different lengths and widths of wire, different sizes of cells, light bulbs, buzzers, motors, switches)	on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Spring 1 – Year B Scientists and Inventors	What is an astrophysicist? What is a black hole? What is a zoologist? What are antibiotics? What is a hominin? What is anesthetic and how is it used?	Astrophysicist Black Hole Universe Zoologist Classification Antibiotic Hominin Evolution Anesthetic Technology	Learning about the following pioneers... Stephen Hawking Libbie Hyman Marie Maynard Daly Alexander Fleming Mary Leakey Dr Daniel Hale Williams Steve Jobs	Listen to some of Stephen Hawkins theories and try and display some in 'child' speak. Chart the evolution of humans. Research an Apple product and it's	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going



	What is an entrepreneur?			marketing.	formative assessment by class teacher.
Spring 2 – Year B All Living Things	What are the Key Features to distinguish between animals? What are the Key Features to distinguish between plants? What are the features of microorganisms?	Taxonomy Classification Distinguish Microorganism Algae Fungi Protozoa Bacteria Viruses	Key Features to distinguish between animals • Invertebrate or vertebrate • Mammal/reptile/fish/amphibian/bird • Colour • Length • Number of legs • Number of body segments • Distinguishing features • Habitat Key Features to distinguish between plants • Flowering or non-flowering • Grass/cereal/garden shrub/deciduous/algae/ coniferous/fern • Colour • Height • Number of flowers • Fruit bearing or not • Distinguishing features • Usual location	Comparing animals from different habitats locally, in other areas in the UK and abroad Designing an investigation to lead another year groups on a bug hunt using these classification keys Locating a range of habitats on the school site and interpreting these results	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key Questions. On-going formative assessment by class teacher.
Summer 1 – Year B Animals Including Humans	What does the heart do? What do the blood vessels do? What does the blood do? What is a balanced diet?	Oxygen Addictive Substance Breathe Circulatory Heart Blood vessels Blood Arteries Capillaries Veins	The heart pumps the blood through the blood vessels so that food and oxygen can get to all the parts of the body Blood vessels carry the blood around the body There are three main types of blood vessels • The arteries, which carry the blood away from the heart • The capillaries, which enable the actual exchange of energy between the blood and the tissues • The veins, which carry blood from the capillaries back toward the heart Blood moves food and oxygen around the body Things humans need to be healthy • To have a balanced diet of the right amount of different types of food and	Setting up tests to investigate the impact of exercise on the way the human body functions Designing and making a circulatory system with a	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key



			drink • To exercise regularly • To be hygienic What is a balanced diet? • See the Eatwell Guide (see diagram) • Drink 6-8 cups/glasses of fluids each day Health risks that can damage the body • Smoking • Drugs • Alcohol • Obesity Dangers of smoking • Addictive • Can cause heart disease and cancer Dangers of drugs • Addictive • Can damage the brain or cause death Dangers of alcohol • Ok in small amounts for adults • Can damage the liver, heart and stomach Dangers of obesity • Can cause heart disease • Can lead to cancer	pump Researching to find out what causes the heart to work harder/maximum heart rates Creating a key to classify plants and animals based on specific characteristics	Questions. On-going formative assessment by class teacher.
Summer 2 – Year B Inheritance and Evolution	What is evolution? Do things evolve? How do things evolve? What's the important thing to know? What is adaption?	Fossils Variations Reproduce Offspring Migration	Evolution is the way that living things change over time. We know that living things used to look a lot different to how they do now - we know this because fossils have been found that show creatures that look a lot different to how they do today Fossils show us that living things have changed over time A famous scientist, Charles Darwin observed that although individuals in a species shared similarities, they were not exact copies of each other. He noticed that there were small differences or variations between them. He also noticed that everything in the natural world was in competition. The winners were those that had characteristics which made them better adapted for survival (for example, they were stronger, faster, cleverer or more attractive	Identifying how animals are adapted to suit their environment in different ways by investigating the strength of eggs Using secondary resources to	Students will be assessed on the key skills in the National Curriculum through showing they can answer the Key



		than others in their species). These living things were more likely to reproduce and pass on their useful characteristics to their offspring. Individuals that were poorly adapted were less likely to survive and their characteristics were not as likely to be inherited. Over time, the characteristics that help survival become more common and a species gradually changes. Given enough time, these small changes can add up to the extent that a new species altogether can evolve. Living things produce offspring of the same kind (For example, owls produce baby owls and humans produce baby humans... BUT... normally offspring vary and are not identical to their parents) • Natural variation like this can lead to offspring being more likely or less likely to survive in their environment • If the variant makes them more likely to survive, they are more likely to be alive to pass this variant to their offspring • As a result, this variant is more likely to become more common in this species Adaption What is adaption? • Adaption is when things evolve to overcome challenges in their environment (for example by adapting their behaviour) Migration • Birds have adapted to move around the world to find weather and food sources to suit them • Birds that didn't do this may have run out of food and died Examples of adaption • Sticking together in packs • Animals that learned to live in packs were more likely to be safer and more successful when hunting, leading them to be more likely to survive	determine why certain animals such as polar bears are not adapted to living in a hot and dry environment Investigate the work of renowned palaeontologists such as Mary Anning and how Charles Darwin and Alfred Wallace developed their ideas on evolution	Questions. On-going formative assessment by class teacher.
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6. Cross-curricular links

Science shares links with the following subjects:

- English: development of literacy skills through reading and writing
- Maths: analysing numerical data and understanding chronological terminology
- ICT: use of the internet for research
- Spiritual, moral, social and cultural (SMSC): encourages empathy towards other cultures and religions, and reflection on moral issues

The above list is not exhaustive and should be adapted to suit your specific context.

7. Curriculum Impact

7.1 Assessment

Jotmans Hall Primary School uses assessment to enable staff to understand what pupils have learnt before, what they need to learn now and what they will learn next.

Assessments are made in order to improve. They are used to identify where there are gaps in learning for particular pupils. Planning is adjusted as a result in order to ensure that identified pupils' catch up or close the gap,

All pupils are individuals and will be assessed in this way to ensure that they fulfil their individual potential. The founding assumption is that all pupils can achieve mastery (breadth and depth) if they are supported to do so.

Pupils' progress is continually monitored throughout their time at school and is used to inform future learning and teaching. Teaching staff will assess the children's knowledge at the end of each unit by asking the Key Questions identified in the knowledge organisers.

End points are set by the National Curriculum. By the end of each key stage, pupils are expected to know, apply and understand the knowledge, skills and competencies as specified in the programme of study.

Assessment for learning is continuous throughout the planning, teaching and learning cycle.

Subject leader monitoring will include the following aspects:

- Work sampling to ensure development of key learning and key vocabulary;
- Discussing and checking understanding of learning and work with pupils, including effective challenge for more able pupils;
- Monitoring planning to ensure full coverage of the curriculum;
- Checking that there are opportunities to use and apply reading and writing skills in each subject area, consistent with quality in Literacy books.
- Monitoring language skills – ensuring pupils understand key vocabulary;
- Climate walks;
- Lesson visits;
- Gathering and responding to stakeholder's views, including pupils;
- Links to other areas of the curriculum including PSHE, Relationships, Healthy Schools, Behaviours for Learning, British Values and Equality;



Subject leaders will:

- Evaluate the performance of pupil cohorts and identified individuals or groups;
- Identify where interventions may be required;
- Work with teachers to ensure pupils are supported to achieve at least sufficient progress and expected attainment.
- Produce an annual Action Plan to work on key development points.

Marking

Children receive regular feedback and marking follows the school's Feedback & Marking policy.

7.2 Recording

In Science, pupils will record their learning in the following ways:

- Topic books or folders
- Reception – Tapestry Learning Journal and class photo books

This may take the form of photographs, pictures, notes or written work, and may be worksheet-based or fully independent.

8. Resources

8.1 Textbooks and other equipment

- A broad and varied selection of textbooks
- A wide variety of science resources, such as circuit materials, rock examples, magnifying glasses, etc, which can be found in the science resource area between Cedar and Beech class
- We use the Twinkl science scheme to enhance and support the teaching of the subject at the school

8.2 Enhancing the Curriculum

School trips are cross curricular but sometimes are more focused in with a science topic, such as when upper Key Stage 2 visited the Gunpowder Mills.

Every year, the school hosts a week of activities to celebrate British Science Week. As part of the week, we host a Science or STEM fair, where each class presents their learning and parents and carers are invited in to see this. We have also had external workshop providers in to further expand the children's learning and scientific experiences.



9. Roles and responsibilities

9.1 Headteacher

The headteacher at our school will:

- Support the subject leader but also hold them to account for the effectiveness of the subject
- Ensure subject action plans are suitable
- Monitor the quality of resources
- Support staff through the provision of training and resources
- Monitor the planning and delivery of the subject
- Ensure the requirements of the National Curriculum are met
- Ensure this policy is reviewed according to the timescales set out
- Monitor pupil and parent engagement with the subject

9.2 Subject leader

The subject leaders at our school will:

- Prepare and review subject policy and curriculum plans
- Promote the study of the subject throughout the school
- Monitor the teaching and assessment of the subject
- Attend appropriate CPD
- Stay informed regarding developments in the study and teaching of the subject
- Evaluate resources
- Provide training and CPD to staff on the subject curriculum and its delivery, and keep them informed about subject developments nationally
- Assess the impact of the subject curriculum on pupils' learning and development
- Make presentations to governors on the subject and how it is being taught

9.3 Governing Body

The Governing Body at our school will:

- Monitor the impact of the subject across the school and on pupils
- Monitor teacher workload and professional development
- Keep up to date with the curriculum (what's taught, why it's taught, and how it's taught)

9.4 Classroom teacher

Classroom teachers at our school will:

- Teach and assess the subject according to the principles laid out in this policy
- Report to the subject leader
- Maintain subject knowledge and appropriate CPD



10. Inclusion

Teachers set high expectations for all pupils in Science. They will use appropriate assessment to set ambitious targets and plan challenging work for all groups, including:

- More able pupils
- Pupils with low prior attainment
- Pupils from disadvantaged backgrounds
- Pupils with special educational needs (SEN)
- Pupils with English as an additional language (EAL)

Teachers will plan lessons so pupils with SEN and/or disabilities can study Science, wherever possible, and ensure that there are no barriers to every pupil achieving.

Teachers will also take account of the needs of pupils whose first language is not English. Lessons will be planned so that teaching opportunities help pupils to develop their English, and to support pupils to take part in Science.

Further information can be found in our statement of equality information and objectives, and in our SEN policy and information report.

11. Links to other policies

This subject policy links to the following policies and procedures:

- Curriculum policy
- Assessment policy
- Marking policy
- SEN policy

12. Monitoring and review

This policy will be reviewed by staff and trustees every 2 years