Science End of Year Expectations updated 2023-2024 (Spring 2024)

Class	Autumn One	Autumn Two	Spring One	Spring Two	Summer One	Summer Two
Reception	**Autumn 1 (7)** **I am a superhero!**	**Autumn 2 (7)** **Down in the woods** **Christmas**	**Spring 1 (6)** **Dinosaurs**	**Spring 2 (6)** **People who help us**	**Summer 1 (6)** **Growing and changing**	**Summer 2 (7)** **We're on a journey**
	Skills • Use senses to explore the world around them • Talk about what they notice around them in the natural world and draw simple pictures • Identify seasonal changes from Summer to Autumn • Describe the weather • Identify and use natural materials		**Skills** • Use simple equipment to make observations etc • Take photographs to make observations and begin to write words to describe • Identify seasonal changes from Autumn to winter and winter to spring • Describe the weather		**Skills** • Make observations and record using drawings and writing e.g. plants growing • Make comparisons and sort in to groups • Test things out • Identify seasonal changes from spring to summer • Describe the weather	
	Planning and objective support PLAN EYFS Matrices.pdf **Summary of Science in EYFS** PLAN Summary of Science in EYFS.pdf					
	How we will practise these skills. • Explore and ask simple questions • Use magnifying glasses • Sort objects into groups (classifying) • Take photos on iPad and compare to what they've noticed in their natural environment. • Use a large class thermometer to look at temperature.		**How we will practise these skills.** • Make simple predictions and explore what happens • Use magnifying glasses • Ask questions and explore the answers • Compare temperature to Autumn term using a large class thermometer.		**How we will practise these skills.** • Explain simply what they have noticed. • Use the outdoor / wildlife camera • Use digital microscopes • Use comparative language to explore differences and similarities • Grow plants/flowers using a variety of gardening tools • Ask questions and explore the answers • Compare temperature to Autumn and Spring terms using a large class thermometer.	
	Early Learning Goals **Children at the expected level of development will:** -Explore the natural world around them, making observations and drawing pictures of animals and plants; -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; -Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.					
Year One	**Animals – grouping and sorting**	**Naming materials**	**Animals – including humans**	**Materials**	**Plants**	**Seasonal changes**
	Statutory teaching					
	Pupils should be taught to: • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Pupils should be taught to: • distinguish between an 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 together a variety of everyday materials on the basis of their simple physical properties	Pupils should be taught to: • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Pupils should be taught to: • distinguish between an 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 together a variety of everyday materials on the basis of their simple physical properties	Pupils should be taught to: • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees	Pupils should be taught to: • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies
	Prior Learning					
	• Name and describe people who are familiar to them**. (Reception - Humans)**	**Possible learning done at nursery – see knowledge matrices for further guidance.**	• Name and describe people who are familiar to them. **(Reception - Humans)**	**Possible learning done at nursery – see knowledge matrices for further guidance.**	• Explore the natural world around them. (**Reception – Living things and their habitats)** • Recognise some environments that are different to the one in	• Explore the natural world around them. **(Reception – Seasonal changes)** • Describe what they see, hear and feel whilst outside. **(Reception – Seasonal changes)**

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					which they live. **(Reception – Living things and their habitats)**	• Understand the effect of changing seasons on the natural world around them. **(Reception – Seasonal changes)**
	Key vocabulary					
	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves **(see knowledge matrices for further guidance)**	**Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic,** foil**, card/cardboard, rubber,** wool, clay**, hard, soft, stretchy,** stiff**, bendy, floppy,** waterproof, absorbent, breaks/tears, **rough, smooth,** shiny, dull, see-through, not see-through	**Head, body, eyes, ears, mouth, teeth, leg,** tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves **(see knowledge matrices for further guidance)**	**Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic,** foil**, card/cardboard, rubber,** wool, clay**, hard, soft, stretchy,** stiff**, bendy, floppy,** waterproof, absorbent, breaks/tears, **rough, smooth,** shiny, dull, see-through, not see-through	**Leaf, flower,** blossom**, petal,** fruit**,** berry, **root, seed, trunk, branch, stem,** bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	**Weather (sunny, rainy, windy, snowy etc.)** **Seasons (winter, summer, spring, autumn)** **Sun, sunrise, sunset, day length**
	Planning and objective support Knowledge Matrices Y1-6 FV.pdf					
	PLAN (Planning for assessment) **Examples of work for each unit – use links below**					
	PLAN Example of Work Y1 Animals including humans FV.pdf PLAN Example of Work Y1 Animals including humans Zeeshan.pdf	PLAN Example of Work Y1 Everyday materials FV.pdf PLAN Example of Work Y1 Everyday materials Olivia.pdf	PLAN Example of Work Y1 Animals including humans FV.pdf PLAN Example of Work Y1 Animals including humans Zeeshan.pdf	PLAN Example of Work Y1 Everyday materials FV.pdf PLAN Example of Work Y1 Everyday materials Olivia.pdf	PLAN Example of Work Y1 Plants FV.pdf	PLAN Example of Work Y1 Plants FV.pdf PLAN Example of Work Y1 Plants FV.pdf
	Other possible activities					
	Group animals according to whether they can swim/ fly / is covered in fur / has 4 legs etc Draw an animal and label with how it moves and what its body is covered in. Look at what animals eat and group according to whether they are a herbivore, carnivore or omnivore. Place animals in a venn diagram Group animals according to whether they are fish, amphibians, reptiles, birds or mammals. Recognise the differences & similarities between the structure of animal' bodies – head, body, tail, way of moving, body covering. Draw and label similar animals with similar parts identified. Sort animals using a branching database based on features of animals Write a non-chronological report about animals – English link.	Materials hunt around the classroom focussing on wood, plastic, glass, metal, water, and rock. Matching activity – name to material. Look at objects made from different materials. Can they identify which materials the objects are made from? Object challenge – which material have all the objects got in common? Draw a picture of an object and label the materials it is made from. Iron out any misconceptions (plastic and metal sometimes get mixed up) Make material faces e.g. A face made from wood, another made from metal etc.	Establish humans are classed as animals. (Mammals) Name and label simple body parts of humans. Look at similarities and differences between people – hair colour, eye colour, skin tone, height etc. Play parachute games according to differences. Talk about respecting that people are different. Make a line tallest to shortest, oldest to youngest etc. Make a class pictogram about children's eye colour in our class then children to answer questions based on it. Talk about our 5 senses and which part of our body we use for them. Carry out investigations on different smells, tastes and what they feel.	Recap on material names from Autumn term & identify objects made from these materials. Sort materials into group according to simple physical properties e.g. hard / soft or rough / smooth, transparent, flexible etc. Use story of the 3 little pigs to identify materials used. Which were strong / weak etc. Create a house using materials they think will be strong enough for the 3 little pigs and test to see if they withstand a blow (like the fox) or even a hairdryer! Look at different homes around the world and what they are made from. Think about the properties of these materials and why they might be used e.g. igloos - *snow & ice - plenty available, easy to shape, other materials such as wood, not easily available etc.* Look at the word 'waterproof' look at different materials and test them. Which material would be best to use to make an umbrella for teddy to keep dry in the rain? (Link to weather)	Discuss plants children know names of already. What's the same / different about them? Leaves, petals etc. Go on a plant hunt in the school grounds to try to find as many as they can. What do they notice about each plant? Look at plants closely in class. Identify the stem, leaves, flower head, seeds, roots etc. Look closely at the different parts using a microscope. Make a flowering plant collage picture and label the parts of the plant. Look at fruits and vegetables that grow on plants / are part of a plant. Identify which part the veg is from e.g. carrot is the root. Plant beans in a transparent cup and watch them grow, measuring weekly and recording observations. Observe cross sections of different fruits looking carefully at the seeds/stones. Which fruit has the biggest / smallest seeds? Where are the seeds on a strawberry? Observational drawing of the inside of a fruit. Look at trees as plants and their different leaves – sort according to if they are evergreen or deciduous. Make leaf rubbings. Garden centre role play.	Every week, over the course of the year, record the weather on a class weather chart. Take a photo at the end of each half term. In the summer term, compare all the photos of our weather chart. When was it most rainy / sunny, stormy? Etc. Relate this to the seasons. Children individually record their own weather diary over the course of a week noticing difference and similarities over this time. Make a rain gauge and collect rain over the period of a week. Predict then measure the results. Observe seasonal changes throughout the year.
	Link to end of unit assessment documents					
	Y1 Animals (Other Animals).docx	Y1 Material Properties (Everyday Materials).docx	Y1 Animals (Humans).docx	Y1 Material Properties (Everyday Materials).docx	Y1 Plants (Common Names & Basic Structure).docx	Y1 Plants (Common Names & Basic Structure).docx

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	Use of everyday materials	Living things and their habitats	Animals including humans	Plants
Year Two	**Statutory teaching**			
	Pupils should be taught to: • 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	Pupils should be taught to: • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food	Pupils should be taught to: • 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 for humans of exercise, eating the right amounts of different types of food, and hygiene	Pupils should be taught to: • 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
	Prior Learning			
	• Distinguish between an object and the material from which it is made. **(Y1 - Everyday materials)** • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. **(Y1 - Everyday materials)** • Describe the simple physical properties of a variety of everyday materials. **(Y1 - Everyday materials)** • Compare and group together a variety of everyday materials on the basis of their simple physical properties. **(Y1 - Everyday materials)**	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. **(Y1 - Plants)** • Identify and describe the basic structure of a variety of common flowering plants, including trees. **(Y1 - Plants)** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. **(Y1 - Animals including humans)** • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. **(Y1 - Animals including humans)** • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). **(Y1 – Animals, including humans)** • Observe changes across the four seasons. **(Y1 - Seasonal changes)**	• Identify and name a variety of common animals that are carnivores, herbivores and omnivores. **(Y1 - Animals, including humans)** • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **(Y1 - Animals, including humans)**	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. **(Y1 - Plants)** • Identify and describe the basic structure of a variety of common flowering plants, including trees. **(Y1 - Plants)**
	Key vocabulary			
	Names of materials – **wood, metal, plastic, glass, brick, rock, paper, cardboard** Properties of materials – as for Year 1 plus **opaque, transparent and translucent, reflective, non-reflective, flexible, rigid** **Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching**	**Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed** Names of local habitats e.g. pond, woodland etc. Names of micro-habitats e.g. under logs, in bushes etc.	**Offspring, reproduction, growth, child, young/old stages** (examples - chick/hen, baby/child/adult, caterpillar/butterfly) **Exercise, heartbeat, breathing, hygiene, germs, disease, food types** (examples – meat, fish, vegetables, bread, rice, pasta)	As for Year 1 plus **light, shade, sun, warm, cool, water, grow, healthy**
	Planning and objective support Knowledge Matrices Y1-6 FV.pdf			
	PLAN (Planning for assessment) **Examples of work for each unit – use links below**			

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	PLAN Examples of Work Y2 Uses of everyday materials FV.pdf		PLAN Examples of Work Y2 Living things and their habitats FV.pdf	PLAN Examples of Work Y2 Animals including humans FV.pdf	PLAN Examples of Work Y2 Plants FV.pdf	
	Other possible activities					
	• Material hunt in and around school grounds • Identify, sort and classify materials using venn diagrams • Recognise materials on Granny's house (LRRH) • Create a picture of a cottage using materials and printing using paints • Letter to the 3 Bears to explain materials they should be using • Generating questions about materials and how we could test them • Testing materials based on aesthetics, flexibility and waterproofness • Planning trip and what clothes we would need and why • Write predictions and test the strength of the houses the 3 pigs built • To manipulate and test the properties of some solid materials • To compare materials and think about where they come from (natural or man-made		• considered animals in this country and animals in other countries • looked at the effects of wildfires on animals in Australia • Bug hunt and mini-beast search throughout school grounds • Seasonal changes in our environment • Record animals and creatures that we may find at different times of the year • To create a model of an animal's habitat • Compare an animal's habitat to our own – Mole vs Human • To compare living vs. non-living things – fact files • To design a bug hotel	• Identify changes in ourselves since being a baby and how we will change as we grow • Measuring and comparing sizes of feet in correlation to height • Consider the difference between NEEDS and WANTS • What do humans NEED to survive – compare to other animals • Look at food groups and importance of each – healthy food plate • Measuring the impact of exercise on our bodies and its overall importance (muscles, organs and weight) • Planning and designing healthy meals • Planning and designing healthy lifestyles and exercise (creating games) • Consider importance of sleep and personal hygiene Posters for around class and school regarding washing hands – link to spread of viruses	• Planting and growing grass seeds • Measuring, observing and recording the effects of sunlight and water on plants ('grass-heads') • Plan an experiment and write predictions • Investigating the amount of seeds in different fruits and other foods • Label the parts of a flower (revisit plants in Y1) • Planting root vegetables outside – applying knowledge of needs of plants • Taking photos of plants/flowers and comparing to humans	
	Link to end of unit assessment documents					
	Y2 Material Properties (Uses of Materials).docx		Y2 Environment (Living things and their habitats).docx	Y2 Animals (Animal survival and growth).docx Y2 Animals & Health (How we grow & stay healthy).docx	Y2 Animals & Health (How we grow & stay healthy).docx	
Year Three	**Animals including humans - skeletons**	**Rocks**	**Forces and magnets**	**Light**	**Plants**	**Animals including humans - nutrition**
	Statutory Teaching					
	Pupils should be taught to: • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement	Pupils should be taught to: • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter	Pupils should be taught to: • compare how things move on different surfaces • notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing	Pupils should be taught to: • recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows changes	Pupils should be taught to: • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Pupils should be taught to: • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement
	Prior Learning					
	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. **(Y1 - Animals, including humans)** • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. **(Y1 - Animals, including humans)** • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). **(Y1 - Animals, including humans)** • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). **(Y2 - Animals, including humans)**	• Distinguish between an object and the material from which it is made. **(Y1 - Everyday materials)** • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. **(Y1 - Everyday materials)** • Describe the simple physical properties of a variety of everyday materials. **(Y1 - Everyday materials)** • Compare and group together a variety of everyday materials on the basis of their	• Explore the natural world around them. **(Reception – Forces)** • Describe what they see, hear and feel whilst outside. **(Reception – Forces)** • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **(Y2 - Uses of everyday materials)**	• Describe what they see, hear and feel whilst outside. **(Reception – Light)** • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **(Y1 - Animals, including humans)** • Describe the simple physical properties of a variety of everyday materials. **(Y1 - Materials)**	• Observe and describe how seeds and bulbs grow into mature plants. **(Y2 - Plants)** • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **(Y2 - Plants)**	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. **(Y1 - Animals, including humans)** • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. **(Y1 - Animals, including humans)** • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). **(Y1 - Animals, including humans)** • Find out about and describe the basic needs of animals, including humans, for survival

	• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **(Y2 - Animals, including humans)**	simple physical properties. **(Y1 - Everyday materials)** • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. **(Y2 - Uses of everyday materials)**				(water, food and air). **(Y2 - Animals, including humans)** • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **(Y2 - Animals, including humans)**
	<u>Key vocabulary</u>					
	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	Rock, stone, pebble, boulder, grain, **crystals, layers,** hard, soft**, texture,** absorb water**,** soil, fossil, marble, chalk, granite, sandstone, slate**, peat, sandy/chalk/clay soil, sedimentary, igneous, metamorphic**	**Force,** push, pull, twist, **contact force, non-contact force, magnetic force,** magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, **attract, repel, magnetic material, nickel, metal, iron,** steel**, poles, north pole, south pole**	Light, **light source,** dark, **absence of light,** transparent, translucent, opaque**,** shiny, **matt, surface, shadow,** reflect, mirror**,** sunlight, dangerous	**Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)**	**Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals,** fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine
	Planning and objective support <u>Knowledge Matrices Y1-6 FV.pdf</u>					
	<u>PLAN (Planning for assessment)</u> **Examples of work for each unit – use links below**					
	<u>PLAN Examples of Work Y3 Animals including humans FV.pdf</u>	<u>PLAN Examples of Work Y3 Rocks FV.pdf</u>	<u>PLAN Examples of Work Y3 Rocks FV.pdf</u>	<u>PLAN Examples of Work Y3 Rocks FV.pdf</u>	<u>PLAN Examples of Work Y3 Rocks FV.pdf</u>	<u>PLAN Examples of Work Y3 Animals including humans FV.pdf</u>
	<u>Possible other activities:</u>					
	• Make a healthy snack in DT • Look at the food groups • Look at the nutrition in food we eat • Look at the types of food animals eat and compare carnivores, herbivores and omnivores • Explore ways to stay healthy and compare what we think is the most important • To design a balanced meal	• To compare and classify rocks; to think about ways we can classify things • To learn the terms and classify rocks into igneous, metamorphic and sedimentary • To look at what Earth is made up of (crust, mantle, etc) • To compare how rocks behave – what happens when we put in water, acid, scratch, etc? • Look at how fossils are made and 'make' own fossils • Look at life of Mary Anning • See what soil is made up of	• Examine what a force is and what different ways we can act on things – gravity, wind, buoyancy, magnetic force, friction, etc. • Discuss what a magnet is • Test what materials are magnetic • Test which magnets are stronger • Generalise behaviour of magnetic			• Look at function of human skeleton • Examine how skeleton grows and compare R/Y6 children's various bone sizes/lengths and what they can do (I.e. jump further, throw further) • Look at other types of skeletons and classify animals as vertebrates, invertebrates, hydrostatic skeletons etc
	<u>Link to end of unit assessment document</u>					
	<u>Y3 Animals (Skeletons & Movement).docx</u>	<u>Y3 Rocks.docx</u>	<u>Y3 Forces and Magnets.docx</u>	<u>Y3 Light (reflections & shadows).docx</u>	<u>Y3 Light (reflections & shadows).docx</u>	<u>Y3 Animals (Health & Nutrition).docx</u>

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Year Four

Animals (including humans)	Electricity	States of matter	Sound	Living things and their habitats
Statutory teaching				
Pupils should be taught to: • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey	Pupils should be taught to: • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors	Pupils should be taught to: • compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Pupils should be taught to: • identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases	Pupils should be taught to: • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things
Prior Learning				
Identify and name a variety of common animals that are carnivores, herbivores and omnivores. **(Y1 - Animals, including humans)** • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). **(Y2 - Animals, including humans)** • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **(Y2 - Animals, including humans)** • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. **(Y3 - Animals, including humans)**	**N/A**	• Distinguish between an object and the material from which it is made. **(Y1 - Everyday materials)** • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. **(Y1 - Everyday materials)** • Describe the simple physical properties of a variety of everyday materials. **(Y1 - Everyday materials)** • Compare and group together a variety of everyday materials on the basis of their simple physical properties. **(Y1 - Everyday materials)** • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. **(Y2 - Uses of everyday materials)** • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **(Y2 - Uses of everyday materials)**	• Describe what they see, hear and feel whilst outside. **(Reception – Sound)** • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **(Y1 - Animals, including humans)**	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. **(Y1 - Plants)** • Identify and describe the basic structure of a variety of common flowering plants, including trees. **(Y1 - Plants)** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. **(Y1 - Animals including humans)** • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). **(Y1 – Animals, including humans)** • Identify and name a variety of plants and animals in their habitats, including microhabitats. **(Y2 - Living things and their habitats)**
Key Vocabulary				
Digestive system, digestion, mouth, teeth, saliva, **oesophagus, stomach, small intestine,** nutrients**, large intestine, rectum, anus, incisor, canine, molar, premolars,** herbivore, carnivore, omnivore**, producer,** predator, prey, food chain	**Electricity, electrical appliance/device, mains,** plug, **electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol** N.B. Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6.	Solid, liquid, gas**, state change,** melting, freezing**, melting point, boiling point, evaporation,** temperature, **water cycle**	Sound**, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation**	**Classification, classification keys,** environment, habitat, human impact, positive, negative, **migrate**, hibernate
Planning and objective support Knowledge Matrices Y1-6 FV.pdf				

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	PLAN (Planning for assessment) **Examples of work for each unit – use links below**				
	PLAN Examples of Work Y4 Animals including humans FV.pdf	PLAN Examples of Work Y4 Electricity FV.pdf	PLAN Examples of Work Y4 States of matter FV.pdf	PLAN Examples of Work Y4 Sound FV.pdf	PLAN Examples of Work Y4 Living things and their habitats FV.pdf
	Other possible activities:				
	• Labelling and ordering parts of the digestive system. • Identifying functions of the digestive system – matching activity. • Write a story about a shrunken scientist who journeys through the digestive system. • Identify the different teeth in humans and explain their function. Classify and compare animal teeth (sorting activity; create new animal and describe the teeth it has and the reason it has them).	• Appliances that use electricity. • Differences between mains and battery. • Dangers of electricity poster. • Building a range of circuits using bulbs, buzzers and motors and drawing these. • Build a circuit to test conductors and insulators and identify the differences.	• Pose scientific questions about states of matter. • Compare and group materials. • Respond to statements about states of matter, linking these to real-life experience. • Write a definition of the different states of matter. • Investigate whether all liquids have the same runniness (practical). • Investigate whether all gases are the same (online research; create poster) • Investigate solids becoming liquids (practical). • Investigate liquids becoming gases (practical). • Completing water cycle document and explaining the water cycle.	• Investigate how sound is produced. • Investigate how well sound travels through different materials. • Investigate why sounds have a different pitch. Investigate the relationship between vibrations and volume. • Investigate the effect of distance on sound. (All the above are practical investigations.) • Build a musical instrument and explain how it works. •	• Explore the natural environment (nature hunt). • Find and record data of minibeasts in the local environment. • Sort, group, compare and classify living things (picture card activity used to populate table). • Construct and interpret a food chain (picture card activity for one chain; cut and stick appropriately in books for second chain). • Create a poster on the impact of environmental change.
	Link to end of unit assessment documents				
	Y4 Animals (Teeth, Eating & Digestion).docx	Y4 Electricity.docx	Y4 States of Matter.docx	Y4 Sound.docx	Y4 Environment (Living Things and their Habitats).docx

Year Five	**Changes of materials (reversible and irreversible)**	**Animals (human life cycles)**	**Earth and space**	**Properties and changes of materials (investigating)**	**Living things and their habitats**	**Forces**
	Statutory teaching					
	Pupils should be taught to: • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals	Pupils should be taught to: • Describe the changes as humans develop to old age • Animals are alive; they move, feed, grow, use their senses, reproduce, breath/respire and excrete.	Pupils should be taught to: • describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon relative to the Earth • describe the sun, Earth and moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	Pupils should be taught to: • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	Pupils should be taught to: • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	Pupils should be taught to: • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect
	Prior Learning					

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	• Notice that animals, including humans, have offspring which grow into adults. **(Y2 - Animals, including humans)** • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **(Y3 - Plants)**	•Notice that animals, including humans, have offspring which grow into adults**. (Y2 - Animals, including humans)**	• Explore the natural world around them. **(Reception – Earth and space)** • Describe what they see, hear and feel whilst outside. **(Reception – Earth and space)** • Observe changes across the four seasons. **(Y1 - Seasonal changes)** • Observe and describe weather associated with the seasons and how day length varies. **(Y1 - Seasonal changes)**	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. **(Y2 - Uses of everyday materials)** • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **(Y2 - Uses of everyday materials)** • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. **(Y3 - Forces and magnets)** • Compare and group materials together, according to whether they are solids, liquids or gases. **(Y4 - States of matter)** • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). **(Y4 - States of matter)** • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **(Y4 - States of matter)**	Compare how things move on different surfaces. **(Y3 - Forces and magnets)** • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. **(Y3 - Forces and magnets)** • Observe how magnets attract or repel each other and attract some materials and not others. **(Y3 - Forces and magnets)** • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. **(Y3 - Forces and magnets)** • Describe magnets as having two poles. **(Y3 - Forces and magnets)** • Predict whether two magnets will attract or repel each other, depending on which poles are facing. **(Y3 - Forces and magnets)**	Compare how things move on different surfaces. **(Y3 -Forces and magnets)** •Notice that some forces need contact between two objects, but magnetic forces can act at a distance. **(Y3 -Forces and magnets)** •Observe how magnets attract or repel each other and attract some materials and not others. **(Y3 -Forces and magnets)** •Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. **(Y3 -Forces and magnets)** •Describe magnets as having two poles. **(Y3 -Forces and magnets)** •Predict whether two magnets will attract or repel each other, depending on which poles are facing. **(Y3 -Forces and magnets)**
	Key Vocabulary					
	Life cycle**, reproduce, sexual, sperm, fertilises,** egg, live young**, metamorphosis, asexual, plantlets, runners,** bulbs, cuttings	**Puberty** – the vocabulary to describe sexual characteristics See support through RSE/PSHE documents (The plan for sex ed.docx)	**Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune),** spherical**, solar system, rotates,** star**, orbit,** planets	**Thermal/electrical insulator/conductor,** change of state**,** mixture, **dissolve, solution, soluble, insoluble, filter,** sieve**, reversible/non-reversible change,** burning, rusting**,** new material	Force, **gravity,** Earth**, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears**	Force, **gravity,** Earth**, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears**
	Planning and objective support Knowledge Matrices Y1-6 FV.pdf					
	PLAN (Planning for assessment) **Examples of work for each unit – use links below**					
	PLAN Examples of Work Y5 Living things and their habitats FV.pdf	PLAN Examples of Work Y5 Animals including humans FV.pdf	PLAN Examples of Work Y5 Earth and space FV.pdf	PLAN Examples of Work Y5 Properties and changes of materials FV.pdf	PLAN Examples of Work Y5 Properties and changes of materials FV.pdf	PLAN Examples of Work Y5 Forces FV.pdf
	Other possible activities:					
	• Describe the lifecycle of a plant - children will carry out several enquiries to see if plants can be propagated from different parts of the parent plant, not just seeds. Children should draw & /or photograph the plant parts before placing in compost to grow. • Give groups of children a non-sprouting & a sprouting potato each. Compare them. • Look at lifecycle of non flowering plants • Describe and compare lifecycles of mammals • Lifecycle of birds • Life cycle of amphibian Compare these lifecycles.	• Timeline of stages of growth of humans • Changes during puberty • Research gestation periods of animals and compare them to humans • Find out and record the mass of babies as they grow.	• Use globes and torches to explore how the earth moves around the sun and how we have night and day. Use pencil as axis and explore seasons and sunrise and sunset. Look at length of day and year in relation to the movements of the earth around the sun and on its own axis. • Use Phizzi science moon phases kit and explore practically the phases of the moon. • Research facts about planets and create a non-fiction booklet to explain day and night and seasons and info about a planet.	• Investigate thermal insulators and conductors • Investigate paper strength • Investigate absorbency - different materials • To plan and implement an investigation into the electrical conductivity/insulation of materials – present findings as graphs.	• Design and make a sieve to separate solids • What happens when you add water? Provide the children with different things to add warm water to – some materials that melt (marg), some that dissolve (jelly crystals, sugar, salt Smarties coffee), some that remain suspended in the liquid (flour) and some that are insoluble (chocolate).. Ask children to predict what happens and record observations in their own format/table	• Label forces • Separating books challenge and moving jelly with chopsticks challenge • Sort pictures of forces into useful and not useful examples of friction. • Allow children to explore how rollers and wheels reduce friction. • Use force-meters to test moving shoe boxes • use Newton meters to accurately read and record measurements in Newtons of the gravitational pull of a variety of objects – ch'n to record these results accurately. • Felix Baumgartner's free fall from space on YouTube • how they can invent the best parachute. They can compare three different parachutes, changing variables.

					• How quickly can the sugar cube dissolve? Investigation • Observation - mix warm milk and vinegar to create casein plastic, bicarb and vinegar to inflate balloon.	
	Link to end of unit assessment documents					
	Y5 Environment (Living Things and their Habitats - Observing Life cycles).docx	Y5 Animals (Human Life Cycles).docx	Y5 Earth and Space.docx	Y5 Material Properties (Testing Material Properties).docx	Y5 Material Changes (Irreversible changes).docx Y5 Material Changes (Reversible changes).docx	Y5 Forces.docx
Year Six	**Living things and their habitats**	**Evolution and inheritance**	**Electricity**	**Light**	**Animals including humans**	
	Statutory teaching					
	Pupils should be taught to: • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics	Pupils should be taught to: • recognise that living things have changed over time and that fossils 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 ways and that adaptation may lead to evolution	Pupils should be taught to: • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram	Pupils should be taught to: • recognise that light appears to travel 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 • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	Pupils should be taught to: • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans	
	Prior Learning					
	• Recognise that living things can be grouped in a variety of ways. **(Y4 - Living things and their habitats)** • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. **(Y4 - Living things and their habitats)** • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. **(Y5 - Living things and their habitats)** • Describe the life process of reproduction in some plants and animals. **(Y5 - Living things and their habitats)**	• Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. **(Y2 - Living things and their habitats)** • Notice that animals, including humans, have offspring which grow into adults. **(Y2 - Animals, including humans)** • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **(Y3 - Plants)** • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. **(Y3 - Rocks)** • Recognise that environments can change and that this can sometimes pose dangers to living things. **(Y4 - Living things and their habitats)** • Describe the life process of reproduction in some plants and animals. **(Living things and their habitats - Y5)**	• Identify common appliances that run on electricity. **(Y4 - Electricity)** • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. **(Y4 - Electricity)** • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. **(Y4 - Electricity)** • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (**Y4 - Electricity)** • Recognise some common conductors and insulators, and associate metals with being good conductors. **(Y4 - Electricity)**	• Recognise that they need light in order to see things and that dark is the absence of light. **(Y3 - Light)** • Notice that light is reflected from surfaces. **(Y3 - Light)** • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. **(Y3 - Light)** • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. **(Y3 - Light)** • Find patterns in the way that the size of shadows change. **(Y3 - Light)** • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. **(Y5 - Properties and changes of materials)**	• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **(Y2 - Animals, including humans)** • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. **(Y3 - Animals, including humans**) • Describe the simple functions of the basic parts of the digestive system in humans. **(Y4 - Animals, including humans)** • Identify the different types of teeth in humans and their simple functions. **(Y4 - Animals, including humans)**	

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	Key Vocabulary				
	Vertebrates, fish**,** amphibians, reptiles, birds, mammals, **invertebrates,** insects, spiders, snails, worms, flowering, non-flowering	**Offspring, sexual reproduction, vary, characteristics, suited, adapted,** environment, **inherited, species, fossils**	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage N.B. Children do not need to understand what voltage is, but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used interchangeably.	As for Year 3 - Light, plus **straight lines, light rays**	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle
	Planning and objective support Knowledge Matrices Y1-6 FV.pdf				
	PLAN (Planning for assessment) **Examples of work for each unit – use links below**				
	PLAN Examples of Work Y6 Living things and their habitats FV.pdf	PLAN Examples of Work Y6 Evolution and inheritance FV.pdf	PLAN Examples of Work Y6 Electricity FV.pdf	PLAN Examples of Work Y6 Light FV.pdf	PLAN Examples of Work Y6 Animals including humans FV.pdf
	Other possible activities				
	• Life Processes – MRS NERG • Hunt for living things in the school grounds • Sorting living things and classification – Invertebrates • Vertebrates – Fish, Amphibians, Reptiles, Birds, Mammals • Using Keys and making own keys • Sorting plants into flowering and non-flowering • Investigating leaves • Learning about Carl Linnaeus (binomial system) and constructing a timeline • Recognising Microbes (Bacteria, Viruses, Fungi) Making own using plasticine • Fact file • Investigating what happens to food left out • Recognising how microbes can be helpful and harmful • Class Novel -Running Wild – Michael Morpurgo	• Adaptation rap – Camel • Adaptations to Winter • Design a species and explain adaptations (revisit classification) • Make a Winter habitat • Build a shelter in Brinscall Woods with Reception buddies • Adaptation to Evolution • Chinese whispers to model the process of evolution • Look at fossils and make own out of plasticine • Learn about Mary Anning and write a diary entry/tongue twister • Survival of the fittest – Bird Beak Buffet activity • Family traits activity • Selective breeding – Dogs • Dog traits - Create your own dog and explain traits	• Construct a range of series circuits using bulbs, buzzers, motors, batteries, wires and switches (closed circuit in which the current follows one path). • Compare and give reasons for variations in how components function including the brightness of bulbs, loudness of buzzers, on/off switches (volts, batteries, wires, components…) • Use recognised symbols to represent a simple circuit in a diagram • Use circuit diagrams to construct a variety of complex circuits and predict if they will work • Set up a circuit to investigate insulators and conductors – Do pencils conduct electricity? Graphite in a HB pencil is a very good conductor • Safety when working with electricity • Springfields Trip - Circuits, safety, energy sources, conductors and insulators • D.T - Battery operated vehicle • English - Safety in the kitchen writing task • Blackpool Illuminations challenge		
	Link to end of unit assessments				
	Y6 Living Things & their Habitats (Classification).docx	Y6 Living Things & their Habitats (Evolution & Inheritance).docx	Y6 Electricity.docx	Y6 Light.docx	Y6 Animals (Exercise, Health & The Circulatory System).docx

*This chart only shows the **statutory requirements** for your year group – for further (non-statutory) objectives please visit https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study

Working Scientifically		
Key Stage 1 During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • 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	**Lower Key Stage 2** During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.	**Upper Key Stage 2** During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments