Meadowbank Primary School
Lifelong Learners, Leaders of Change, Lasting Legacy

Science Progression of Skills, Knowledge and Vocabulary Map 2024-2025

Understanding the World	**Foundation Stage**					
	EYFS Statutory Educational Programme: **Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.**					
The Natural World	**Foundation Stage 1** **Cause and Effect, Structures**			**Foundation Stage 2** **Cause and Effect, Structures**		
	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Comments and ask questions about aspects of their familiar world, such as the place where they live or the natural world. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.			Explore the natural world around them. Look closely at similarities and differences, patterns and change in nature. Describe what they see, hear and feel whilst outside. Make observations of animals, plants and matter, and explain why some things occur, and talk about changes. Recognise some environments that are different from the one in which they live. Understand the effect of changing seasons on the natural world around them. Begin to understand the effect their behaviour can have on the environment. Know about similarities and differences in relation to places, objects, materials and living things.		
Year Group Connected Concepts	**Key Stage 1** **Cause and Effect, Structures**		**Lower Key Stage 2** **Cause and Effect, Structures**		**Upper Key Stage 2** **Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Working Scientifically to Enquire	Ask simple questions using their prior knowledge.	Ask simple questions and recognising that they can be answered in different ways.	Ask and answer relevant questions.	Ask relevant questions and use different types of scientific enquiries to answer them.	Plan different types of scientific enquiries to answer questions.	Plan different types of scientific enquiries to answer questions including recognising and controlling variables where necessary.
Working Scientifically To Observe	Observe closely, talking about what is noticed.	Observe closely, using simple equipment. Use their observations and ideas to suggest answers to questions.	Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Use straightforward scientific evidence to answer questions or to support their findings.	Set up simple practical enquiries, comparative and fair tests. Use straightforward scientific evidence to answer questions or to support findings. Draw simple conclusions, make predictions or new values, suggest improvements and raise further questions.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Identifying scientific evidence that has been used to support or refute ideas or arguments and use this when making predictions.

Working Scientifically To Conduct	Perform simple tests and talk about how to make it fair.	Perform simple tests including some fair tests and making predictions. .	Use results to draw simple conclusions, make predictions and suggest improvements and raise further questions referring to evidence. Set up simple practical enquiries, comparative and fair tests, reporting on findings from enquiries.	Make systematic and careful observations and where appropriate make accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Identify differences, similarities or changes related to simple scientific ideas and processes.	Use test results to make predictions to set up further comparative and fair tests. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Use test results to make predictions to set up further comparative & fair tests. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Working Scientifically to Respond	Identify and classify using a given criteria.	Identify and classify using their own criteria. Gather and record data to help in answering questions.	Identify differences, similarities or changes related to simple scientific ideas and processes. Gather, record, classify and present data in a variety of ways to help in answering questions.	Gather, record, classify and present data in a variety of ways to help answer questions, record findings sing simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Report on findings from enquiries, including oral & written explanations, displays or presentations of results and conclusions.	Report and present findings from enquiries, including conclusions, causal relationships and explanations.	Offer practical suggestions of how working methods could be used. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral & written forms such as displays & other presentation.
Year Group Connected Concepts	**Key Stage 1 Cause and Effect, Structures**		**Lower Key Stage 2 Cause and Effect, Structures**		**Upper Key Stage 2 Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Plants	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.	Observe and describe how seeds and bulbs grow into mature plants. Find out about and describe how plants need water, light and a suitable temperature to grow and stay healthy.	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.			
Key vocabulary	*Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stem, bud. Names of trees in local area, garden and wild flowering plants.*	*Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud. Names of trees in local area, garden and wild flowering plants, light, shade, sun, warm, cool, water, grow, healthy.*	*Photosynthesis, pollen, pollination, seed formation, seed dispersal (wind, animal, water), pollen, absorb, nutrients, reproduce, germination, stamen, style.*			
Assessment and indicators	TAPS focussed assessment. Leaf looking. Name plants and trees they see regularly. Name and label parts plants and trees (leaves, stem/trunk, branches flowers, roots) Identify trees which lost their leaves and those who keep them all year, naming them evergreen and deciduous. **Pattern seeking. Identifying, grouping and classifying.**	TAPS focussed assessment: Compare plant growth in different conditions. **Observing over time.** **Comparative and fair tests.** Describe how plants that have grown from seeds and bulbs have developed over time. Identify plants that grew well in different conditions. Spot similarities and differences between bulbs and seeds. Nurture seeds and bulbs into mature plants identifying the different requirements of different plants.	TAPS focussed assessment: How much water do plants need? **Observing over time.** **Comparative and fair tests.** Explain the function of the parts of a flowering plant. Describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal and germination. Give different methods of pollination and seed dispersal, including examples. Draw and label a diagram of their created flowering plant to show its parts and their role and method of pollination and seed dispersal.			
Year Group Connected Concepts	**Key Stage 1 Cause and Effect, Structures**		**Lower Key Stage 2 Cause and Effect, Structures**		**Upper Key Stage 2 Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Animals, including humans	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.	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.	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. Find out and describe that food contains a range of different nutrients – carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water and fibre - that are needed by the body to stay healthy. Plan a daily diet to contain a good balance of nutrients. Identify and describe that humans and some other animals have skeletons and muscles for support, protection and movement.	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.	Describe the changes as humans develop to old age.	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.
Key vocabulary	*Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, reptile, amphibian, mammal, omnivore, carnivore, herbivore, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue*	*Offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, survival, water food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)*	*Nutrition, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, skeleton, bones, muscles, support, protect, skull, ribs, spine, muscles, joints.*	*Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, molar, incisor, canine, herbivore, carnivore, producer, omnivore.*	*Puberty, vocabulary linked to describe a range of sexual characteristics.*	*Heart, pulse, rate, pumps, blood, blood vessel, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle.*
Assessment and indicators	TAPs focussed assessment: **Animal classification. Identifying, grouping and classifying.** Name a range of animals which includes animals from each of the vertebrate groups and describe the key features of named animals. Describe what a range of animals eat, identifying if they are carnivores, herbivores and omnivores.	**Observing over time.** Describe how animals, including humans, have offspring which grow into adults, using some of the appropriate names for the stages. Demonstrate how insects change (more than a butterfly). State the basic needs of animals, including humans, for survival. Discuss the importance for humans of exercise.	**Research Using Secondary Sources.** Name the nutrients found in food. State that to be healthy we need to eat the right types of food to give us the correct amount of these nutrients. Use **secondary sources** to find out the types of food that contain the different nutrients. Name some bones that make up the skeleton,	TAPs focussed assessment: **Teeth in liquid. Observing over time.** **Research Using Secondary Sources** Sequence the basic parts of the digestive system and describe what happens in each part. Point to the three different types of teeth in their mouth and talk about their shape and what they are used for.	TAPs focussed assessment. Growth survey**.** **Pattern seeking.** Explain the changes that takes place in boys and girls during puberty. Explain how a baby changes physically as it grows and also what it is able to do.	TAPs focussed assessment. Heart rate poses. **Pattern seeking.** **Research Using Secondary Sources** Identify the main parts of the human circulatory system, explaining the function of each part. Explain the positive and negative effects on diet, exercise, drugs and lifestyle on the body.

	Sort and group animals using similarities and differences. Label some external parts of the human body. Match which parts of the body are associated with each sense by describing its function.	Name some foods in each section of the Eat well Plate and explain why eating healthy is important for humans. Discuss why good hygiene is important for humans to be healthy.	giving examples of they support, help us move and provide protection. Describe how muscles and joints help bones move. Describe what would happen if humans didn't have a skeleton.	Construct food chains and name producers, predators and prey within a habitat. Identify how the teeth in animal skulls show they are carnivores, herbivores or omnivores.		Describe how nutrients and water are transported within animals, including humans.
Year Group Connected Concepts	**Key Stage 1 Cause and Effect, Structures**		**Lower Key Stage 2 Cause and Effect, Structures**		**Upper Key Stage 2 Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Materials and Matter	Materials 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.	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. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Rocks and Soils 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 a rock. Recognise that soils are made from rocks and organic matter.	States of Matter. 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.	Materials 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. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. 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. 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.	
Key vocabulary	*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, rough, smooth, shiny, dull, see through, not see through.*	*Use/useful, suitable/unsuitable, hard/soft, stretchy/stiff. rigid/flexible, waterproof/absorbent, strong/weak, transparent/opaque, shape, push, pull, twist, squash, bend, stretch.*	*Rock, grain, crystals, layers, soil, fossil, marble, chalk, granite, sandstone, slate, soil, porous, durable (e.g. peat, sandy/ chalk/clay soil).*	*Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle*	*Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/not reversible, change, burning, rusting, new material.*	
Assessment and indicators	TAPs focussed assessment. Ways to test reflectiveness. **Identifying, classifying and grouping**. Match an object with the material it is made from. Describe the properties of materials. Sort materials using their properties and discuss their similarities and differences.	TAPs focussed assessment: Materials Hunt. **Comparative and fair tests.** Name an object, say what material it is made from, identify the properties of that material and make links between its properties and its use. Describe the actions used to change the shape of an object. Describe similarities and differences between different materials, making links to their uses.	TAPs focussed assessment. Reporting on Rocks. **Identifying, classifying and grouping**. Name some types of rock and give physical features of each. Classify rocks in a range of ways using scientific vocabulary. Explain that fossils are formed when things that have lived are trapped within a rock. Explain that soils are made from rocks and also contain living/dead matter. Identify plant/animal matter in soil.	**Observing over time.** **Identifying, classifying and grouping**. Identify and name properties of solids, liquids and gases, giving reasons to justify why something is a solid liquid or gas. Identify everyday examples of melting and freezing and how melting and freezing points vary. Measure and research the melting points of some materials. Give everyday examples of evaporation and condensation. Describe the water cycle, making links to how evaporation and condensation are fundamental to its process. Explain how the rate of evaporation is effected by temperature.	TAPs focussed assessment Insulating layers. **Comparative and fair tests.** **Identifying, classifying and grouping**. Compare and group together everyday materials on the basis of their properties. Give evidence from test to justify everyday uses of materials. Explain what dissolving is, giving examples. Name equipment used for filtering and sieving. Describe how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. Describe simple reversible and non-reversible changes to materials, giving examples.	
Year Group Connected Concepts	**Key Stage 1** **Cause and Effect, Structures**		**Lower Key Stage 2** **Cause and Effect, Structures**		**Upper Key Stage 2** **Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Seasonal changes	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.					
Key vocabulary	*Weather (sunny, rainy, windy, snowy etc.) seasons (winter, summer, spring, autumn) sun, sunrise, sunset, day length*					
Assessment and indicators	TAPs focussed assessment. Seasonal change Name four seasons and identify when in the year they occur. Observe and describe weather in different seasons. Describe days being longer in summer and shorter in winter.					
Year Group Connected Concepts	**Key Stage 1** **Cause and Effect, Structures**		**Lower Key Stage 2** **Cause and Effect, Structures**		**Upper Key Stage 2** **Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Living things		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		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	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. Grow and observe plants that reproduce asexually e.g. strawberries, spider plants, potatoes.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.

		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.		sometimes pose dangers to living things.		Evolution and Inheritance 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.
Key vocabulary		*Living, dead, never been alive, suited, suitable, basic need, food, food chain, shelter, move, feed, names of local habitats (e.g. pond, woodland), names of micro habitats (e.g. under logs, in bushes)*		*Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate.*	*Lifecycle, mammal, amphibian, germination, seed formation, insect, bird, pollination, life processes, plants, animals, reproduction, environment, dispersal, growth, living, eggs, and seeds.*	*Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and nonflowering.* *Evolution and Inheritance* *Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.*
Assessment and indicators		TAPs focussed assessment Woodlice habitat. **Identifying, classifying and grouping.** Find a range of items and sort into living, dead, never living. Name plants/animals which live in different habitats and micro habitat. Discuss the features of the animal/plant and how they are suited to the habitat. Construct a food chain that starts with a plant and has		TAPs focussed assessment. Local survey. **Identifying, classifying and grouping.** **Research using secondary sources.** Name living things in local and wider habitats, giving key features that helped identify them. Use classification keys to identify plants and animals. Give examples of how an environment may change both naturally and due to	TAPs focussed assessment. Life Cycle research. **Research using secondary sources.** **Observing of time.** Using diagrams, describes the lifecycles of mammals, amphibians and insects. Compare two or more animal life cycles. Explain how some plants and animals reproduce, including how a range of plants reproduce asexually, drawing from observations.	TAPs focussed assessment. Invertebrate research/Outdoor keys. **Identifying, classifying and grouping.** **Research using secondary sources.** Give examples of animals in the five vertebrate groups and some of the invertebrate groups. Give key characteristics of the five vertebrate groups and some invertebrate groups.

		the arrows pointing in the correct direction.		human impact, positively and negatively.		Give examples of flowering and non-flowering plants. Use classification keys to identify unknown plants and animals. Create own classification keys. Give a number of characteristics that explain why an animal belongs to a particular group.
						Evolution and Inheritance. **Pattern seeking.** Explain the process of evolution. Give examples of how plants and animals are suited to their environment. Give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth. Give examples of things that lived millions of years ago and the fossil evidence to support this.
Year Group Connected Concepts	**Key Stage 1 Cause and Effect, Structures**		**Lower Key Stage 2 Cause and Effect, Structures**		**Upper Key Stage 2 Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Light and Sound **Earth and Space**			Light 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 our eyes Recognise that shadows are formed when the light source is blocked by a solid object	Sound 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	Earth and Space 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 Earth rotation to explain day and night due	Light 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.

			Find patterns in the way the size of the shadows change	strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the sound source increases	to the apparent movement of the sun across the sky.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Key vocabulary			*Light, light source, dark, absence of light, transparent, translucent, opaque, matt, surface, shadow, reflect, mirror, sunlight.*	*Sound, source, vibrate, vibration, travel, pitch, volume, faint, loud, insulation.*	*Earth, Sun, Moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, Pluto (dwarf planet), spherical, solar system, rotates, star, orbit, planets, axis, night, day, season, galaxy, meteorite.*	*As for Year 3 - Light, plus straight lines, light rays*
Assessment and indicators			TAPs focussed assessment. Make shadows. **Pattern Seeking.** Describe how we see objects in lights and can describe dark as the absence of light. Clearly explain, giving examples, that objects are not visible in complete darkness. State that it is dangerous to view the sun directly and give precautions used to view the sun, for example in eclipses. Describe how shadows are formed. Demonstrate how shadows are formed by blocking light and how different levels of light will change the visibility of an object and its shadow.	TAPs focussed assessment. String telephones. **Pattern Seeking** Name sound sources and state that sounds are produced by the vibration of the object. Explain that sounds travel through different mediums such as air, water, metal. Find patterns between pitch and volume and the features of the object producing it. Give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder Demonstrate that sounds get fainter as the distance from the sound source increases.	TAPs focussed assessment. Solar System research/craters. **Research using secondary sources.** Describe the movement of the Earth and other planets relative to the sun in the solar system. Describe the sun, Earth and moon as approximately spherical bodies Using diagrams, show the movement of the Earth and moon and explain it. Explain the rotation of the Earth and how this causes night and day. Explain evidence gathered about the position of shadows in terms of movement of the Earth. Explain how a sundial works.	TAPs focussed assessment. Investigating shadows. **Pattern Seeking.** Describe with diagrams how light travels in straight lines, either from sources or reflected from other objects into our eyes. Describe with diagrams how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape.
Year Group Connected Concepts	**Key Stage 1 Cause and Effect, Structures**		**Lower Key Stage 2 Cause and Effect, Structures**		**Upper Key Stage 2 Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Forces and Magnets			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		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	
Key vocabulary			*Force, contact force, noncontact force, magnetic, magnet, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel. magnetic material, poles, north pole, south pole.*		*Gravity, earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears.*	

Assessment and indicators			TAPs focussed assessment. Testing the strength of magnets. I**dentifying, classifying and grouping.** Give examples of objects moving differently on different surfaces. Use results to make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun on that surface. Demonstrate that some forces need contact between 2 objects, but magnetic forces can act at a distance Identify that some metals, but not all, are magnetic. Through exploration, demonstrate and explain how like poles repel and unlike poles attract, and name unmarked poles. Draw diagrams using arrows to show the attraction and repulsion between the poles of magnets.		TAPs focussed assessment. Spinners. Demonstrate the effect of gravity acting on an unsupported object. Give examples of friction, water resistance and air resistance. Give examples of when it is beneficial to have high or low friction, water resistance, and air resistance. Demonstrate how pulleys, levers and gears work.	
Year Group Connected Concepts	**Key Stage 1** **Cause and Effect, Structures**		**Lower Key Stage 2** **Cause and Effect, Structures**		**Upper Key Stage 2** **Cause and Effect, Structures**	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Electricity				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		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

				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.		buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.
Key Vocabulary				*Electrical, appliance, mains, circuit, component, cell, battery, positive, negative, connectors, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, symbol.*		*Circuits, complete circuit, circuit diagram, circuit symbol, voltage* *nb: 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*
Assessment and indicators				TAPs focussed assessment. Does it conduct electricity? **Pattern Seeking.** Name the components in a circuit. Make an electric circuit. Control a circuit including a light bulb using a switch. Name some metals that are conductors and some materials that are insulators. Explain how a switch works and connect a range of different switches, identifying the parts that are insulators and conductors.		TAPs focussed assessment. Bulb brightness. **Pattern Seeking\ Comparative and fair tests.** Explain how a circuit operates to achieve particular operations, such as control the light for a torch with different brightness's or make a motor go faster or slower. Carry out fair tests exploring changes in circuits. Draw a circuit using recognised symbols.

				Communicate structures of circuits using drawings.		