

	guide them into becoming en lives and how vital it is to th	iquiry-based learners. As a re le world's future prosperity.		elop an understanding of the uses an	nd implications of Science, how it ho	as changed and shaped our
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	their senses, showing curiosit through their play. They can name and describe an environment and experiences Explore the seasonal changes Winter in our environment.	s, noticing elements of Autumn and	seasons). Name the seasons and n ice, frost and how it impacts on the We visit a farm and learn about a countries. We learn the names of grow and thrive. They draw animals and plants and plants and bodies. We explore how people can be helkeep healthy ourselves.	nimals from England and some from other baby animals and what animals need to live, discuss these, beginning to name parts of ped by doctors and dentists and how we can	roots, stems, leaves and flowers. We plant seeds and watch as they geochildren can talk about main parts of the explore insects and other bugs naming them and simple body parts. Our trip includes pond dipping, finding and describing them. We find out what bugs need to stay hotels and treat them with respect. We observe as caterpillars grow and other life cycles including frogs and the weak we will change as we grow into a week to eat to get energy and to grow we learn and explore how sleep, for humans healthy. We learn why keeping our teeth clear we experience the change in weath about the importance of sun safety.	of common plants. that we can find in our environment, ing what lives in the water, examining valive and learn how to build bug . d develop into butterflies. We explore d people. live changed since we were babies and adults. y and treats, talking about why we ow. od, water, exercise and activities kee an is important and how to do it. lier from Spring to Summer and learn
Year 1	Describing materials	Seasons	<u>Habitats</u>	Plants	Animals including humans	
	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	
	Properties, metal, rock, fabric,	Spring, summer, autumn, winter,	Variation, habitat, adapted, survive,	Seed, bulb, leaves, germination, roots,	Organisms, growth, energy, fish, amphibians,	·
	wood, plastic, ceramic, suitable,	hibernating, migration, evergreen,	avoid, wild plant, garden plant	shoots	omnivore, carnivore, predator, prey, food ch	ain, senses
	purpose LOs:	deciduousObserve changes across the	By the end of the year, children will understand:	 Identify and name a variety of common wild and garden plants, 	LOs: Tidentify and name a variety of comme	mon animals including fish, amphibians,
	Distinguish between an	four seasons	There is variation in all living	including deciduous and evergreen	reptiles, birds and mammals	non animals melading rish, amphibians,
	object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock Describe the simple physical properties of a variety of everyday materials Compare and group	 Observe and describe weather associated with the seasons and how day length varies Making tables and charts about the weather 	things; • Animals and plants live in a variety of different places called habitats; • Animals and plants have adapted to survive in different habitats; • Wild plants such as ferns, daisies, nettles and dandelions grow randomly; and • What is a habitat?	trees Identify and describe the basic structure of a variety of common flowering plants Observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants Describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.	 Identify and name a variety of commercial herbivores and omnivores Describe and compare the structure amphibians, reptiles, birds and mammercial herbidy, name, draw and label the burnish part of the body is associated Using their observations to compare 	e of a variety of common animals (fish imals, including pets) basic parts of the human body and say d with each sense e and contrast animals at first hand o escribing how they identify and group they eat

everyday materials on the

plants have changed over time, for



	basics of their simple physical properties • Performing simple tests to explore questions, for example: 'What is the best material for an umbrella?for lining a dog basket?for curtains?for a bookshelf?for a gymnast's leotard?' How can we describe materials?			example the leaves falling off trees and buds opening • Compare and contrast what they have found out about different plants. • Garden plants such as roses, tulips, poppies, daffodils are planted intentionally. • How do plants grow?		
Year 2	Habitats Organisms, growth, energy, fish, amphherbivore, omnivore, carnivore, predate Explore and compare the difficiency, dead, and things that he Identify that most living thin suited and describe how differenceds of different kinds of a depend on each other Identify and name a variety of including microhabitats Describe how animals obtain to animals, using the idea of a sin name different sources of forms. Sorting and classifying things dead or were never alive, and they should describe how the exploring questions for example tree dead in winter? and talk questions. They could construct a simple grass, cow, human). Describe the conditions in diff (under log, on stony path, under	nibians, mammals, birds, reptiles, tor, prey, food chain, senses rerences between things that are lave never been alive gs live in habitats to which they are erent habitats provide for the basic nimals and plants, and how they of plants and animals in their habitats, their food from plants and other mple food chain, and identify and	Animal, including humans Vocabulary: Maturity, reproduce, die, offspring, life cycle, food chain, producer, consumer. Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance of humans of exercise, eating the right amounts of different types of food and hygiene Observing, through video or first-hand observation and measurement, how different animals, including humans, grow Asking questions about what things animals need for survival and what humans need to stay healthy Suggesting ways to find answers to their questions. What is the life cycle of an animal?	New Plants Vocabulary: Flowering, reproduction, germinate, generations. Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy Observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth Setting up a comparative test to show that plants need light and water to stay healthy. How are new plants made?	Changing materials Vocabulary: Changed, physical force, absorb, crumbly, property, drag, suitable, strongest, flexible. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • Compare the uses of everyday materials in and around school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs) • Observing closely, identifying and classifying the uses of different materials and recording their observations How materials can change?	Pushes and Pulls Vocabulary: Motion, pushing, pulling, slow down, speed up, direction. By the end of the year, children will understand: • Objects can move (be in Motion) in various ways-roll, slide and bounce; • The pushing or pulling of an object can affect its motion; • Pushing or pulling can do three things, slow down, speed up or change the direction of an object; • The larger the push/pull the bigger the effect on motion; and • Pushing and pulling objects can change their shape. Why and how do objects move?
Year 3	Rocks and soils Vocabulary: Rock, crystal, mineral, ore, grains, fossil, sedimentary, igneous, metamorphic, porosity, hardness, soil, humus, silt.	Plants and animals (Skeletons) Vocabulary: Vertebrates, invertebrates, skeleton, exoskeleton, vital organs, support, mass, muscles, connect, contract.	 Light Vocabulary: Light source, shiny, transparent, opaque, reflective, translucent. Know that you need light to see things and that dark is the absence of light 	Forces and magnets Vocabulary: Magnet, force, attraction, repulsion, metal, non-contact force, pole. • Notice that some forces need contact between 2 objects but magnetics forces can act at a distance	States of matter Vocabulary: State, solid, liquid, gas, gravity, viscous, heating, cooling, melting, boiling, evaporate, freeze, condense.	Plants and animals - plants (how they make their food) Vocabulary: Carbon dioxide, oxygen, roots, soil, leaves. Describe the main requirements of plants for light and growth



•	Compare and group rocks based
	on appearance and simple
	physical properties

- Know that solids are made from rocks and organic matter
- Set up simple fair tests
- Collect and present data from scientific experiments
- Uses results from experiments to draw simple conclusions

Explain the functions of skeletons and muscles in humans and animals

How does the length of the bone tell you/inform you of how the animal moves?

How does the length of the bone affect its bending strength? (Challenge - think about diameter)

- Notice that you need light to see things and that dark is an absence of light
- Know how shadows are formed
- Find patterns in the way shadows change
- Set up simple fair tests
- Collect and present data from scientific experiments
- Present findings using tables, graphs and charts appropriately
- Take accurate measurements using a range of scientific apparatus
- Uses results from experiments to draw simple conclusions or suggest improvements
- Identify differences, similarities or changes linked to simple scientific ideas and processes
- Use straightforward scientific evidence in support of ideas

How do shadows change throughout the day?

How does the number of sheets of tracing paper affect how transparent they are?

Explore first how to measure

- Know that magnets can attract or repel each other and attract some materials
- Group materials according to their magnetic properties
- Describe magnets having north and south poles
- Set up simple fair tests
- Collect and present data from scientific experiments
- Uses results from experiments to draw simple conclusions or suggest improvements
- Present findings using tables, graphs and charts appropriately
- Take accurate measurements using a range of scientific apparatus
- Identify differences, similarities or changes linked to simple scientific ideas and processes
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How does the distance between magnets affect the force between them? - Class led.

How does the material put between magnets affect their force of attraction? Child led

- Compare and group materials together as solids, liquids and gases
- Know that some materials change state when they are heated or cooled
- Explain the main stages of the water cycle
- Know that temperature affects the rate of evaporation
- Set up simple fair test
- Collect and present data from scientific experiments
- Uses results from experiments to draw simple conclusions or suggest improvements
- Take accurate measurements using a range of scientific apparatus
- Present findings using tables, graphs and charts appropriately
- Identify differences, similarities or changes linked to simple scientific ideas and processes
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How does the size of the ice block affect how quickly it melts? How does the shape of ice (surface area) affect how quickly ice melts? Describe the functions of different parts of flowering plants
 How does the size of a seed affect how tall it grows before it gets leaves?

How does the size of a seed affect how quickly it grows after germinating?

Comparison of results and feedback

Year 4 Electricity

Vocabulary: Electricity, batteries, mains electricity, device, wires, circuit, conductor, insulator.

- Construct a simple series electrical circuit, identifying and naming its basic parts
- Know that a lamp in a circuit can only be on if the switch is closed
- Know some common conductors and insulators, and know metals make good conductors
- Collect and present data from scientific experiments
- Uses results from experiments to draw simple conclusions or suggest improvements

<u>Plants and animals - Living things</u> <u>and their habitats</u>

Vocabulary: Classification, classification key, vertebrates, invertebrates, food chain, nutrients, organism, mammal, amphibian, insect, bird, environmental change.

- Use classification keys to identify plants or animals in their local or wider environment
- Know that environments can change and this sometimes can pose dangers to living things
- Construct and interpret a variety of food chains, identifying producers, predator and prey

<u>Plants and animals - Teeth and digestive system</u>

transparency - science day.

Vocabulary:

Meat, dairy, protein, grains, root vegetable, carbohydrates, fat, insulation, fruits, minerals, vitamins, fibre, healthy, digestion.

- Describe the simple function of basic parts of the digestive system in humans
- Know the different types of teeth, and their functions, in humans
- Uses results from experiments to draw simple conclusions or suggest improvements
- Identify differences, similarities or changes linked to simple scientific ideas and processes
- Use straightforward scientific evidence in support of ideas

Plants and animals - Life cycle

Vocabulary:

Pollination, seed, stamen, stigma, ovaries, petals, dispersal, germination.

- Describe the differences in life cycle of a M, an A, and I and a B
- Describe the life process of reproduction in some plants and animals
- · Describe changes of humans as they grow old
- Plan scientific investigation

Mixtures and separating them

Vocabulary:

Substance, mixture, dissolving, solution.

- Compare and group every day materials based on their properties
- Give reasons, based on comparative and fair test evidence, for particular uses of everyday materials
- Know how a (Liquid) solution can be created and describe how this change can be reversed
- Demonstrate that dissolving, mixing and changes of state are all reversible changes
- Explain how mixtures can be separated through filtering, sieving and evaporation
- Plan scientific investigation , including controlling variables where appropriate
- Can use scientific equipment to take accurate measurement (repeating when appropriate)
- Record data using diagrams, keys, tables and a range of graphs



Year 5	Fossils Vocabulary: Million, billion, evolution, extinct, fossil, palaeontologist, organism, microorganism, bacteria, microscope. • Describe in simple terms how fossils are formed	How does the season affect the population of wildlife in the school grounds? - Minibeasts - Pondlife Small mammals/ birds Making new substances Vocabulary: Matter, mass, react, irreversible • Explain that some changes form new materials and that these changes are usually irreversible • Plan scientific investigation, including controlling variables where appropriate • Can use scientific equipment to take accurate measurement (repeating when appropriate) • Record data using diagrams, keys, tables and a range of graphs • Identify differences, similarities or changes linked to simple scientific ideas and processes • Repeat conclusions and explanations (written or oral) from scientific investigations	Forces Vocabulary: Water resistance, air resistance, friction, undulation, interlock, gears, pulley, lever • Identify effects of air resistance, water resistance and friction between moving surfaces • Recognise that some of mechanisms (L, P & G) allow a smaller force to have a greater effect • Plan scientific investigation, including controlling variables where appropriate • Can use scientific equipment to take accurate measurement (repeating when appropriate) How does the roughness of the surface affect friction? How does adding holes to a parachute affect the time it takes to fall? How does the weight affect the distance an object needs to be from the pivot to	simple scientif		Sound Vocabulary: Sound, pitch, volume, vibration, ear drum, frequency, amplitude. Recognise that vibrations from sound travel through the medium of the ear Can find patterns between the pitch of sound and the features of the objects that produce it Can find patterns between the volume of a sound and the features of the object that produced it Know that sounds get fainter as the distance from the sound increases Set up simple fair test Collect and present data from scientific experiments Uses results from experiments to draw simple conclusions or suggest improvements How does the thickness of a material
Year 6	Light Vocabulary:	Electricity Vocabulary:	Evolution and inheritance Vocabulary:		All living things (Circulation) Vocabulary:	affect how it blocks sound?
	 Shadow, opaque, transparent, translucent, reflection, pupil., Recognise that light appears in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye 	 Current, voltage, volts, conductor, resistance, resistor, Associate the brightness of a lamp or the volume of a buzzer with the number of voltage of cells used in a circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the 	 Evolution, natural selection, population, variation, competition, adapted, offspring, inheritance, Charles Darwin, Lamarck, HMS Beagle. Recognise that living things have changed over time and that fossil provide information about living things that inhabited the Earth millions of years ago Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different Oxygen, sugar(glucose), lungs, muscles, cind offspring, on the same classify common observable characteristics and including microorganisms, plants and characteristics Give reasons for classifying plants and characteristics Identify and name the main parts of explain the functions of the heart, blants 		fied into broad groups according to and based on similarities and differences, animals and animals based on specific the human circulatory system, and	



- Explain that we see things because light travels from a light source to our eyes or from a light source to objects and the to our eyes
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that cast them
- Plan scientific investigation, including controlling variable where appropriate
- Taking measurement, using a range of scientific equipment, with increasing accuracy and precision
- Using test results to make predictions to set up further comparative and fair tests
- Recording data and results of increasing complexity using scientific diagrams and tables, classification keys, tables, and bar and line graphs
- Identify differences, similarities or changes linked to simple scientific ideas and processes
- Report conclusions and explanations (written or oral) from scientific investigations

How does the material the light is shining on affect the direction of travel?

How does the distance between a light source and an object affect its shadow?

- loudness of the buzzers and on/off position of switches
- Use recognised symbols when representing a simple circuit
- Plan scientific investigation, including controlling variable where appropriate
- Taking measurement, using a range of scientific equipment, with increasing accuracy and precision
- Using test results to make predictions to set up further comparative and fair tests
- Recording data and results of increasing complexity using scientific diagrams and tables, classification keys, tables, and bar and line graphs
- Identify differences, similarities or changes linked to simple scientific ideas and processes
- Report conclusions and explanations (written or oral) from scientific investigations
 How does the voltage affect the brightness of a bulb?

How does the component type affect the battery life? (longitudinal)

 How does the number of devices in a circuit affect how long the battery lasts?

- Describe the ways in which nutrients and water are transported within animals, including humans
- Plan scientific investigation, including controlling variable where appropriate How does the fat in your diet affect the way your body functions? (Longitudinal)

How does the muscle exercised affect our pulse rate?

Year 1 & Year 2

- Asking simple questions and recognising that they can be answered in different ways
- Observing closely, using simple equipment
- Performing simple tests
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions.

Year 3	Year 4	Year 5	Voor 6
year 3	year 4	rear 5	Year 6



Set up simple fair tests Verbally suggest ways to test the scientific question given and the type of investigation needed. Begin to verbally discuss what must change and what must remain the same in an investigation. Begin to discuss and understand why a simple fair test is needed.	Set up simple fair tests Develop their confidence in identifying and making some decisions about which type of investigation is most suited to answer a scientific question. Plan by discussing and recording the parts of an investigation that remain the same and those that change. Understand why and when a simple fair test is needed.	Plan scientific investigation, including controlling variables where appropriate Begin to use their previous experiences of the world around them to explore ideas and raise scientific questions. Begin to select and plan the most appropriate type of investigation. Begin to recognise and record when and how to set up comparative and fair tests. Begin to identify the variables that must change or remain the same by explaining why.	Plan scientific investigation, including controlling variable where appropriate Confidently use their previous experiences of the world around them to explore ideas and raise scientific questions. Develop their ability to select and plan the most appropriate type of investigation. Develop their ability to recognise and record when and how to set up comparative and fair tests. Independently identify the variables that must change or remain the same by explaining why and how this would impact the investigation.
Collect and present data from scientific experiments Begin to verbally discuss ways for grouping, sorting and classifying. Begin to discuss and record a simple key if necessary Begin to discuss verbally any observations that need to be made, how long to observe for and any equipment they may need for this. Begin to look for naturally occurring patterns and decide what data to collect to identify them.	Collect and present data from scientific experiments Develop their ability to verbally discuss ways for grouping, sorting and classifying. Develop their ability to discuss and record a simple key if necessary Develop their ability to discuss verbally any observations that need to be made, how long to observe for and any equipment they may need for this.	Can use scientific equipment to take accurate measurement (repeating when appropriate) Develop their independence in making decisions about what observations to make, what measurements to use, how long to make them for and whether they need repeating Develop their independence in choosing the most appropriate equipment and begin to explain how to use it accurately. Begins to question when repeated readings are necessary.	Taking measurement, using a range of scientific equipment, with increasing accuracy and precision Independently make decisions about what observations to make, what measurements to use, how long to make them for and whether they need repeating Independently choose the most appropriate equipment and explain how to use it accurately. Uses a wide range of scientific equipment accurately and precisely. Understand when to take repeated readings
Uses results from experiments to draw simple conclusions or suggest improvements Begin to verbally draw simple conclusions from findings. Are able to suggest basic improvements to their investigation. Begin to raise further questions based on results.	Uses results from experiments to draw simple conclusions or suggest improvements Verbally draw simple conclusions and record key ideas. Can suggest improvements to their investigations including some predictions of results. Creates further scientific enquiry based on results.	Record data using diagrams, keys, tables and a range of graphs Further develop their ability to develop and record keys and other forms of information to identify, classify and describe living things and materials. Begins to decide on how to record data from a choice of familiar approaches.	Using test results to make predictions to set up further comparative and fair tests Use results to identify when further test and observations might be needed.
Take accurate measurements using a range of scientific apparatus Develop their ability to take accurate measurements using standards units in a range of equipment. Develop their ability to make careful observations.	Take accurate measurements using a range of scientific apparatus Independently makes systematic and careful observations. Able to independently take accurate measurements using standard units on a range of relevant equipment.	Identify differences, similarities or changes linked to simple scientific ideas and processes Begin to look for different causal relationships in their data. Begin to identify patterns that might be found in the natural environment. Begin to use their scientific understanding to explore changes that occur in investigations.	Recording data and results of increasing complexity using scientific diagrams and tables, classification keys, tables, and bar and line graphs Securely record keys and other forms of information to identify, classify and describe living things and materials by identifying patterns that might be found in their natural environment. Securely chooses appropriate way to record data from a choice of familiar approaches. Uses appropriate scientific diagrams and labels, classification keys, tables and a variety of graphs to record results.
Present findings using tables, graphs and charts appropriately Begin to record findings using simple scientific language using drawings, labelled diagrams, keys, bar charts and tables	Present findings using tables, graphs and charts appropriately Records findings using simple scientific language using drawing, labelled diagrams, keys, bar charts and tables. Begins to make some decisions on appropriate ways to record findings. Classifies and presents data in a variety of ways to help answer scientific questions.	Repeat conclusions and explanations (written or oral) from scientific investigations Develop their ability to use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.	Identify differences, similarities or changes linked to simple scientific ideas and processes Develop their independence to look for different causal relationships in their data. Can identify patterns that might be found in the natural environment. Securely use their scientific understanding to explore changes that occur in investigations.
Identify differences, similarities or changes linked to simple scientific ideas and processes Begin to use taught scientific knowledge to explain their results and findings.	Identify differences, similarities or changes linked to simple scientific ideas and processes Develops their ability to apply scientific knowledge taught to explain results and findings.		Report conclusions and explanations (written or oral) from scientific investigations Confidently use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.



		Report findings from enquiries including the degree of trust they hold in their results.
Use straightforward scientific evidence in support of ideas	Use straightforward scientific evidence in support of ideas	Identify scientific evidence that has been used to support
Begin to read and spell scientific vocabulary correctly	Confidently read and spell scientific vocabulary correctly	ideas
Begin to draw simple conclusions and apply some simple	Draw simple conclusions and apply some scientific language	Can recognise when secondary sources will be most useful to
scientific language to talk about what they have found out.	first to talk about and later write about what they have found	research their idea.
	out.	Begins to separate opinion from fact when researching their
	Begins to find things out using secondary sources of	ideas.
	information.	Begin to identify evidence that refutes or supports their ideas,
		Understand how scientific ideas have developed over time.