

Science medium term planning

The Science Curriculum at The Pines:

The science curriculum aims to help develop children's sense of excitement and curiosity about the world around them. It aims to provide them with the skills and knowledge to be able to use science to be able to answer scientific questions and to predict how things will behave and why. It aims to provide children with opportunities to learn through practical activities and to develop scientific enquiry skills which will help them to understand the world around them and to be able to apply these skills across the curriculum.

Skills and Knowledge to be found within the Science Skills Ladder.



Intent

At the Pines we want all children to be naturally curious about the world around them and to embrace their sense of wonder about natural world. We aim to help children develop and understanding about the world which they live in and prepare them for living increasingly scientific and technological world. Scientific enquiry skills are embedded in each topic, in science lessons we aim to encourage the skills of exploring and investigation including; observing, measuring, predicting, hypothesising, experimenting, problem solving, communicating, interpreting, explaining and evaluating. The curriculum is organised into topics which are revisited and developed throughout the years to allow children to build up upon their prior learning committing knowledge into their long-term memory with the aim for them to achieve a greater depth of understanding.

Key vocabulary for each topic is identified within the planning and children are encouraged to develop Science teaching at The Pines involves adapting the National Curriculum to ensure it is relevant for all learners but provides opportunities to all learners to be suitably challenged and achieve success, regardless of their starting point. During KS1 and KS2, where possible, science is linked to class topics but is taught as discrete units and lessons where needed. Teachers plan learning activities to suit their children's interests and to be as interactive and engaging. We ensure that all children are provided with rich learning experiences that make links to other areas of the curriculum.

Implementation

The curriculum is led and overseen by a science curriculum leader for primary and secondary and a member of the SLT, who regularly monitor, evaluate and review science teaching and learning. Using the National Curriculum as a basis we have designed a bespoke science curriculum. This is documented through knowledge maps and medium term planning for each topic across each Key Stage.

Science topics are taught in an order that makes sense in relation to other subjects and seasons. Teachers are provided with a clear knowledge maps which allows them to see the learning journey across Science for learners across all pathways. This enables teachers to know what prior learning and activities have taken place. Planning ensures that teachers are able to adapt lessons to ensure all learners can access challenging outcomes. Lessons are planned to enable children across the school to have hands-on experiences and take part in a range of experiments. Scientific enquiry takes place in every topic across the school and there is a coherent progression in the development of these skills across the year groups. Understanding in science is assessed regularly through a variety of formative assessment methods. Misconceptions are addressed immediately and where necessary, teachers will adjust subsequent lessons based on their assessments. Science resources at The Pines are regularly audited and we have a well-stocked science resource room and fully equipped science laboratory. This allows teachers to easily access the resources required for high quality teaching. Where appropriate, high quality fiction and non-fiction texts are used to compliment science topics.

The key aim of the Early Years curriculum is to provide high quality play with planning based on themes allowing pupils a holistic approach to learning. Planning the prime and specific areas of understanding the world and personal development aims to guide the pupils to explore the natural world, their own personal care needs, understanding the importance of healthy foods as well as their scientific enquiry. Within the continuous provision (activities provided throughout the day indoors and out) children have the opportunity to engage in activities that

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encourage them to explore, problem solve, observe, predict, think, make decisions and communicate about the world around them by engaging with play that is child led, play which is sensitively supported and extended by adults and play that is guided towards specific educational outcomes.

Impact - Children enjoy and are enthusiastic about science. Children are confident to engage in practical activities and experiments. There is a clear progression of children's work and teachers' expectations and skills and knowledge are carefully built up on topic by topic and year by year. Children are exposed to a scientific language rich environment are encouraged to explore the science topics with increasing independence.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	All about me	Colours everywhere	Out and about	Growing up	On the farm	At the seaside
Cycle 1	Biology Animals and humans	Chemistry Materials	Biology Animals and humans	Physics Seasonal changes	Biology Plants	Chemistry Materials
Cycle 2	Chemistry Materials	Biology Living things and habitats	Biology Plants	Chemistry Materials	Physics Seasonal changes	Biology Animals and humans
Cycle 3	Physics Lights	Physics Forces and magnets	Chemistry Rocks and Soil	Chemistry Rocks	Biology Animals and humans	Biology Plants
Cycle 4	Chemistry Materials	Biology Living things and habitats	Physics Electricity	Chemistry Materials	Physics Sound	Biology Animals and humans
Cycle 5	Biology Living things and habitats	Physics Forces	Chemistry Materials	Physics Earth and space	Biology Animals and humans	Chemistry Materials
Cycle 6	Physics Lights	Biology Animals and humans	Physics Lights	Biology Living things and habitats	Biology Evolution and inheritance	Physics Electricity
Cycle 7	Biology M- Organisms, Cells and movement ME - Organsims, Cells and movement E – Animals and Plants	Chemistry M – Particulate, nature of atoms and elements ME- Elements, mixtures and compounds E- Materials	Physics M- Space and Physics ME – Space E- Space	Biology M- Interdependence and photosynthesis ME – Environment E- Living things and Habitats	Chemistry M- Pure and impure substances ME- Separating mixtures E- Mixtures	Physics M- Sound ME – Sound E- Sound

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Cycle 8	Biology M- Human reproduction and health ME – Reproduction and Health E - Health	Chemistry M- Materials ME – Chemical reactions E- Reactions	Physics M- Light ME- Light E - Light	Biology M – Breathing and digestions ME – Digestion E - Digestion	Chemistry M – Periodic Table ME – Periodic table E – Solid, liquid, gas	Physics M – Sound ME – Sound E - Sound
Cycle 9	Biology M – Respiration ME – The respiratory system E – The respiratory system	Chemistry M – Acids and alkalis ME – Acid and Alkalis E – Safety	Physics M – Motions and forces ME – Motions and forces E - Forces	Biology M- Evolution and Inheritance ME- Evolution and Inheritance E –Inheritance	Chemistry M – Earth and Atmosphere ME – Earth and Atmosphere E – Earth	Physics M – Energy ME – Energy E – Energy
Cycle 10	Biology Pre ELC – The Human Body Unit 1 ELC - Component 1 - The Human Body GCSE - Block 2 and 3	Chemistry Pre ELC – Chemicals and Hazards ELC - Component 3 – Elements, Mixtures and Compounds GCSE - Block 5 and 8	Physics Pre ELC – Electricity ELC Component 5 – Energy, forces and the structure of matter GCSE - Block 6 and 7	Biology Pre ELC – Looking After Plants Unit 1 ELC Component 2 - Environment, evolution and inheritance GCSE - Block 2 and 4	Chemistry Pre ELC – Introduction to Everyday Materials ELC - Component 4 – Chemistry in Our word GCSE - Block 1 and 8	Physics Pre ELC – Recycling ELC - Component 6 – Electricity, magnetism and waves GCSE - Block 6 and 7
Cycle 11	Biology Pre ELC – The Human Body Unit 1 ELC - Component 1 and 2 GCSE - Block 2, 3 and 4	Chemistry Pre ELC – Materials and their uses Component 3 and 4 GCSE - Block 1, 4, 5 and 8	Physics Pre ELC – Sound and Hearing Component 5 and 6 GCSE - Block 6 and 7	Biology Pre ELC – Looking After Plants Unit 2 ELC/GCSE Revision or Portfolio Preparation	Chemistry Pre ELC – Materials and their Properties. ELC/GCSE Revision or Portfolio Preparation	Physics Pre ELC – Solids and Liquids ELC/GCSE Revision or Portfolio Preparation

Cycle 1 Autumn Term – Biology (Animals)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
Identify and name a variety of common animals. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Scientific enquiry	Identify and name some familiar animals. Name and label some of the common parts of the human body. Identify some of the senses. Scientific Enquiry	Explore pictures and objects related to animal (begin to observe and explore objects). Scientific enquiry

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<p>Ask simple questions and recognising that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests.</p>	<p>Ask simple questions. Observe patterns or changes. Explore and use simple equipment with support.</p>	<p>Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.</p>
<p>Lesson Ideas</p>	<p>Lesson Ideas</p>	<p>Lesson Ideas</p>
<ul style="list-style-type: none"> • Use 3D animal figures to discuss body parts. ‘Pin on’ animals activities - pin on key parts of animals body. • Labelling animals, people – body parts etc. (with symbols/words) • Trace around a person and label body parts. • Sorting animals according to foods they eat • Locate parts of the body on a real animal. • Split pin puppets. • Farm visit. • Using information books to research animals. • Carousel of activities linked to different senses – eg dark tent with light sources, smelling pots, headphones with different sounds, materials to feel. 	<ul style="list-style-type: none"> • Use symbols for CIP to match to large cut out of specific animal. • Printing with body parts and assigning symbol or words to the part they have printed with • In Forest School, hide, find and match laminated and Velcro-backed insects, birds, animals, leaves, natural objects. • Playing with and sorting animals-farm and wild • Children to be given different communicate in print body part labels and label stage 2 appropriately. OR stick the tail on the donkey type activity (for humans/animals etc) • Farm visit / Zoo visit 	<ul style="list-style-type: none"> • Box of animals - switch toys (we may need to purchase more) e.g monkey, dog, pig, cow etc), blow up animals, inflatable body/animals, chattering teeth. Anything to do with the animals including humans that will hold attention. • Explore moving animals or those that make noises - make different animals - collage/stencil. • Human - make large class template • Interactive whiteboard game matching animals to their noises • Hand and foot printing • The Body- Action Rhymes-Heads, Shoulders, Knees and Toes. • Food tasting senses, smell foods. • Visit to Twycross Zoo / Visit to a farm. • Use symbols for CIP to match to large cut out of specific animal.
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Key body parts, key animals.</p>	<p>Key body parts, key animals, sort</p>	<p>Key animals</p>

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Cycle 1 Autumn 2 - Chemistry (Materials)		
M - Pathway	ME - Pathway	E - Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Identify and name a variety of everyday materials. Describe the simple physical properties of everyday materials.</p> <p>Scientific enquiry Ask simple questions and recognising that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests.</p>	<p>Identify and name some familiar materials. Begin to group some familiar materials based on a given criteria.</p> <p>Scientific Enquiry Ask simple questions. Observe patterns or changes. Explore and use simple equipment with support.</p>	<p>Use the senses to explore a range of familiar materials (begin to explore materials in different ways).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Identify key materials in environment by going on a material hunt • What's in the box - can you guess the material from clues/ feeling it? • Three Little pigs link. Make all the houses from materials and try and blow them down using key vocabulary strong, weak • Make a simple feely book with a range of textures and label • Explore different materials - test properties • Identify and name different materials using real objects. Sort objects into material groups. • Find the best material to hold a liquid by carrying out a simple test 	<ul style="list-style-type: none"> • Feely bag Sorting materials - soft / hard Sorting materials - plastic / wood / metal. • Sorting objects by material using symbols. • Making collages - rough/smooth, shiny/dull etc. • Going on a materials hunt around school. • Three little pigs – explore properties of the house. • Feely bag with blind fold – find the.... 	<ul style="list-style-type: none"> • Texture trays with materials in . Explore how materials change e.g put them in water tray, sand tray, mud, etc • Handle objects made from wood, plastic, glass, paper, cloth and metal. • Play with toys made from different materials. • Attention Autism style different material toys and objects in box • Make a feely display, interactive sorting. • Smelling pots, explore textures with hands, feet. • Explore the sensory room and different properties and experiences. • TACPAC sessions
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign

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Properties, materials, wood, plastic, glass, fabric, hard soft, smooth, rough, strong, weak	Materials, wood, plastic, glass, paper, fabric	Feel, touch,
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Cycle 1 Spring 1 – Biology (Animals)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Identify and name an increasing variety of animals. Identify carnivores, herbivores and omnivores. Identify, name, draw and label an increasing range of parts of the human body and begin to name the function of parts of the body.</p> <p>Scientific enquiry Ask simple questions and recognising that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests.</p>	<p>Identify and name some familiar animals. Name, locate and label an increasing range of parts of the human body. Identify the senses and begin to link to parts of the body associated with each sense.</p> <p>Scientific Enquiry Ask simple questions. Observe patterns or changes. Explore and use simple equipment with support.</p>	<p>Explore an increasing range of pictures and objects related to animal (begin to observe and explore objects). Being to name or group animals in a variety of ways.</p> <p>Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Use 3D animal figures to discuss body parts. 'Pin on' animals activities - pin on key parts of animals body. • Labelling animals, people – body parts etc. (with symbols/words) • Trace around a person and label body parts. • Sorting animals according to foods they eat • Locate parts of the body on a real animal. • Split pin puppets. • Farm visit. • Using information books to research animals. • Carousel of activities linked to different senses – eg dark tent with light sources, smelling pots, headphones with different sounds, materials to feel. 	<ul style="list-style-type: none"> • Use symbols for CIP to match to large cut out of specific animal. • Printing with body parts and assigning symbol or words to the part they have printed with • In Forest School, hide, find and match laminated and Velcro-backed insects, birds, animals, leaves, natural objects. • Playing with and sorting animals-farm and wild • Children to be given different communicate in print body part labels and label stage 2 appropriately. OR stick the tail on the donkey type activity (for humans/animals etc) • Farm visit / Zoo visit 	<ul style="list-style-type: none"> • Box of animals - switch toys (we may need to purchase more) e.g monkey, dog, pig, cow etc), blow up animals, inflatable body/animals, chattering teeth. Anything to do with the animals including humans that will hold attention. • Explore moving animals or those that make noises - make different animals - collage/stencil. • Human - make large class template • Interactive whiteboard game matching animals to their noises • Hand and foot printing • The Body- Action Rhymes-Heads, Shoulders, Knees and Toes. • Food tasting senses, smell foods.

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		<ul style="list-style-type: none"> • Visit to Twycross Zoo / Visit to a farm. • Use symbols for CIP to match to large cut out of specific animal.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Key body parts, key animals, carnivore, herbivore, omnivore	Key body parts, key animals, sort	Key body parts, key animals

Cycle 1 Spring 2 - Physics – (seasonal changes)

M - Pathway	M/E - Pathway	E- Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
Name the seasons and know the changes across them. Know the weather associated with the seasons and how day length varies. Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.	Match seasons to clothing / activities. Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.	Explore seasons and weather through sensory based activities (participate in shared activities). Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Weather desk in class. Collect rain in a jar. • Create a weather chart. Identify the weather each day • Build a simple weather station to measure temperature, rainfall and wind direction using jug, thermometer and weather vane. Look at local and national weather forecasts on BBC website. Each day a different pupil could be the weather reporter. Record the weather each day in classroom. • STEM activity - take pictures of Forest School every day throughout the year • Match clothes to different weather • Label seasons, make seasons artwork 	<ul style="list-style-type: none"> • Join in with weather songs • Create a simple daily weather chart • Dress up in different clothes for different seasons • Display hot and cold activities - sorting and exploring - hot packs, ice packs, ice • Explore different environments and look at seasonal changes • Cut and dress the doll for the weather/season. • Pictorial representations of key seasons and the weather 	<ul style="list-style-type: none"> • Look at a different weather each week - sensory experience e.g. fan for wind, spray for rain, ice for cold, read a sensory story related to the weather • Feeling senses. Hot cold wet dry, linking pictures to seasons • Box of weather type activities - water spray, fake snow, leaves, twigs, soil, shaving foam, floaty material, torches etc • Create weather scenes, using arts and crafts materials - sun, rain etc • Create seasonal scenes- trees, beaches, snowmen etc. • Invite children to sit under an umbrella and squirt water over singing 'it's raining pouring' -use water spray for rain, shredded paper for snow. Sit

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<ul style="list-style-type: none"> • Observing changes in trees in forest school or at local parks. Take a picture of the same tree during each season. • Weather diaries using symbols. • Identifying suitable fabrics for different weather. Is it waterproof-experiment with different clothes/fabrics and water. • Sort clothing into groups waterproof and not waterproof. • Make a class book with photographs of the weather/clothes worn throughout the year for pupils to revisit. 		<p>children under plastic umbrella and squirt or sprinkle. Blow windmill or shake thick card for wind</p> <ul style="list-style-type: none"> • labelling weather, creating weather symbols, exploring materials (soil/leaves etc) • Take pupils out in all weather and photograph/video them so can revisit experiences.
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Spring, winter, summer, autumn, weather, sunny, windy rain, snow, temperature, hot, cold, seasons</p>	<p>Spring, winter, summer, autumn, sunny, windy rain, snow,</p>	<p>Sun, rain, wind, snow</p>

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Cycle 1 Summer 1 Biology (Plants)		
M - Pathway	M/E - Pathway	E- Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
Identify and name a variety of common wild and garden plants. Identify and describe the basic structure of flowering plants. Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.	Name some familiar plants. Know the main parts of a flowering plant. Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.	Explore flowering plants (begin group / make simple observations). Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • 3D plant display. Grow your own cress. • Labelling plants (words or symbols) Grow a plant in class and identify the features • Plant hunts in Forest School using simple tick sheets. • Regular planting, watering and caring for seeds, seedlings, plants, flowers, vegetables and fruit at allotment and in Forest School or on classroom windowsill. • Selection of bulbs and seeds to sort and identify. • Selection of common plants and pictures to match, have children seen them before? Can they match the plant to the seed packet • Velcro large plant - put together, label. • Forest school - look at plants - collect leaves, stem, flowers. • Measure growth of beans in - observe growth of shoots and roots and record digitally/drawing • Look at real flowers with magnifying glasses. 	<ul style="list-style-type: none"> • Cress heads • Regular planting, watering and caring for seeds, seedlings, plants, flowers, vegetables and fruit at allotment and in Forest School or on classroom windowsill. • Selection of bulbs and seeds to sort • Draw / collage a simple flower and label • Visit a garden centre with symbols/photographs of key parts of plant to identify on a tick sheet • Plant hunt in school grounds 	<ul style="list-style-type: none"> • Box of outside toys/activities - switch toys (we may need to purchase more) e.g. pop up plant, tickling leaves, dancing flower, spinning toys etc. Anything to do plants/flowers • Dry soil with range of pots, trowels for filling and emptying, repeat but allow pupils to add water • In forest school building structures using twigs, wooden blocks, mud castle, sand castles, pouring water using watering can etc. • Pot a plant all together Invite children to do their own, e.g. filling container with soil, seeds and water...repeat process until all the children have had a turn? Use symbols to focus on key vocabulary • Arts and crafts activities - decorating a flower or plant, labelling parts, tip over lentils in a pot 'soil or earth', squeeze paint to make stem 'stem' add some leaves 'leaves' and then print flower head 'petals • Going to the allotment, observing changes.

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<ul style="list-style-type: none"> Science Clips-growing plants EdCity-Granny's garden plus more 		<ul style="list-style-type: none"> Visit garden centre
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Plant, soil, leaf, stem, root, grow, petal, flower, water, seed, bulb	Plant, soil, leaf, flower, petal, root, grow, water,	soil, leaf, flower, seed

Cycle 1 Summer 2 - Chemistry (Materials)

M - Pathway	ME - Pathway	E - Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
Identify and name an increasing variety of everyday materials. Begin to identify common uses of different materials. Describe physical properties of a range of materials. Scientific enquiry Ask simple questions and recognising that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests.	Identify and name everyday materials. Begin to describe some properties of familiar materials. Scientific Enquiry Ask simple questions. Observe patterns or changes. Explore and use simple equipment with support.	Explore an increasing range of materials (begin to explore materials in different ways). Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.
Lesson Ideas	Lesson Ideas	Lesson Ideas

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<ul style="list-style-type: none"> Identify key materials in environment by going on a material hunt What's in the box - can you guess the material from clues/ feeling it? Three Little pigs link. Make all the houses from materials and try and blow them down using key vocabulary strong, weak Make a simple feely book with a range of textures and label Explore different materials - test properties Identify and name different materials using real objects. Sort objects into material groups. Find the best material to hold a liquid by carrying out a simple test 	<ul style="list-style-type: none"> Feely bag Sorting materials - soft / hard Sorting materials - plastic / wood / metal. Sorting objects by material using symbols. Making collages - rough/smooth, shiny/dull etc. Going on a materials hunt around school. Three little pigs – explore properties of the house. Feely bag with blind fold – find the.... 	<ul style="list-style-type: none"> Texture trays with materials in . Explore how materials change e.g put them in water tray, sand tray, mud, etc Handle objects made from wood, plastic, glass, paper, cloth and metal. Play with toys made from different materials. Attention Autism style different material toys and objects in box Make a feely display, interactive sorting. Smelling pots, explore textures with hands, feet. Explore the sensory room and different properties and experiences. TACPAC sessions
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Properties, materials, wood, plastic, glass, fabric, hard soft, smooth, rough, strong, weak	Materials, wood, plastic, glass, paper, fabric	Feel, touch,

Cycle 2 Autumn Term 1 - Physics (Materials)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
Know the suitability of a variety of everyday materials for their particular uses. Know solid objects can be changed by squashing, bending, twisting and stretching. Scientific Enquiry Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.	Describe the simple physical properties of everyday materials. Explore and describe how the shape of malleable materials can be changed. Scientific Enquiry Sort objects into groups. Make generalisations and connections to answer simple questions.	Explore and manipulate malleable materials (begin to respond to options). Scientific Enquiry Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration.

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Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Complete a table - what the object is, what material it is made of and investigate why - waterproof, insulator, etc. (matching a material to its use) • Investigate properties of objects. Identify what objects are made from and suitability. Bending and stretching malleable materials. • Link with recycling and squash down cans and bottles? Make play dough and squash it. • Sort objects by properties. • Make playdough as a group - discuss changes that happen when mixing and heating. • Children to change the shape of play dough and clay by squashing, rolling, pulling, stretching etc. • Build a bridge out of different materials, predict which one will be the best 	<p>Begin to collect and make simple records of their findings</p> <ul style="list-style-type: none"> • Look at all the various materials within school environment including Forest School, name, describe, chart findings materials they can twist, stretch, bend. Change different materials and experiment with ways of changing them (squash, roll, twist) • Setting and melting-jelly, chocolate, cheese. Freezing water/making ice lollies. • Bending/twisting/ripping materials for collages. • Selection of everyday/common objects and identify what they are made from. • Cook simple recipes such as fairy cakes that allow children to observe changes when liquid consistency is baked. • Make home-made malleable materials (see list in next column), observe and discuss materials at the start and what they look and feel like at the end. Observe and discuss the changes. 	<ul style="list-style-type: none"> • Ideas for malleable materials: <ul style="list-style-type: none"> • Mud, clean mud, porridge goo, marshmallow slime, cloud dough, jelly, cornflour, ice, foam, clay, playdough • Edible dough variations- baking dough, bread dough, pastry • Play dough variations- herb dough, chocolate dough, cinnamon dough, lavender dough, sparkle dough, sand dough • Salt dough- bake afterwards • Activity Ideas: <ul style="list-style-type: none"> • Sensory play with any of the malleable materials listed above • Explore with a range of tools to create different ways of changing materials • Cooking simple recipes such as biscuits and pastry that require manipulation of ingredients. • Put Mr. Potato Head accessories into dough balls (eyes, mouth, hat, feet, etc) • Different colours of dough, roll into balls and make different flavours of pretend ice cream- use ice cream scoop. • Dough snowmen, add googly eyes and sticks for arms. • Roll sausages and use different edge scissors to chop. • Dough birthday cakes and place wax candles in.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Materials, solid, change, bend, twist, stretch, waterproof, test, predict	Materials, change, bend, twist, stretch,	Change, squeeze, roll, twist

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Cycle 2 Autumn Term 2 - Biology (Living things and habitats)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the differences between living things, dead and non-living things. Know what a habitat is. Know what a food chain is and how animals depend on each other.</p> <p>Scientific Enquiry Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.</p>	<p>Group things into living and non-living. Match some familiar animals with their habitat. Know the diet of familiar animals.</p> <p>Scientific Enquiry Sort objects into groups. Make generalisations and connections to answer simple questions. Begin to collect and make simple records of their findings</p>	<p>Explore pictures and objects related to animals and their habitats (begin to match or group objects).</p> <p>Scientific Enquiry Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Identify living and non-living animals - sorting rings, • Identify habitats of animals and why the animal may live there, research food chains and create a diagram. • Match animals to where they live. Group photos into living and non-living • Sort into alive, dead, never alive. Discuss adaptations of animals and habitats. Name and group familiar animals and plants. Micro habitats and food chains • Go on a trip to visit a zoo or farm to find more living beings. • Simple version of MRS NERG - what makes thing living. • Watch videos of animals in habitat. Pictures of habitats - match to animals. Use plastic/soft animals to create food chain. • Pictorially record a food chain for a familiar animal 	<ul style="list-style-type: none"> • Sort out living and non-living things • Create menus (pictorial) for common animals • Build a bug hotel in forest school • Match animals to habitats (simple and common) creating habitats in the classroom discussing what they need to include (do this practically in tuff try) • Mini-beast, birds, scavenger hunts in Forest School using simple tick sheets. • Project Science books by Kingfisher - very good series for lots of simple projects related to topics of animals and habitats • Small world activities e.g woodland, jungle, under water with correct animals (pupils can choose through symbol correct animals to place in habitats) • Sort objects/ visual representations of living and on-living to sort (make these very obvious) 	<ul style="list-style-type: none"> • Box of animals - switch toys (we may need to purchase more) e.g monkey, dog, pig, cow etc), blow up animals, inflatable body/animals, chattering teeth. • Creating a habitat or scene using raw materials - soil, sand etc. Placing insect's toys inside. • Role play (if appropriate - children could pretend to be the different stage of the habitat using masks/dress up. • Sort animals and humans out (pictorially) • Create sensory worlds on tough spots with plastic or soft animals - make food chains - interconnecting rings, hanging mobiles. • Visit pet shop / farm / zoo / aquarium • Small world activities e.g woodland, jungle, under water with correct animals
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Living, non-living, dead, sort, food, food chain, habitat, diet,	Living, non-living, habitat, diet	Home, living, animal, same, different

Use skills ladders for assessment

Science medium term planning

Cycle 2 Spring Term 1 - Physics (Materials)		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Know the uses of an expanding variety of materials for particular uses. Explore how a range of materials and objects respond to squashing, bending, twisting and stretching and how material are selected for their properties. Scientific Enquiry Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.	Key Knowledge. Know the suitability of a variety of everyday materials for their particular uses. Know solid objects can be changed by squashing, bending, twisting and stretching. Scientific Enquiry Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions	Key Knowledge. Explore and manipulate a range of different materials (begin to respond to options). Begin to name some common materials. Scientific Enquiry Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration.
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Complete a table - what the object is, what material it is made of and investigate why - waterproof, insulator, etc. (matching a material to its use) • Investigate properties of objects. Identify what objects are made from and suitability. Bending and stretching malleable materials. • Link with recycling and squash down cans and bottles? Make play dough and squash it. • Sort objects by properties. • Make playdough as a group - discuss changes that happen when mixing and heating. • Children to change the shape of play dough and clay by squashing, rolling, pulling, stretching etc. • Build a bridge out of different materials, predict which one will be the best 	<ul style="list-style-type: none"> • Look at all the various materials within school environment including Forest School, name, describe, chart findings materials they can twist, stretch, bend. Change different materials and experiment with ways of changing them (squash, roll, twist) • Setting and melting-jelly, chocolate, cheese. Freezing water/making ice lollies. • Bending/twisting/ripping materials for collages. • Selection of everyday/common objects and identify what they are made from. • Cook simple recipes such as fairy cakes that allow children to observe changes when liquid consistency is baked. • Make home-made malleable materials (see list in next column), observe and discuss materials at the start and what they look and feel like at the end. Observe and discuss the changes. 	Ideas for malleable materials: <ul style="list-style-type: none"> • Mud, clean mud, porridge goo, marshmallow slime, cloud dough, jelly, cornflour, ice, foam, clay, playdough • Edible dough variations- baking dough, bread dough, pastry • Play dough variations- herb dough, chocolate dough, cinnamon dough, lavender dough, sparkle dough, sand dough • Salt dough- bake afterwards Activity Ideas: <ul style="list-style-type: none"> • Sensory play with any of the malleable materials listed above • Explore with a range of tools to create different ways of changing materials • Cooking simple recipes such as biscuits and pastry that require manipulation of ingredients.

Use skills ladders for assessment

Science medium term planning

		<ul style="list-style-type: none"> Put Mr. Potato Head accessories into dough balls (eyes, mouth, hat, feet, etc) Different colours of dough, roll into balls and make different flavours of pretend ice cream- use ice cream scoop. Dough snowmen, add googly eyes and sticks for arms. Roll sausages and use different edge scissors to chop. Dough birthday cakes and place wax candles in.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Materials, solid, change, bend, twist, stretch, waterproof, test, predict	Materials, change, bend, twist, stretch,	Change, squeeze, roll, twist, Material

Cycle 2 Spring 2 - Biology (Plants)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
Know seeds and bulbs grow into plants. Describe what plants need to be healthy. Scientific Enquiry Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.	Observe and describe how a plant grows. Name something a plant needs to grow. Scientific Enquiry Sort objects into groups. Make generalisations and connections to answer simple questions. Begin to collect and make simple records of their findings	Observe how a plant grows (begin to describe / explore objects). Scientific Enquiry Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration.
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> Grow your own veg at the allotment (visits). Take pictures at allotment to label on school display Plant seeds in class/allotment and measure the process - complete a diary of how it changes every day/week/month. Plant experiment - take away one thing they need - light, water, oxygen and see the effect it has on the plant. 	<ul style="list-style-type: none"> Grow your own veg at the allotment (visits). Take pictures at allotment to label on school display Plant seeds in class/allotment and measure the process - complete a diary of how it changes every day/week/month. Children to cut up different fruits and look at the seeds. Also smell and taste Sensory experiences in soil / seeds / bulbs 	<ul style="list-style-type: none"> A flower or plant, labelling parts, going to the allotment, observing changes. Printing with fruit and vegetables and looking at where they came from Grow cress seeds in small box, water daily and observe changes. Grow beans in a clear pocket and study the changes, particularly how tall it grows.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Pollination and reproduction of plants. Name, label and draw four main parts of plants. Plant life cycle. Observation over time of plants growing. • Velcro large plant - put together, label. Forest school - look at plants - collect leaves, stem, flowers. 	<ul style="list-style-type: none"> • Grow cress seeds in the classroom. • Plant spring bulbs in a window box, water daily and observe them bloom. • Explore herbs, vegetables and plants. Categorise by exploring using senses, eg: smell lavender- make perfume. Basic vegetables and make a simple stew to taste. Pick flowers and place in water to look at and admire. • Sort seeds and bulbs and look at where seeds come from, 	<ul style="list-style-type: none"> • Role play garden centre. • Sensory play with soil, watering can, trowel etc for emptying and filling. • Tuff tray with petals, stems and leaves to explore and begin to sort/match etc
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Seeds, bulbs, Light, water, oxygen, plant, grow, roots, seedling	Light, water, soils, plant. grow,	Plant, flower, soil, water

Cycle 2 Summer 1 - Physics – (seasonal changes)

M - Pathway	M/E - Pathway	E- Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Explore the temperature changes across the seasons and the appropriate clothing needed for each season. Explore a range of different weather we experience across the year (gales, thunder storms, hail, heatwaves, and snow storms).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.</p>	<p>Name the seasons and know the changes across them.</p> <p>Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.</p>	<p>Explore day and night and how the temperature changes over the day through sensory based activities (participate in shared activities).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Weather desk in class. Collect rain in a jar. • Create a weather chart. Identify the weather each day 	<ul style="list-style-type: none"> • Weather desk in class. Collect rain in a jar. • Create a weather chart. Identify the weather each day 	<ul style="list-style-type: none"> • Look at a different weather each week - sensory experience e.g. fan for wind, spray for rain, ice for cold, read a sensory story related to the weather

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Build a simple weather station to measure temperature, rainfall and wind direction using jug, thermometer and weather vane. Look at local and national weather forecasts on BBC website. Each day a different pupil could be the weather reporter. Record the weather each day in classroom. • STEM activity - take pictures of Forest School every day throughout the year • Match clothes to different weather • Label seasons, make seasons artwork • Observing changes in trees in forest school or at local parks. Take a picture of the same tree during each season. • Weather diaries using symbols. • Identifying suitable fabrics for different weather. Is it waterproof-experiment with different clothes/fabrics and water. • Sort clothing into groups waterproof and not waterproof. • Make a class book with photographs of the weather/clothes worn throughout the year for pupils to revisit. 	<ul style="list-style-type: none"> • Build a simple weather station to measure temperature, rainfall and wind direction using jug, thermometer and weather vane. Look at local and national weather forecasts on BBC website. Each day a different pupil could be the weather reporter. Record the weather each day in classroom. • STEM activity - take pictures of Forest School every day throughout the year • Match clothes to different weather • Label seasons, make seasons artwork • Observing changes in trees in forest school or at local parks. Take a picture of the same tree during each season. • Weather diaries using symbols. • Identifying suitable fabrics for different weather. Is it waterproof-experiment with different clothes/fabrics and water. • Sort clothing into groups waterproof and not waterproof. • Make a class book with photographs of the weather/clothes worn throughout the year for pupils to revisit. • 	<ul style="list-style-type: none"> • Feeling senses. Hot cold wet dry, linking pictures to seasons • Box of weather type activities - water spray, fake snow, leaves, twigs, soil, shaving foam, floaty material, torches etc • Create weather scenes, using arts and crafts materials - sun, rain etc • Create seasonal scenes- trees, beaches, snowmen etc. • Invite children to sit under an umbrella and squirt water over singing 'it's raining pouring' -use water spray for rain, shredded paper for snow. Sit children under plastic umbrella and squirt or sprinkle. Blow windmill or shake thick card for wind • labelling weather, creating weather symbols, exploring materials (soil/leaves etc) • Take pupils out in all weather and photograph/video them so can revisit experiences.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Spring, winter, summer, autumn, weather, sunny, windy rain, snow, temperature, hot, cold, seasons	Spring, winter, summer, autumn, weather, sunny, windy rain, snow, temperature, hot, cold, seasons	Sun, rain, wind, snow

Use skills ladders for assessment

Science medium term planning

Cycle 2 Summer 2 - Biology (Animals and Humans)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the basic needs of animals and how their offspring turn into adults.</p> <p>Know the importance for humans of exercise, eating healthy, and hygiene.</p> <p>Scientific Enquiry</p> <p>Identify and classify.</p> <p>Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.</p>	<p>Name some of the basic needs of a familiar animal.</p> <p>Group some examples of lifestyle choices into healthy and unhealthy.</p> <p>Scientific Enquiry</p> <p>Sort objects into groups.</p> <p>Make generalisations and connections to answer simple questions.</p> <p>Begin to collect and make simple records of their findings</p>	<p>Explore and participate in healthy lifestyle routines (join in with shared activities).</p> <p>Scientific Enquiry</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Food diary for one week • water-pepper- soap germ experiment to clean hands • Life cycles of animals and humans. Science resources. Animals and off spring, science resources. What is needed to survive, animals and humans. Food hygiene and exercise. Healthy eating, cooking. • Wash dolls and babies to show importance of keeping clean. • Practice cleaning own teeth. Have a large laminated set of teeth, spray on paint or food colouring and children brush it off using toothbrushes. • Put hands on slice of bread, put bread in sealed bag - watch what happens. • Animal and human life cycles - jigsaws, velcro charts, make own. What we need to grow - healthy foods. Sort foods. Cook healthy recipes. • Name animals and their young. Order stages of human and animal life cycles. Children order pictures of themselves. 	<ul style="list-style-type: none"> • Role play vets/pet shop- categorise animals eg: fish/ reptile/bird/mammal. • Visit local garden centre with a pet area, record observations using ipad. Ask simple questions about the visit...what lived in the tank of water (fish), etc. What couldn't live in the tank...rabbits, etc. • Look after and research pets. Ask parents for photos of pets at home. Do a case study on pets we have at home • Sort pets into groups such as fish/reptile/bird/mammal. • Make a "keeping a pet" book. What do they need? How do we look after them? • Healthy bodies - songs, videos (YouTube). Matching animals and offspring names - pictures/symbols / words • My favourite food paper plate collage. • Wash dolls and babies to show importance of keeping clean. • Hygiene - symbol stories, charts - practical sessions on hand washing - glitter on hands investigation. 	<p>Teeth activities-</p> <ul style="list-style-type: none"> • Clean teeth- own toothbrush & toothpaste pack in school, clean each day after lunch. • Clean teeth activity in tuff spot- laminated smiley teeth, offer toothbrushes and toothpaste for children to explore and access independently. Show pupils how to brush laminated teeth to keep them clean. <p>Role play ideas-</p> <ul style="list-style-type: none"> • Dentist • Doctors • Hospital • Fruit and veg shop • Smoothie bar <p>Tuff spot ideas-</p> <ul style="list-style-type: none"> • Dolls and doctor's equipment (Miss Polly had a dolly rhyme) • Cooking pots and pans and utensils, pretend to cook healthy foods such as fruit and veg

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Have caterpillars in class to observe change into a butterfly. Photograph and sequence stages. • Children sequence photographs of themselves at various stages of growth. • Matching animals with their young-using small world toys moving on to picture worksheets and EdCity activities. What do animals and humans need to grow 	<ul style="list-style-type: none"> • Practice cleaning own teeth. Have a large laminated set of teeth, spray on paint or food colouring and children brush it off using toothbrushes. • Making cakes with vegetables (beetroot cake and so on) 	<ul style="list-style-type: none"> • Offer junk food objects and healthy food objects and encourage pupils to sort into a healthy lunchbox and an unhealthy lunchbox. • Washing/hygiene- wash dolls using flannel, soap, towels. <p>Healthy eating-</p> <ul style="list-style-type: none"> • Healthy sandwiches • Fruit skewers • Fruit/veg smoothies <p>Exercise ideas-</p> <ul style="list-style-type: none"> • Make mini obstacle courses- buckets, crates, pots, sticks: encourage children to travel up/down, to/fro, rotate and balance to increase heart rate. • Visit local play areas to access large gross motor equipment to encourage exercise. • Dancing- just dance/add in scarves, pomp oms and wands. • Parachute games- running under/around, add in a ball/beanbag to differentiate.
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Healthy, unhealthy, hygiene, clean, grow, young, adult, exercise, adult, germs</p>	<p>Healthy, unhealthy, clean, grow, food, water, care</p>	<p>Clean, healthy, brush, wash, exercise,</p>

Use skills ladders for assessment

Science medium term planning

Cycle 3 Autumn Term 1 - Physics (light)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know light is reflected from surfaces for us to be able to see them and how shadows are formed. Know the dangers of the sun (sunburn / eye damage).</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Identify some sources of light and objects that reflect light.</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions</p>	<p>Explore reflective objects (begin to observe and respond to materials and objects).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Use mirrors to find reflections and draw them. Identify objects that use light. • Make shadows using bodies out on playground. Look for and draw shadows of trees, plants, shed etc. in Forest School and at allotment. Have a tick sheet for various shadows around school grounds and in Forest School. • Shadow investigation and exploration. Dark tent and torches. Identifying and grouping sources of light. • Light sources and reflectors. Sun safety. Forming shadows. Transparent, Translucent, Opaque. • Make a sundial for the allotment/forest school. • Have a friend stand very still and draw around their shadow with playground chalk. Repeat at different times of the day. Why has the shadow moved? 	<ul style="list-style-type: none"> • Sort different sources of light- fire/stars/man-made • Go for a walk, to look for natural/man made sources of light • In forest school, observe natural light when adult makes a small bonfire & marshmallows...discuss fire safety • Drawing around shadows with chalk on the floor shadow puppets. • Use mirrors to look at own reflection and do a self-portrait. • Light hunt around school • Playing with torches in different rooms • Make shadow puppets - put on show. Use Thai shadow puppets in multicultural cupboard • Sun - collage, sun glasses 	<ul style="list-style-type: none"> • Sensory play with the light boxes and boards • Use the sensory room with targeted light and sound • Coloured torches, torch exploration. • A range of mirrors- plane, concave, convex- what happens to our reflection? • Create a shiny box- it can include pots, foil, cd's and cellophane. Pupils can explore independently once put together. Add some key symbols. • Make reflective mobiles to dangle from the ceiling, use silver collage such as tin foil, reflective card and take away boxes cut up. • Explore shiny baubles, mirror mat in tuff tray, foil blanket. • Ice is reflective- make ice cubes, explore and paint different colours in a tuff tray.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Use projector in classroom to create shadows - hand shadows, sensory studio. • Have a range of sunglasses with different UV strengths. Why are they important? 	<ul style="list-style-type: none"> • Have a range of materials for pupils to predict if they will reflect light. 	
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Light, shadow, record, predict, dark, light, reflect, reflection	Light, shadow, dark, block, reflect, shadow	Light, dark, reflect, shiny, colour

Use skills ladders for assessment

Science medium term planning

Cycle 3 Autumn Term 2 - Physics (Forces and Magnets)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Understand friction as a force and how this changes over different surfaces. Understand magnetism (know force acts at a distance, magnets attract and repel each other, they are attracted to certain metals, they have poles and which poles attract/repel). Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.	Key Knowledge. Explore how friction is a force and how things move over different surfaces (fast/slow). Understand magnetism (explore how magnets can attract and repel each other). Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions	Key Knowledge. Engage with activities and objects which explore friction and magnetism (observe / observe the results of their actions). Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions
Lesson Ideas <ul style="list-style-type: none"> • Identifying magnetic objects by using magnets to find them. • Pull metal items with a magnet as a demonstration. • Investigations - magnetic/non-magnetic - how many paper clips can different magnets pick up. Use magnets to separate materials from collection. • Friction/forces investigations - gravity - paper helicopters/spinners, Rubbing balloons/ static hair, confetti. Make parachutes, test • Build with magnetic construction. Use cars and ramps. Test objects to see which attract magnets. 	Lesson Ideas <ul style="list-style-type: none"> • Use textured ramps to experiment with different types of friction- carpet/artificial grass/sand paper/card. Make prediction which ramp will let the car go the fastest and check them. • Have a cotton wool ball on the table children have to guess how many straws they will need to blow down to make it move, repeat with other objects • Pull back friction cars, run them through paint for added interest and effect. • Rub sticks together. What happens if you rub quickly? How does it feel? • Simple magnetic investigation projects- clipboard and symbol chart of items within the 	Lesson Ideas <ul style="list-style-type: none"> • Marbles in paint use straws to create friction by blowing down the straw • Use paper towel rolls or drain pipes roll balls/marbles down modelling language as they go faster the higher the tube. • Pupils make marble runs, click clack tracks • Tuff tray with magnetic items and magnets for children to explore. Progress to magnetic and non-magnetic. • Join together magnetic construction resources. • Cross-curricular learning- magnetic fishing for numbers/letters.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> Use friction ramps and investigate movement experiment With magnets make and play fishing game with magnets. Identify when friction is useful 	<p>class/environment. Children investigate with a magnet to find out if they are magnetic or not.</p> <ul style="list-style-type: none"> Using magnets to find magnetic toys hidden in sensory materials such as rice/foam/sand. 	
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Magnetic, poles, attract, repel, friction, force, speed, fast, slow	friction, fast, slow, magnet, repel, attract	Friction, magnet,

Cycle 3 Spring term 1 - Chemistry (Rocks and Soil)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the composition of soil. Know why soil is important and the different types of soil.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Explore different types of soil and the animals that live in soil. Explore why soil is important for plants to grow.</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions</p>	<p>Explore soil in the classroom and outside (explore objects in a variety of ways).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> Explore how soil is formed. Observations of different types of soils using a magnifying glass and microscope. 	<ul style="list-style-type: none"> Explore what is contained in soil – sieve to find plant matter. Complete a treasure hunt activity. 	<ul style="list-style-type: none"> Trays of sand and rocks to touch and feel-have miniature diggers etc. to add to the tray

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Grow plants in different types of soil. • Observing and investigating soils and making compost. • Visit Sutton Park to look for different types of soils. • Explore different types of commercial compost. • Explore the organisms which live in soil. • Explore the why plants need soil to live. • Explore what happens to living organic matter over time. 	<ul style="list-style-type: none"> • Observations of different types of soils using a magnifying glass or observing in Petri dishes. • Explore how plants need soil to grow. • Observing what happens to different organic and non-organic material over time. • Visit Forest Schools to look for different types of soils. • Explore the organisms which live in soil. • Complete a bug hunt for animals that live in and on soil. 	<ul style="list-style-type: none"> • Collect stones from the forest school area, display in the tuff tray and explore using magnifying glasses. Sort stones by size or texture. • Paint rocks and stones. • Tuff tray exploratory play- construction site with diggers, minibeasts hidden under stones/rocks, dinosaur land using big and small rocks and stones, volcano with soil, stones and rocks. • use stencils of fossils and flour sprinkle or sand sprinkle to reveal. • Explore rocks in water.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Soil, Compost, vegetation, investigate, nutrient.	Soil, Compost, investigate.	Rock, hard, sort, dig, soil,

Use skills ladders for assessment

Science medium term planning

Cycle 3 Spring term 2 - Chemistry (Rocks)		
M - Pathway	M/E - Pathway	E Pathway
<p>Key Knowledge. Know the different types of rock. Know how fossils are formed.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Key Knowledge. Explore rocks and begin to sort into given groups based on their properties. Know fossils are a record of a prehistoric plant or animal found in some rocks.</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions</p>	<p>Key Knowledge. Explore rocks and stones in the classroom and outside (explore objects in a variety of ways).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions</p>
<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Dino dig - fossil fact file-cut a fossil picture in half and place information booklet in between. • Scavenger hunt for rocks. Looking at different types of fossils. • Explore how fossils are formed. Rock observations, science resources. • Observing and investigating soils and composition. Properties of rocks. • Visit Sutton park to look for different types of stones. • Demonstrate layers of rock by squashing bits of wax crayon in a tube. • Types of rocks • Visit museum • Scratch rocks with a nail and order from softest to hardest. Use chalk on boards. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Collect and sort rocks by colour, heavy or light. • Sort rocks by natural or manmade • Play with model dinosaurs-maybe fossilise them with sand and water. • Sieve rocks, pebbles and sand and sort • Go on dig in forest school, find rocks • Use magnifying glasses to observe and draw what they see. • Children can predict if rocks will float or sink. • Fossil hunter pack with bones, fossils hidden in soil for pupils to find using tools try and match to symbols of animals that are displayed around the activity. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Trays of sand and rocks to touch and feel-have miniature diggers etc. to add to the tray • Collect stones from the forest school area, display in the tuff tray and explore using magnifying glasses. Sort stones by size or texture. • Paint rocks and stones. • Tuff tray exploratory play- construction site with diggers, minibeasts hidden under stones/rocks, dinosaur land using big and small rocks and stones, volcano with soil, stones and rocks. • use stencils of fossils and flour sprinkle or sand sprinkle to reveal. • Explore rocks in water.

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<ul style="list-style-type: none"> Permeable rocks can absorb water and impermeable rocks cannot absorb water. To test rock permeability place sandstone, granite, chalk and marble in separate beakers of water for 30 seconds. Look closely at the rocks, does anything happen? Draw the results 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Rock, fossil, hard, soft, investigate,	Rock, fossil, soil, sand, water, stone	Rock, hard, sort, dig, soil,

Use skills ladders for assessment

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Cycle 3 Summer term 1 - Biology (Animals)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know living things need nutrition and how they get this.</p> <p>Know skeletons are needed for support, protection and movement in animals.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Set up simple practical enquiries.</p> <p>Make careful observations and measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use simple scientific language and drawings to communicate ideas.</p> <p>Share findings including oral and written explanations and displays.</p> <p>Draw simple conclusions and make predictions.</p> <p>Identify differences, similarities or changes.</p>	<p>Know some of things needed to keep living healthy.</p> <p>Know skeletons are needed for support in humans.</p> <p>Scientific Enquiry</p> <p>Ask simple questions and recognising that they can be answered in different ways.</p> <p>Use simple equipment to make observations.</p> <p>Gather data to help in answering questions.</p> <p>Begin to use some simple scientific language.</p> <p>Begin to answer simple scientific questions</p>	<p>Know some of things needed to keep them healthy.</p> <p>Know skeletons are needed for support, protection and movement in animals.</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change.</p> <p>Begin to respond to scientific questions</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Nutrition songs/ videos (YouTube). • Observing and identifying different types of skeletons and what each part/bone does. • Healthy eating focus: Do some healthy cooking and healthy food tasting. • Put a skeleton together – labelling key bones • Nutrition - what we need to grow - strong bones • Complete a food group wheel, keep a food diary for a week looking at food groups • Design healthy lunch box • What happens to body parts if unhealthy e.g. tooth decay. Carry out tooth in coke test 	<ul style="list-style-type: none"> • Role play x ray department. • Pin skeletons- funny bones- Twinkl - paper plate skeletons. • X-ray display photos, moving skeleton-actual or funny bones, skeleton labelling sheet • Large scale group activity- toilet roll skeleton. Label main bones with symbols. • Research nutrients found in foods, plant based and meat based. • Design a simple recipe, could be written/symbols/pictures. • Make the recipe and gather data about whether the pupils enjoyed their recipe or not. • Cut out pictures of healthy food and stick onto paper plates. Or offer a choice of nutritious food 	<ul style="list-style-type: none"> • Sensory food sessions with healthy food, explore nutritious food types. How does it taste? Nice? Horrible? • Make healthy smoothies, children choosing fruit they want to add • Role play making healthy meals- place appropriate resources in tuff tray, food types, plates, cups, cutlery. • Daily movement sessions to demonstrate importance of exercise to keep healthy. Feel heartbeat. Look at self in mirror...hot and sweaty? • Look at x-ray pictures. • Listen to funny bones song on IWB. • Skeleton craft activities-

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	<p>pictures and junk food pictures and ask pupils to make a nutritious plate of food.</p>	<ul style="list-style-type: none"> • Black and white x ray picture of hand and wrist- recreate by painting hand and wrist white and printing on black paper • Cotton bud skeleton craft.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Nutrition, healthy, food, body, skeleton, support, movement, unhealthy, decay	Nutrition, healthy, food, skeleton, movement	Healthy, food, movement, skeleton.

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Cycle 3 Summer term 2 - Biology (Plants)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the function of the parts of flowering plants including their lifecycle (pollination, seed formation and seed distribution).</p> <p>Know how water is transported within plants.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them. Set up simple practical enquiries.</p> <p>Make careful observations and measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Know the how a flowering plant is pollinated by insects.</p> <p>Know plants need water to be healthy and this is taken in by the roots.</p> <p>Scientific Enquiry</p> <p>Ask simple questions and recognising that they can be answered in different ways.</p> <p>Use simple equipment to make observations.</p> <p>Gather data to help in answering questions.</p> <p>Begin to use some simple scientific language.</p> <p>Begin to answer simple scientific questions</p>	<p>Explore the things a plant needs to be healthy (participate in shared activities).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change.</p> <p>Begin to respond to scientific questions</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Grow plants and observe plant anatomy and function. Plants and different needs. Water transportation, experiments. • Life cycle of plants - pollination, seed dispersal. chart/jigsaw. Make a tactile life cycle/display. • Find dandelions and put in order use food colouring and white flowers to see how a plant sucks up the water use a picture of a plant and draw the water route from root to flower. • Ink and daffodil experiment to observe capillary action. 	<ul style="list-style-type: none"> • Bring in flowers put in coloured water - watch petals change colour. Celery put in coloured water - cut to see Life cycle • Life cycle of a plant on Twinkl and You tube clips. Sequencing cards (Science Resources) and symbol supported activity to sequence the lifecycle of a plant. • Draw water up with a syringe to show how flowers take water up through the roots. 	<ul style="list-style-type: none"> • 4 or 5 pots in a row. Put soil and seed in pot 1. Then have pre-cut shoot to put in pot 2, stem and a leaf for pot 4, closed flower for pot 4 and then open flower with petals for pot 5. • Use water butt and mud kitchen in Forest School to 'explore' with water. • Plant a bean and keep a bean diary. • Big Book 'Bean diary' in school plus YT clips • Velcro large plant - put together, • Regular planting, watering and caring for seeds, seedlings, plants, flowers, vegetables and fruit at allotment and in Forest School or on classroom windowsill.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Petal, stamen, sepal, stigma, style, ovary, insect, pollinate	Flower, petal, leaf, stem, root, insect, water	Flower, petal, leaf, root, water, grow

Use skills ladders for assessment

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Cycle 4 Autumn Term 1 - Chemistry (Materials)		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know names of solids, liquids and gases. Know how materials change state with temperature changes.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Be able to group familiar materials into solids, liquids or gases. Know how water can be both solid, liquid and gas.</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions.</p>	<p>Explore sensory activities related to water within its different states (begin to respond or options or choices).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Changes of state with chocolate (solid/liquid) making slush drinks. • Identify solids liquids and gases in the classroom, playground. • Experiments to see changes in state - freezing, boiling, etc. Asking children to make predictions of what will happen at different stages. • Boiling ice and discuss what's happening. • Lots of investigations - eggs – boiling. Make toast. Make bread rolls. Milkshake. Dissolving salt/sugar crystals. Mentos in coke. Children to write simple experiment. • Sort objects investigate changes of state, use a mirror to show condensation • Create a model of the water cycle 	<ul style="list-style-type: none"> • Make jelly photographing the process to sequence at the end • Make cakes-photograph for children to sequence the process. • Group real items for solids and liquids. • Provide pictures of solid/liquid/and gas items and group. • Walk around school to take photos of solids and liquids. • Make ice cubes, watch them melt, pour into a pan and boil...watch the steam! • Make a small puddle outside, observe the effects as the sun heats the water and it slowly shrinks...evaporating! • Create a model of the water cycle 	<ul style="list-style-type: none"> • Investigate liquids-water, treacle, ketchup etc in plastic containers, shaking and pouring. • Use cornflour mix making gloop looking at how it moves. • Sensory tubs; Ice cubes in tray • Water play, ice play. Use warm/cold water and add ice cubes, look at and record using pads how quickly the ice cubes melt in different temperature waters. • Make cup of tea/hot chocolate using boiling water demonstrating using the kettle and steam.

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Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Solid, liquid, gas, temperature, evaporation, condensation, water cycle	Solid, liquid, gas, evaporation, water cycle	Liquid, solid, change

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Cycle 4 Autumn Term 2 - Biology (Living things)		
M - Pathway	M/E - Pathway	E Pathway
<p>Key Knowledge.</p> <p>Recognise that living things can be grouped in a variety of ways. Use classification keys to help group, identify and name a variety of living things.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Key Knowledge.</p> <p>Be able to group animals with a given criteria. Use simple keys to help identify an organism.</p> <p>Scientific Enquiry</p> <p>Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions.</p>	<p>Key Knowledge.</p> <p>Explore living organisms and their characteristics / differences (begin to match objects).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings.</p>
<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Choose a group of living things (eg vertebrate/invertebrate, arthropod, reptile, insects), explore in as practical way as possible (plastic animals) and discuss their features. Identify similarities/differences. Use a classification chart to group. • Visit a garden centre/zoo and take photos of the animals. Upon return, use a classification key to group the animals observed during the visit. • Talk about pets, who has a pet. What have they got in common? 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Mini sensory tubs with an environment in each and plastic animals to sort. • Minibeast Identification • Animal groups - use plastic animals in plastic rings. • Sort safari animals from farm animals, sort fish from birds, sort pets from wild animals, etc using toys. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Explore different organisms through real-life experiences. Observe similarities and differences. • Explore flowers and plants by visiting the first school area, local recreation ground or garden centre. Observe similarities and differences. • Tuff tray with pretend flowers and plastic animals- classify into plants and animals. • Classify fish from mammals by placing plastic fish in a bowl of water and mammals on dry land. • Explore a range of organisms through a range of tuff tray opportunities- tuff trays of various organisms each session...may be safari animals one day, farm animals the next, flowers the next or small world dolls the next.
<p>Key Vocab / symbols/ Sign</p> <p>Organism, classification, vertebrate, invertebrate</p>	<p>Key Vocab / symbols/ Sign</p> <p>Organism, animal, plant, bird, reptile, fish, mammal, same, different</p>	<p>Key Vocab / symbols/ Sign</p> <p>Animal, plant, same, different</p>

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Cycle 4 Spring 1 - Physics (Electricity)		
M - Pathway	M/E - Pathway	E Pathway
<p>Key Knowledge.</p> <p>Know common appliances which use electricity. Know how to construct a simple series circuit and name the parts (cell, wire, bulb, switch, buzzer). Name materials which are conductors and insulators</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Key Knowledge.</p> <p>Name some familiar appliances which use electricity. Construct a simple circuit and name the parts (cell, wire, bulb). Sort familiar materials into conductors and insulators.</p> <p>Scientific Enquiry</p> <p>Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions.</p>	<p>Key Knowledge.</p> <p>Explore sensory activities related to objects which use electricity to make light and movement (begin to respond or options or choices).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings.</p>
<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Identify objects that use electricity. • Practice creating and using circuits Identify materials/ objects that are conductors/insulators • Find the correct symbols to make a circuit, then do the same with the real components to switch a bulb • Walk around the school to find things that use electricity - make a chart of the findings. • Sorting toys that use electricity / do not use electricity. • Children made switches with paper clip, drawing pins and a piece of balsa wood demonstrate how a switch really works. • What is electricity and why we need it Making an electric circuit (battery bulb switch). 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Use some familiar and well-known electrical appliances for their purpose such as making toast in toaster, hoovering with a hoover, fan to cool down. • Walk around school to see what electrical items can be found. How do we know they're electrical? How do we stay safe around them? Pupils can draw them, write them or take a photo. • Sort materials into conductors and insulators. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Explore battery operated toys, talk about how they move, light up or make a sound. • Explore plug in electrical items, talk about their feature eg: cool air from a fan, light from a lamp, noise from a blender. • Use real-life electrical items such as a hoover, blender, toaster, microwave. • Practice electrical safety.

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<ul style="list-style-type: none"> Identify objects in the kitchen that use electricity understand that batteries carry electricity make a simple circuit make a switch and use to find insulators and conductors. 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Electricity, circuit, cell, wire, bulb, switch, buzzer, conductor, insulator	Electricity, battery, circuit, cell, wire, bulb, plug	Electricity, battery, plug, safe

Use skills ladders for assessment

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Cycle 4 Spring Term 2 - Chemistry (Materials)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>To know the process where water can evaporate and condense in the home.</p> <p>To understand the role of evaporation and condensation within the water cycle.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Be able to name materials which are solids, liquids or gases.</p> <p>To explore practical examples of the evaporation and condensation of water.</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions.</p>	<p>Explore sensory activities related to materials within its different states and change of state (begin to respond or options or choices).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Changes of state with chocolate (solid/liquid) making slush drinks. • Identify solids liquids and gases in the classroom, playground. • Experiments to see changes in state - freezing, boiling, etc. Asking children to make predictions of what will happen at different stages. • Boiling ice and discuss what's happening. • Lots of investigations - eggs – boiling. Make toast. Make bread rolls. Milkshake. Dissolving salt/sugar crystals. Mentos in coke. Children to write simple experiment. • Sort objects investigate changes of state, use a mirror to show condensation • Create a model of the water cycle 	<ul style="list-style-type: none"> • Make jelly photographing the process to sequence at the end • Make cakes-photograph for children to sequence the process. • Group real items for solids and liquids. • Provide pictures of solid/liquid/and gas items and group. • Walk around school to take photos of solids and liquids. • Make ice cubes, watch them melt, pour into a pan and boil...watch the steam! • Make a small puddle outside, observe the effects as the sun heats the water and it slowly shrinks...evaporating! • Create a model of the water cycle 	<ul style="list-style-type: none"> • Investigate liquids-water, treacle, ketchup etc in plastic containers, shaking and pouring. • Use cornflour mix making gloop looking at how it moves. • Sensory tubs; Ice cubes in tray • Water play, ice play. Use warm/cold water and add ice cubes, look at and record using pads how quickly the ice cubes melt in different temperature waters. • Make cup of tea/hot chocolate using boiling water demonstrating using the kettle and steam.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign

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Solid, liquid, gas, temperature, evaporation, condensation, water cycle	Solid, liquid, gas, evaporation, water cycle	Liquid, solid, change
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Use skills ladders for assessment

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Cycle 4 Summer 1 - Physics (Sounds)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know how sounds are made and how they travel. Know how pitch and loudness of sounds can change.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Name objects that make sound and how the sound is produced. Know how sounds in these objects can be changed</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions.</p>	<p>Explore sensory activities related to objects which make sounds (observe the results of their actions).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Go on a sound walk around school identifying different sounds they hear. • Experimenting with musical instruments - low/high pitch, quiet/loud. • Visit Forest School, listen to what you can hear e.g. bird song, wind in trees - then try and imitate. Try it loud and quiet, then low and high pitch. Listen to bird songs in 'Woodland Bird Song Book', then try and identify them in Forest School. • Tuning forks to explain vibrations by placing them in water watching the ripples. Speaker covered in plastic - cornflour gloop bounces on top. Use rum and rice • Using instruments to make high/low, loud/quiet sounds. Making different sounds with their voices. • Investigate how far sound travels. 	<ul style="list-style-type: none"> • Go on a sound walk around school identifying different sounds they hear. • Place rice grains on a drum, observe the rice bounce from the sound vibrations to help teach that sound is made from vibrations. • Listen to different objects that make sounds such as nature sounds, instrument sounds or sounds like the radio/tv/h Hoover. • Experience high and low sounds/ loud and quiet sounds. • Make sounds on instruments by banging, hitting, striking. • Make home-made instruments and know how to make a sound louder/quieter using them. • Play well known instruments behind back, encourage pupils to guess which instrument makes that sound. 	<ul style="list-style-type: none"> • Walk through forest school can you hear sounds of nature? Or can you hear traffic, aeroplanes? • Listen to sound bingo matching sound to object/animal • Use microphone, telephone, megaphone for pupils to explore making sounds louder • Explore a range of instruments and the different sounds they make- loud/quiet. • Make home-made instruments. • Make a string telephone. • Watch vibrations in action by placing rice on a drum...watch the rice bounce up and down with the sound vibrations. • I can hear.... around the classroom, in the playground, on a community walk.

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<ul style="list-style-type: none"> • Kitchen Clutter-gather implements made from different materials and investigate how we can change the pitch and loudness. • Musical games and songs-sing well known songs and change the pitch and volume. • Sorting sounds according to pitch 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Sound, vibrations, travel, pitch, loud, quiet, instrument, ear	Sound, loud, quiet, instrument, vibration, ear	Ear, listen, sound, instrument

Use skills ladders for assessment

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Cycle 4 Summer 2 - Biology (Animals)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the function and organs of the digestive system, including the name and function of different teeth. Interpret and food chains and Identify producers, predators and prey.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Set up simple practical enquiries. Make careful observations and measurements. Gather and record data in a variety of ways. Use simple scientific language and drawings to communicate ideas. Share findings including oral and written explanations and displays. Draw simple conclusions and make predictions. Identify differences, similarities or changes.</p>	<p>Know the organs of the digestive system, including the function of teeth. Create a simple food chain within a given habitat.</p> <p>Scientific Enquiry Ask simple questions and recognising that they can be answered in different ways. Use simple equipment to make observations. Gather data to help in answering questions. Begin to use some simple scientific language. Begin to answer simple scientific questions.</p>	<p>Explore routines we need to keep healthy (hydration, toilet, diet, cleaning teeth). (Participate in shared activities and sustain concentration.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Look at video of how digestive system works in humans labelling key organs. Use models in science room • Create diagrams of food chains for different animals. BBC bitesize. • Food chain sorting cards producers, predators, prey • In Forest School, look for evidence that animals are eating there, e.g. pine cones half eaten by squirrels, clumps of feathers where sparrowhawks have attacked birds, leaves eaten by caterpillars. Use check sheets and camera to record evidence. • Use mirrors to look at and record their own teeth. Do they have baby teeth? Adult teeth? Or any gaps. 	<ul style="list-style-type: none"> • Use mirrors to look at and record their own teeth. Do they have baby teeth? Adult teeth? Or any gaps. • Use model of teeth, videos to show the function of the different teeth. • Look at models of digestive system and practically ask children to show the main organs. • Choose one person to be the basking shark. The rest of the group are plankton. Designate two areas of “shallow sea” (one at each end of the field/playground). These areas are safe. Plankton all start at one end. When the whistle is blown, the tide changes and all the plankton run to the other area. As they run, the basking shark tries to eat (tag) the plankton. When tagged, the plankton must stand still and become barnacles. The 	<ul style="list-style-type: none"> • Tuff tray with toothpaste, toothbrushes and laminated teeth, teeth models for pupils to practice cleaning teeth. Mirrors to be available to look at their own. • Teeth cleaning to become part of class routine after lunch. • Look at washing own body. Water trays with symbol supports to follow cleaning sequence for hand, feet, legs, hair etc. • Follow recipe, children matching symbols to ingredients and following recipe. Pupils to record if they liked the result. • Sort healthy and unhealthy foods. • Sensory tuff trays with fruit, vegetables etc.

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<ul style="list-style-type: none"> • Label diagram of teeth and name the function of each type of tooth. • Investigate which liquid will cause the most tooth decay, pupils to predict then record their findings. • Brush teeth then use disclosure tablets and look in the mirror. 	<p>winner is the last plankton alive. Replay the game with more sharks to discuss food chains and predator /prey relationships.</p>	
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Digestive, organs, mouth, liver, intestine, stomach, rectum, teeth, incisor molar, food chain, producers, predators, prey</p>	<p>Teeth, molar, incisor, digestive, mouth, liver, intestine, stomach, food chain</p>	<p>Teeth, clean, healthy</p>

Use skills ladders for assessment

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Cycle 5 Autumn Term 1 - Biology (living things in their habitats)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the lifecycles of a mammal, amphibian, insect and bird. Know how plants and animals reproduce.</p> <p>Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Know the lifecycles of a mammal and insect. Know how animals reproduce.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions.</p>	<p>Explore the lifecycles animals or insects (begin to match objects).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities. Being to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Create diagrams of life cycles for different animals. • Chick hatching project. Caterpillar cocoon project where the children can observe all the stages, recording their findings. • Visit to nature reserve. What is reproduction and why we need it!! • Make a life cycle of an animal match baby to mother, look at reproduction of plants and animals take a plant cutting and regrow. • Look at reproduction in animals and order. • Sequence the life cycle of a butterfly- sequencing cards-Science resources. EdCity- Y2-flutter and fly Topmarks-Life Cycles, You tube-Life cycles clips. • Show pupils photographs of a range of animals and ask them to predict how long they carry their young. Discuss the varying length of times. 	<ul style="list-style-type: none"> • Wooden jigsaws in school. Life cycle bags. • Caterpillar cocoon project where the children can observe all the stage, recording stages digitally • Match baby to mother. • Have a selection of photographs of one of the pupils or adults in the class at different stages, sequence them in order. 	<ul style="list-style-type: none"> • Small world tuff trays farm animals/ wild animals with to match mother with their young. • Visit to the farm/pet shop • Caterpillar cocoon project where the children can observe all the stage • Have photographs of the pupils when they were babies, can they recognise themselves? • Tuff tray frog life cycle tray (see pinterest) includes frog spawn, tadpoles, frogs • Butterfly tuff spot life cycle (see pinterest) includes, eggs, cocoons, caterpillars

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Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Life cycles, mammal, amphibian, insect, bird, reproduce	Mammal, insect, reproduce, life cycle	Lifecyle, animal, insects

Use skills ladders for assessment

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Cycle 5 Autumn Term 2 - Physics (Forces)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Understand the forces of gravity, air resistance, water resistance and friction.</p> <p>Understand how levers, pulleys and gears allow forces to have a greater effect.</p> <p>Scientific Enquiry</p> <p>Plan different types of scientific enquiries to answer questions.</p> <p>Take measurements, using scientific equipment, with increasing accuracy.</p> <p>Record data and results of using scientific diagrams, labels and simple graphs.</p> <p>Use test results to make predictions.</p> <p>Report and presenting findings from enquiries, including conclusions.</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Understand the forces and friction.</p> <p>Understand how levers allow forces to have a greater effect.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Use simple equipment to take measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use an increasing level of scientific language.</p> <p>Share findings in a number of simple ways.</p> <p>Identify differences, similarities or changes.</p> <p>Draw simple conclusions and make predictions.</p>	<p>Explore how forces act on objects – push / pull (Observe the results of their own actions).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities.</p> <p>Being to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Paper air resistance experiment. Hold one piece of A4 paper out flat at chest height. Start the stopwatch as you let go of the paper. Stop the stopwatch when the paper hits the floor. Record the time it took to fall. Fold the edges of the paper and repeat steps. After each drop, fold the edges of the paper in a little more. Discuss findings • Tin foil water resistance experiment Fill your container with water. Take a piece of tinfoil and mould it into any shape you like. Start the stopwatch as you drop the tinfoil into the water. Stop the stopwatch when the tinfoil reaches the bottom. Repeat steps with different tinfoil shapes. • Warm friction balloon. Feel the temperature of the balloon deflated by touching it or placing it on your 	<ul style="list-style-type: none"> • Move around school identifying push and pull, include sensory circuit equipment. Pupils record in a grid what objects needed a push or pull. • Use ramps and cars. Pupils to measure how far the car travels on different surfaces. • Use construction kit to investigate how levers work. • Make a simple catapult using lollipop sticks to show how a lever works 	<p>Friction-</p> <ul style="list-style-type: none"> • Create textured ramps to experiment with different types of friction- carpet/artificial grass/sand paper/card. Which is faster? Which is slower? • Move around school identifying push and pull, include sensory circuit equipment • Visit local park and identify which equipment is push or pull, what happens when we push harder? • Chopstick/pencil in rice experiment- what happens? How? • Push toy cars in different textures eg mud, dry/wet sand, shaving foam. Model language.

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<p>cheeks. Stretch a balloon back and forth by pulling on each end. Stretch it about 20 times or more. Feel the temperature of the balloon again and see if you notice a change. If not, keep stretching the balloon until you notice a difference in temperature. Talk about the molecules moving and crashing into each other making the balloon expand.</p> <ul style="list-style-type: none"> • Make a pulley using a lever to move an object across the table • Use construction kits that have gears, levers and pulleys. Investigate how gears increase the force 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
gravity, air resistance, water resistance, friction, levers, pulleys, gears	Forces, friction, levers	Forces, push, pull

Use skills ladders for assessment

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Cycle 5 Spring 1 - Chemistry (Materials)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know how to group materials on the properties of hardness solubility, transparency, electrical and thermal conductivity, and response to magnets.</p> <p>Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Be able to group materials on the properties of transparency, opacity.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions.</p>	<p>Take part in activities to explore grouping or separating materials (explore objects in a variety of ways).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Rainbow experiment with skittles / gummy bears experiment with sizes. • Add various substances to water and observe whether it dissolves-salt, sugar, coffee etc. Pupils to predict outcomes then investigate, recording the conclusion. • Group materials according to different properties dissolve sugar and salt and use evaporation to retrieve. • Put stones and soil in water - Use sieves and muslin to separate. 	<ul style="list-style-type: none"> • Shining a torch on different materials to see if they are transparent or opaque. • Design a window, what is the best material to use? • Investigate shadows using transparent and opaque objects • Add various substances to water and observe whether it dissolves-salt, sand, sugar, coffee etc. Record findings using ipad • Separating mixtures with sieves and coffee filters. 	<ul style="list-style-type: none"> • Feely bag Sorting materials - plastic/ wood / metal/fabric • Going on a materials hunt around school. • Separate mixed sand and water • Separate stones from soil
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
hardness solubility, transparency, electrical and thermal conductivity, dissolving, reversible and irreversible	Transparent, opaque, dissolve, separate	Materials, wood, plastic, metal, fabric
Cycle 5 Spring 2 - Physics (Earth and space)		
M - Pathway	M/E - Pathway	E Pathway

Use skills ladders for assessment

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Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the movement of the Earth and planets in the Solar System relative to the sun. Describe these as spherical objects.</p> <p>Know the movement of the Moon relative to the Earth. Know day and night is related to the rotation of the Earth.</p> <p>Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Identify some of the planets in the solar system. Name the sun and moon in the solar system. Know the Earth rotates on its axis.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions.</p>	<p>Participate in sensory activities related with space and the planets (Request events or activities).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Participate in shared activities and sustain concentration. Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities. Being to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Create 3D models of space and create the orbit process. • Create collages to show night and day. • Children hold coloured balls and physically walk around someone holding a large yellow ball-the sun. • Use a globe and a torch to find different countries in day and night. • Use children to model movement of the Earth, moon and sun • Pencil shadow experiment • https://www.calacademy.org/educators/lesson-plans/kinesthetic-astronomy-earths-rotation • Factfile on the different planets can be presented through powerpoint or video recording 	<ul style="list-style-type: none"> • Make 3D planets • Make paper wheels of night and day. • Explore globes and how they rotate labelling its axis • Fizzing planets • Make sun dials • Paper plate earth rotation <p>Educational visit</p> <ul style="list-style-type: none"> • Space centre • Planetarium - Think Tank 	<ul style="list-style-type: none"> • Make a night scene on black paper using glitter. Turn off all the lights in class and use a torch to shine on the glitter picture. • Use dark den to experience full darkness. • Make 3D planets • Ice planets, adding food colouring to water and freezing in bowls/balloons. • Create craft rockets • Galaxy in a bottle • Paint rocket splat • Fizzing planets
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign

Use skills ladders for assessment

Science medium term planning

Solar system, sun, moon, planets, rotate, spherical	Planets, sun, moon, axis	Space, planets
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Use skills ladders for assessment

Science medium term planning

Cycle 5 Summer 1 - Biology (Animals and Humans)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the changes as humans develop to old age.</p> <p>Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Describe the changes as humans grow and age.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions.</p>	<p>Explore how we and familiar people have changed over time (Begin to match objects in terms of single features).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities. Being to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Explore the key stages of human foetal development – Look at scan photographs • Explore key milestones in child development using photographs of pupils/adults at different stages. Look at growth charts and plot their own personal data. • Look at puberty and difference between genders. Identify physical and mental changes that happen in old age. A visit from a grandparent to talk about it and show pictures of when they were younger and what they could do then. • Complete a human timeline. 	<ul style="list-style-type: none"> • Look at baby photos and discuss similarities, differences. • Look at photographs of a staff member over time. discuss how they have changed. Pupils to sequence the photographs • Sort pictures into categories – baby, adult, elderly. • Have a selection of objects that can be used at different times e.g bottle, car, walking stick. Pupils to sort. • Explore how the pupils may change as they get older. Have an outline of their face they can add grey hair, beard, glasses. 	<ul style="list-style-type: none"> • Look at baby photos of the pupils and have bottle, dummy, car seat items for a baby. Using dolls role play looking after the baby. • Complete a sorting activity to what a baby would need • Tuff tray to bathe the baby, dress the baby. • Look at the pupils using photographs of things they can do now, walk, climb, ride a bike. • Look at an adult.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Growth, change, foetus, baby, adolescent, puberty, adult, elderly,	Growth, change, baby, toddler, teenager, puberty, adult, elderly,	Change, grown, baby, child, adult

Use skills ladders for assessment

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Cycle 5 Summer 2 - Chemistry (Materials)		
M - Pathway	M/E - Pathway	E Pathway
<p>Key Knowledge.</p> <p>Know what dissolving is and how to separate mixtures using sieving, filtering and evaporation.</p> <p>Know some reversible and irreversible changes.</p> <p>Scientific Enquiry</p> <p>Plan different types of scientific enquiries to answer questions.</p> <p>Take measurements, using scientific equipment, with increasing accuracy.</p> <p>Record data and results of using scientific diagrams, labels and simple graphs.</p> <p>Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Key Knowledge.</p> <p>Know what dissolving is and how to separate mixtures using sieving.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Use simple equipment to take measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use an increasing level of scientific language.</p> <p>Share findings in a number of simple ways.</p> <p>Identify differences, similarities or changes.</p> <p>Draw simple conclusions and make predictions.</p>	<p>Key Knowledge.</p> <p>Take part in activities to explore grouping or separating materials (explore objects in a variety of ways).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration. Begin to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities.</p>
<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Rainbow experiment with skittles / gummy bears experiment with sizes. • Add various substances to water and observe whether it dissolves-salt, sugar, coffee etc. Pupils to predict outcomes then investigate, recording the conclusion. • Group materials according to different properties dissolve sugar and salt and use evaporation to retrieve. • Put stones and soil in water - Use sieves and muslin to separate. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Shining a torch on different materials to see if they are transparent or opaque. • Design a window, what is the best material to use? • Investigate shadows using transparent and opaque objects • Add various substances to water and observe whether it dissolves-salt, sand, sugar, coffee etc. Record findings using ipad • Separating mixtures with sieves and coffee filters. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Feely bag Sorting materials - plastic/ wood / metal/fabric • Going on a materials hunt around school. • Separate mixed sand and water • Separate stones from soil

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Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Filtering, dissolving, reversible and irreversible, separating.	Dissolve, separate.	Materials, wood, plastic, metal, fabric

Cycle 5 Spring 2 - Physics (Earth and space)		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the movement of the Earth and planets in the Solar System relative to the sun. Describe these as spherical objects.</p> <p>Know the movement of the Moon relative to the Earth. Know day and night is related to the rotation of the Earth.</p> <p>Scientific Enquiry</p> <p>Plan different types of scientific enquiries to answer questions.</p> <p>Take measurements, using scientific equipment, with increasing accuracy.</p> <p>Record data and results of using scientific diagrams, labels and simple graphs.</p> <p>Use test results to make predictions.</p> <p>Report and presenting findings from enquiries, including conclusions.</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Identify some of the planets in the solar system.</p> <p>Name the sun and moon in the solar system.</p> <p>Know the Earth rotates on its axis.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Use simple equipment to take measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use an increasing level of scientific language.</p> <p>Share findings in a number of simple ways.</p> <p>Identify differences, similarities or changes.</p> <p>Draw simple conclusions and make predictions.</p>	<p>Participate in sensory activities related with space and the planets (Request events or activities).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities.</p> <p>Being to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Create 3D models of space and create the orbit process. • Create collages to show night and day. • Children hold coloured balls and physically walk around someone holding a large yellow ball-the sun. • Use a globe and a torch to find different countries in day and night. 	<ul style="list-style-type: none"> • Make 3D planets • Make paper wheels of night and day. • Explore globes and how they rotate labelling its axis • Fizzing planets • Make sun dials • Paper plate earth rotation <p>Educational visit</p>	<ul style="list-style-type: none"> • Make a night scene on black paper using glitter. Turn off all the lights in class and use a torch to shine on the glitter picture. • Use dark den to experience full darkness. • Make 3D planets • Ice planets, adding food colouring to water and freezing in bowls/balloons. • Create craft rockets • Galaxy in a bottle

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<ul style="list-style-type: none"> • Use children to model movement of the Earth, moon and sun • Pencil shadow experiment • https://www.calacademy.org/educators/lesson-plans/kinesthetic-astronomy-earths-rotation • Factfile on the different planets can be presented through powerpoint or video recording 	<ul style="list-style-type: none"> • Space centre • Planetarium - Think Tank 	<ul style="list-style-type: none"> • Paint rocket splat • Fizzing planets
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Solar system, sun, moon, planets, rotate, spherical	Planets, sun, moon, axis	Space, planets

Use skills ladders for assessment

Science medium term planning

Cycle 6 Autumn Term 1 - Physics (Light)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Explain how light travels from sources to objects and then to our eyes. Explore objects that give off light and those that reflect light. Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments.	Key Knowledge. Understand how light reflects off some surfaces. Explore objects that create light. Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions	Key Knowledge. Explore sensory activities related to light and reflection (begin to observe and respond to materials and objects). Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities, to make their own observations.
Lesson Ideas <ul style="list-style-type: none"> • Explain how light rays travel in a straight line from a light source, reflect off an object and into our eyes, use model of eye and make an object out of modelling clay and wool to show how the light source hits an object then enters the eye. • Make a periscope to show how light reflects off mirrors. • Refraction investigation. Pupils draw a horizontal arrow on a small piece of paper, pupils make a prediction, and hold it behind a glass of water. The arrow should appear to change direction. Record their observations and conclusion. • Use a torch and a mirror and draw reflection route • Make shadow puppets, discuss if the shadows are the same shape as the object that has been cast 	Lesson Ideas <ul style="list-style-type: none"> • Investigate using light sources and materials that are transparent, translucent, and opaque. Which material creates shadows? • Make shadows using bodies out on playground. Look for and draw shadows of trees, plants, shed etc. in Forest School and allotment. Have a tick sheet for various shadows around school grounds and in Forest School. • Shadow investigation and exploration. Use light sources with different strengths. Which light source is better for making shadows? • Use projector in classroom to create shadows - hand shadows, sensory studio. • Use mirrors to find reflections and draw them. Identify objects that use light. 	Lesson Ideas <ul style="list-style-type: none"> • Drawing around shadows with chalk on the floor • Make shadow puppets • Use Thai shadow puppets in multicultural cupboard • Dark tent and torch for pupil to experience darkness and adding light. • Have a range of different object within the dark tent to cast shadows

Use skills ladders for assessment

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Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Light source, eye, straight lines, reflects, refraction	Shadow, light source, reflects, opaque	Shadow, light, dark

Cycle 6 Autumn Term 2 - Biology (Animals and Humans)		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know the name of the main parts of the human circulatory system, including the function of the heart, blood vessels and blood.</p> <p>Know the impact of diet, exercise, drugs and lifestyles on health.</p> <p>Know how nutrients are transported in humans and plants.</p> <p>Scientific Enquiry</p> <p>Plan different types of scientific enquiries to answer questions.</p> <p>Take measurements, using scientific equipment, with increasing accuracy.</p> <p>Record data and results of using scientific diagrams, labels and simple graphs.</p> <p>Use test results to make predictions.</p> <p>Report and presenting findings from enquiries, including conclusions.</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Know the name of the main parts of the human circulatory system; heart, blood and blood vessels.</p> <p>Know the impact of a poor lifestyle on our heart health.</p> <p>Know how blood is transported around the body.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Use simple equipment to take measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use an increasing level of scientific language.</p> <p>Share findings in a number of simple ways.</p> <p>Identify differences, similarities or changes.</p> <p>Draw simple conclusions and make predictions</p>	<p>Participate in practical activities to explore our heart and breathing (observe the results of their own actions).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities, to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Use a microscope and look at red and white blood cells. Sketch the blood showing texture and form. • How the blood moves around the heart can be shown by using kids with either red or blue on. Sports mats showing the different chambers and cones to shows veins and arteries. 	<ul style="list-style-type: none"> • Use a stethoscope to listen to each other heart and take pulse rates. • Beat the heart https://www.adventuresci.org/diy-science/posts/heart-beat-the-clock-by-science-educators/ • Use red water beads for red blood cells, table tennis balls for white blood cells and white 	<ul style="list-style-type: none"> • Blowing in and out of different objects e.g. paper bag, whistles, straws to feel the breathing process • Complete physical activities and encourage children to lie down after and feel heart beat and breath. • Breathing onto mirrored surfaces to see breath

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Use a stethoscope to listen to each other heart and take pulse rates. Record heart rate when rested after walking and running. • https://www.science-sparks.com/pumping-heart-model/ Make a simple heart model • http://www.majordifferences.com/2013/11/difference-between-diffusion-and-osmosis.html#.WBNI0vor12w - Differences between diffusion and osmosis; http://kitchenpantryscientist.com/diffusion-and-osmosis-experiments/ - Gelatine investigation (scroll down); http://www.schoolingamonkey.com/osmosis-for-kids-blood-cell/ - Egg investigation instructions. • Look at model of circulation system. Draw out a diagram of the system and to show using colour coding how various components move around and are removed. • Pupils create an advert to highlight a healthy diet and lifestyle message as well as note what can happen to the body when we don't do these things or eat too much unhealthy food. • Make a poster to show the effect of drugs/alcohol 	<p>pompoms for platelets. You can clearly see how many red blood cells there are compared to white blood cells and platelets.</p> <ul style="list-style-type: none"> • https://www.science-sparks.com/pumping-heart-model/ Make a simple heart model • https://www.science-sparks.com/make-a-stethoscope/ Make a stethoscope • https://resource-bank.scholastic.co.uk/resources/15476 a healthy heart • https://www.risingstars-uk.com/blog/may-2018/a-bloody-investigation - making blood 	<ul style="list-style-type: none"> • https://copingskillsforkids.com/deep-breathing-exercises-for-kids • https://www.icanteachmychild.com/what-is-blood-made-of/ - blood tuff tray • Pumping red water using different pipettes
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>blood, blood vessels, arteries, veins, capillaries, heart, pumps, oxygen, carbon dioxide, lungs, nutrients, water, circulatory system, diet, exercise, lifestyle, health</p>	<p>Stethoscope, heart, breathing, red blood cells, white blood cells, platelet, organ, pulse</p>	<p>breathe, fast, slow, heart, pump, beat, exercise, relax,</p>

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Cycle 6 Spring Term 1 - Physics (Light)

M - Pathway	M/E - Pathway	E Pathway
<p>Key Knowledge.</p> <p>Understand light travels in straight lines and how this creates shadows.</p> <p>Explore how different material react to light.</p> <p>Scientific Enquiry</p> <p>Plan different types of scientific enquiries to answer questions.</p> <p>Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs.</p> <p>Use test results to make predictions.</p> <p>Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Key Knowledge.</p> <p>Know how shadows are formed.</p> <p>Explore how some materials can let light through.</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Use simple equipment to take measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use an increasing level of scientific language.</p> <p>Share findings in a number of simple ways.</p> <p>Identify differences, similarities or changes.</p> <p>Draw simple conclusions and make predictions</p>	<p>Key Knowledge.</p> <p>Explore sensory activities related to shadows (begin to observe and respond to materials and objects).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities, to make their own observations.</p>
<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Explain how light rays travel in a straight line from a light source, reflect off an object and into our eyes, use model of eye and make an object out of modelling clay and wool to show how the light source hits an object then enters the eye. • Make a periscope to show how light reflects off mirrors. • Refraction investigation. Pupils draw a horizontal arrow on a small piece of paper, pupils make a prediction, and hold it behind a glass of water. The arrow should appear to change direction. Record their observations and conclusion. • Use a torch and a mirror and draw reflection route • Make shadow puppets, discuss if the shadows are the same shape as the object that has been cast 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Investigate using light sources and materials that are transparent, translucent, opaque. Which material creates shadows? • Make shadows using bodies out on playground. Look for and draw shadows of trees, plants, shed etc. in Forest School and allotment. Have a tick sheet for various shadows around school grounds and in Forest School. • Shadow investigation and exploration. Use light sources with different strengths. Which light source is better for making shadows? • Use projector in classroom to create shadows - hand shadows, sensory studio. • Use mirrors to find reflections and draw them. Identify objects that use light. 	<p>Lesson Ideas</p> <ul style="list-style-type: none"> • Drawing around shadows with chalk on the floor • Make shadow puppets • Use Thai shadow puppets in multicultural cupboard • Dark tent and torch for pupil to experience darkness and adding light. • Have a range of different object within the dark tent to cast shadows
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>

Use skills ladders for assessment

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Light source, eye, straight lines, reflects, refraction	Shadow, light source, reflects, opaque	Shadow, light, dark
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Cycle 6 Spring Term 2 - Biology (Living things and habitats)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know how living things (including microorganisms) are classified into broad groups.</p> <p>Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Recognise that living things can be grouped in a variety of ways Use classification keys to help group, identify and name a variety of living things.</p> <p>Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions</p>	<p>Explore images and examples of a range of living things and their habitats (begin to group / sort).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities, to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> Sorting and group animals into broad groups the sub groups Research living things and their habitats and write a fact file. Make graphs to show characteristics of living things and where they live. Explore branch diagrams to classify organisms. Investigate microorganisms looking at helpful or harmful. You will use 2 slices of bread and 2 clear plastic bags. Place each slice of bread in a plastic bag, then change the conditions that each slice of bread is exposed to over a week. For example, you may put 	<ul style="list-style-type: none"> Study different groups of animals fish, amphibians etc. https://www.bbc.co.uk/bitesize/topics/z6882h Create a fact file/PowerPoint of different types of animals Use Venn diagrams to group animals into fish, amphibians, reptiles, birds and mammals Use classification keys to find the answers to questions Begin to create classification keys based on familiar animals 	<ul style="list-style-type: none"> Mini sensory tubs with an environment in each and plastic animals to sort. Minibeast Identification Animal groups - use plastic animals in plastic rings. Sort safari animals from farm animals, sort fish from birds, sort pets from wild animals, etc using toys. Small world activities e.g woodland, jungle, under water with correct animals (pupils can choose through symbol correct animals to place in habitats) Create mini habitats for different animals.

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<p>one slice of bread in the light and one in the dark. Or one may go in the fridge and the other over a radiator. Or you may choose to dampen one slice of bread before putting it in the bag, while leaving the other dry.</p> <ul style="list-style-type: none"> • Pupils to identify living things in the forest school/allotment completing a field guide by classifying the organisms they find in the correct area. 	<ul style="list-style-type: none"> • https://www.bbc.co.uk/bitesize/topics/zmhxjh/articles/z9cbcwx 	
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Organism, microorganism, broad group, subgroup, classify</p>	<p>Mammal, reptile, amphibian, fish, birds, groups, venn, classification key</p>	<p>animal home, habitat, group, wild, pet</p>

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Cycle 6 Summer Term 1 - Biology (evolution and Inheritance)		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Know fossils can provide evidence of how living things have changed over time.</p> <p>Know variation occurs within offspring.</p> <p>Know how organisms adapt to their environment and adaption can lead to evolution.</p> <p>Scientific Enquiry</p> <p>Plan different types of scientific enquiries to answer questions.</p> <p>Take measurements, using scientific equipment, with increasing accuracy.</p> <p>Record data and results of using scientific diagrams, labels and simple graphs.</p> <p>Use test results to make predictions.</p> <p>Report and presenting findings from enquiries, including conclusions.</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Know how fossils are formed.</p> <p>Give examples of how an organism can adapt to their environment</p> <p>Scientific Enquiry</p> <p>Ask relevant questions and begin to try to answer them.</p> <p>Use simple equipment to take measurements.</p> <p>Gather and record data in a variety of ways.</p> <p>Use an increasing level of scientific language.</p> <p>Share findings in a number of simple ways.</p> <p>Identify differences, similarities or changes.</p> <p>Draw simple conclusions and make predictions</p>	<p>Explore how we adapt to our environment – changes in weather, etc. (participate in shared activities and sustain concentration).</p> <p>Scientific Enquiry</p> <p>Explore objects and materials in a variety of ways.</p> <p>Observe the results of their own actions.</p> <p>Respond to options or choices.</p> <p>Begin to match objects in terms of single features.</p> <p>Request events or activities.</p> <p>Participate in shared activities and sustain concentration.</p> <p>Begin to recognise change, to respond to scientific questions, to make connections or generalisations, to make simple recordings of their findings, to contribute to experiments or practical activities.</p> <p>Being to make their own observations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Explain how inherited characteristics lead to both similarities and differences between biological parents and offspring. Match parents to their offspring. • Identify variations between themselves and a peer, recording then presenting findings. • Look at different habitat's humans live in across the globe. How do we adapt to live there? • Pupils to design an animal to survive in a given environment explaining their choice of features. • Look at a simple version of Darwin's theory of evolution. Pupils create a fact file page. Horrible 	<ul style="list-style-type: none"> • https://www.youtube.com/watch?v=F14d8zaM0cw formation of fossils • Excavation • https://excavatingadventures.com/blogs/excavating-adventures-blog/oozing-obleck-excavation • https://excavatingadventures.com/blogs/excavating-adventures-blog/chocolate-rock-quarry • https://excavatingadventures.com/blogs/excavating-adventures-blog/6-diy-dinosaur-eggs-ideas • Practical demo with different materials to show how a fossil is formed. • Think about hibernation and create an animal home for an animal to hibernate in. 	<ul style="list-style-type: none"> • Look at homes in different settings – cold and hot places. • Make mini-models of home from different places. • Look at clothing of people in different countries – fur in cold places, cotton in hot places • Design a piece of clothing for different weather conditions. • Explore how different weather conditions help plants to grow – look at icy pictures with no plants and warm weather with plants. • Explore different foods eaten in winter and summer months.

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<p>Histories, Series 4, Episode 2 - song called 'Charles Darwin: Natural Selection'.</p> <ul style="list-style-type: none"> Look at fossils in rocks, link it to Darwin's views. Sequence the fossilisation process. 	<ul style="list-style-type: none"> Bear Cave – Create a cave (fort) with blankets, sheets, or towels. Pretend to be a bear waking up from a long winter's nap. Watch video's about how animals communicate with each other and how they have adapted. Look at animals that change colour 	
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Offspring, characteristics, vary/variation, inherit/inheritance, environmental variation, adaptation</p>	<p>Fossil, hibernation, adapt, excavation, formed, bones,</p>	<p>Hot, cold, warm, adapt, change</p>

Use skills ladders for assessment

Science medium term planning

Cycle 6 Summer Term 2 - Physics (electricity)

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Know the effect of voltage within a circuit (buzzer or lamp). Know the symbols for components of a circuit. Scientific Enquiry Plan different types of scientific enquiries to answer questions. Take measurements, using scientific equipment, with increasing accuracy. Record data and results of using scientific diagrams, labels and simple graphs. Use test results to make predictions. Report and presenting findings from enquiries, including conclusions. Identify scientific evidence that has been used to support or refute ideas or arguments.	Key Knowledge. Know how to construct a simple series circuit and name the parts (cell, wire, bulb, switch, and buzzer). Name materials which are conductors and insulators. Scientific Enquiry Ask relevant questions and begin to try to answer them. Use simple equipment to take measurements. Gather and record data in a variety of ways. Use an increasing level of scientific language. Share findings in a number of simple ways. Identify differences, similarities or changes. Draw simple conclusions and make predictions	Key Knowledge. Explore sensory activities related to objects which use electricity to make sound and actions (begin to respond or options or choices). Scientific Enquiry Explore objects and materials in a variety of ways. Observe the results of their own actions. Respond to options or choices. Begin to match objects in terms of single features. Request events or activities. Participate in shared activities and sustain concentration. Begin to recognise change. Begin to respond to scientific questions. Begin to make connections or generalisations. Begin to make simple recordings of their findings. Begin to contribute to experiments or practical activities. Being to make their own observations.
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Look at the amin historical discoveries made in electricity. • Plan and carry out a series of simple electrical circuit investigation • Make predictions about what will happen to a bulb, motor or buzzer depending on the voltage of the cell or battery. Discuss what difference they would expect (e.g. bulb will get brighter, it will increase in brightness, the brightness will stay the same). Model one example using a bulb, including how to draw the circuit diagram of each step with volts labelled accurately. • circuit bugs. 	<ul style="list-style-type: none"> • Make simple circuits using cell, wire and bulb • Make simple circuits using cell, wire and buzzer • Make a circuit using wire, cell, switch and bulb/buzzer • Conductor and insulator sort • https://www.bbc.co.uk/bitesize/topics/zci6yrd/articles/zb6mt39 • Predict and test materials to see if they are a conductor or insulator. • Make a human circuit to replicate an electrical circuit • Salt water circuit 	<ul style="list-style-type: none"> • Explore battery operated toys, talk about how they light up or make a sound. • Explore light switches around the school • Explore lamps and torches • Explore light toys in a dark den • Explore paddle switches in the sensory room • Explore plug in fans • Explore using the vacuum - noise and suction

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<ul style="list-style-type: none"> • Make circuit, test which materials are conductors - metal spoon, plastic spoon etc. Sort things which use /do not use electricity Parallel / series circuits with bulbs • Learn the symbols match symbol to drawing make a circuit represent it using symbols use a meter to measure voltage • Investigate does wire length affect how components in a circuit work? <p>Educational visit</p> <ul style="list-style-type: none"> • Electrifying science – Think Tank 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Circuit wire, battery, conduct, electricity, cell, wire, bulb, switch, and buzzer).	Cell, wire, bulb, switch, and buzzer, circuit, conductor, insulator	battery, switch, on, off, press, start, stop

Cycle 7 Autumn Term 1 - Biology		
M – Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Organisms Cells / Movement Know the function of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. Identify similarities and differences between plant and animal cells. Understand the organisation living things from cells to tissues to organs to systems to organisms. Understand the structure, functions of the human skeleton, to support, protection, movement and making blood cells. [<i>Understand the interaction between skeleton and muscles.</i>]</p> <p>Scientific Enquiry Ask questions, based on observations of the real world.</p>	<p>Organisms and Movement Know plants and animals are made from smaller building blocks. Name some of the key organs within animals. Name some of the key organ systems in plants. Understand the role of the skeleton has in support and protection.</p> <p>Scientific enquiry Ask simple questions, based on observations. Begin to make simple predictions.</p>	<p>Animals and Plants Participate in practical activities to explore key functions of our bodies (eating, digestion, breathing, heart rate).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways and begin to make simple observations.</p>

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<p>Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations.</p>
<p>Lesson Ideas</p>	<p>Lesson Ideas</p>	<p>Lesson Ideas</p>
<ul style="list-style-type: none"> • Learn to use a microscope. Label the parts of the microscope and look at pre prepared slides. • Prepare an onion skin slide. To observe under a microscope. Draw what they see under the microscope. • Create Venn diagrams of the parts of plant and animal cells. • Create a cell model. Use food to bake a cell cake or cell using bread. • Use Visking tubing and glucose solution experiment to demonstrate diffusion through a membrane. • Create a cell model of a bacteria. Observe videos of how bacteria are able to move. • Use pre-prepared slides to look at plant and animal tissues. Use Lego to build organ models from cells (bricks) to tissue (multiple similar bricks) to organs (a range of tissue to create a model of an organ). • Use the full sized skeleton to identify bones and bone structures. • Use chicken bones and weights to explore the strength of bones. • Use bone puzzles to learn the names and functions of the skeleton. • Play bone / cell bingo activities. 	<ul style="list-style-type: none"> • Use magnifying glasses to look at and draw objects up close. • Use a pre-set up microscope or a digital microscope to observe picture of cells and objects under a microscope. • Explore micro images of objects. Draw what they see under the microscope. • Create a cell model. Use food to bake a cell cake or cell using bread. • Explore and identify different types of tissue in the body (muscle, skin, epithelial, brain). • Identify some organs in the human body and in plants (heart, brain, lungs, stomach). • Use the full sized skeleton to identify some bones (ribcage, skull). • Use animal bones to see what bones look like from the inside. • Use bone puzzles to learn the names of some of the bones and how they protect organs like the heart and brain. • Play bone / cell bingo activities. • Create a model box to show how the skull can keep the brain (water balloon) protected. 	<ul style="list-style-type: none"> • Record or explore sounds related to eating (chewing crunch vegetables, stomach rumbling, swallowing etc.). • Participate in songs related to eating and digestion. • Listen to stories related to food and eating. • Take part in relaxation activities to experience calm breathing. • Take part in exercise to feel how our breathing changes. • Blow balloons and make objects that can move with blowing / breath. • Explore songs and sounds related to the heart. • Feel their hearts and how their heart rate changes through exercise. • Create a life size outline of a body and draw some of the organs in the body.

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Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Cell, cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. Tissue, Organ, Diffusion, Skeleton, Support, Protection, Movement.	Cell. Tissue, Organ. Skeleton, Support, Protection, Movement.	Body, Heart, Brain, Fast, Slow.

Cycle 7 Autumn Term 2 - Chemistry		
M – Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Particulate Nature of Matter and Atoms and Elements Know the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure. Know changes of state in terms of the particle model. <i>[Describe a simple (Dalton) atomic model.]</i> Describe the differences between atoms, elements and compounds Understand chemical symbols and formulae for elements and compounds. <i>[Understand conservation of mass changes of state and chemical reactions.]</i> Know energy changes on changes of state. <i>[Understand exothermic and endothermic chemical reactions (qualitative).]</i></p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results.</p>	<p>Elements, Mixtures and Compounds Name and describe the properties of a range of materials. Group materials based on their state. Know materials are made of smaller building blocks. Describe the differences between pure and impure. Be able to describe and name a range of elements. Be able to name and describe a range of compounds. Know energy is needed to melt ice and boil water.</p> <p>Scientific enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Materials Take part in activities to explore contrasting materials. (Begin to make connections or generalisations).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings.</p>

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<p>Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>		<p>Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Introduce the Periodic Table. Play Periodic Table Bingo. Play an elements hunt around school. • Introduce atoms, elements and compounds. Use Lego to build up an understanding of single bricks are atoms. Elements are the same bricks connected and compounds are different bricks connected. • Bake a cake to introduce the concept of the combining materials can create new and different products (elements to compounds). • Explore physical examples of elements and compounds. • Explore materials from different states. Explore videos of elements in different states, (Liquids; mercury, bromine). • Explore the temperatures of ice melting and boiling. Plot simple line graphs of the temperature changes. • Introduce chemical symbols as a way of simplifying chemical equations. Link this to recipes to create simplified recipes e.g. Eggs, flour and sugar make cake - $Eg + Fl + Su \rightarrow Ca$ (introduce conservation of mass) • Introduce the particle model. Use students to physically act out the particles in different states. • Use the collapsing can experiment to demonstrate air pressure. • Use HCl and Mg reaction to demonstrate an exothermic reaction. Use cool packs to demonstrate Endothermic reactions. Measure temperature changes. 	<ul style="list-style-type: none"> • Introduce materials around us and their uses. • Explore common compounds and elements and the different materials that they are made from. • Bake a cake to introduce the concept of the combining materials can create new and different products. • Use additional ingredients (seeds etc.) to cakes or jelly moulds to introduce the concept of pure, impure. • Explore materials in different states. Explore videos of elements in different states, (Liquids; mercury, bromine). • Explore and observe the changes of ice melting and boiling. • Introduce word equations as a way of simplifying reactions. Link this to recipes to create simplified recipes e.g. Eggs, flour and sugar make cake - $Eg + Flour + Sugar \rightarrow Cake$ • Use HCl and Mg reaction to demonstrate a chemical reaction and creates new products. Explore a range of chemical reactions (hydrogen pop, iron filing and HCl to make smells, Elephants Toothpaste, burning Mg and other materials. 	<ul style="list-style-type: none"> • Explore a range of liquids with different viscosities through sensory activities. • Explore making shapes with malleable materials. • Take part in activities with using hard materials (using a toy hammer, rolling pin, plastic knife). • Explore the texture of a range of objects and materials. • Cook cookies, flapjacks or cakes and introduce a range of different ingredients with contrasting textures. • Take part in making models and structures with different materials (dried spaghetti and marshmallow towers). • Explore the changes with ice as it melts. • Explore the changes with chocolate as it melts and then cools and hardens.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign

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Endothermic, Exothermic, Reaction, Reversible, Irreversible, Energy, Particle, Model, Symbol, Periodic, Element, Compound, Atom.	Reaction, Reversible, Irreversible, Energy, Liquid, Solid, Gas.	Soft, Hard, Smooth, Rough.
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Cycle 7 Spring 1 - Physics		
M – Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Space Physics Understand gravity as a force on Earth and other planets. Understand the force of gravity between planets and the sun.[Understand gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun.]Understand our Sun as a star, other stars in our galaxy, other galaxies. Understand the seasons and the Earth’s tilt Understand the light year as a unit of astronomical distance.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>Space Know the effect of gravity. Know the movement of the Earth and planets in the Solar System relative to the sun. Describe these as spherical objects. Know the movement of the Moon relative to the Earth. Know day and night is related to the rotation of the Earth. Explore the distances and scale of space.</p> <p>Scientific enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Space Participate in sensory activities related to gravity (Respond to options or choices and request events or activities.)</p> <p>Scientific enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings, Begin to match objects in terms of single features. Begin to make connections or generalisations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas

Use skills ladders for assessment

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<ul style="list-style-type: none">• Complete a gravity experiment; measure times for objects to fall from height. Design protection to keep an egg safe from a drop.• Introduce Force/Newton meters to measure the pull of gravity on objects (N). Use them to measure force for a range of objects.• Explore videos of the moon landings and how gravity changes (link to larger mass = larger gravitational pull).• Explore the gravity on the planets in the solar system. Compare how common objects would weigh on different planets. Create a PowerPoint presentation. Calculate gravitational force on each planet.• Create scale models of the Solar System with paper mâché.• Explore videos of the orbit of the Earth around the Sun and Moon around the Earth. Swing a ball on a rope to experience the forces involved, let go to experience what would happen to the Earth without gravitational forces.• Use scale models to explore the scale of different suns across galaxies. This could be 2D with chalk on the playground.• Create a disk to go on a probe to explain Earth to anyone who intercepts it.• Explore current ideas of life on other planets.• Explore the seasons in the UK and the data on temperature, daylight hours etc. Present this information in a graphical report.• Explore the position of the Earth and the influence on the seasons.• Explore the seasons and data on temperature, daylight hours etc. on other areas of the world. Link this to the position of the sun.	<ul style="list-style-type: none">• Explore how objects fall when dropped because of gravity.• Design protection to keep an egg safe from a drop.• Explore videos of the moon landings and how gravity changes and how gravity can change through the solar system.• Explore the how life would be like on contrasting planets.• Create models of the Solar System with paper mâché.• Use the models to demonstrate the orbit of the moon / planets on the playground.• Explore the sun and how it provides heat and light to the planet. Use data loggers to explore temperature changes over the day and night.• Use chalk on the playground to show the scale of the sun compared to the Earth.• Explore deep space probes. Create and build a space probe.• Create a disk to go on a probe to explain things that are important to them on Earth.• Explore current ideas of life on other planets and create alien pictures.• Explore the seasons in the UK how the temperature changes over the seasons.• Create models with torches in a dark room to demonstrate why we have day and night on Earth.	<ul style="list-style-type: none">• Create art with melted wax dripping down a board or piece of paper.• Drip paint onto sheets of card to explore the shapes and patterns.• Take part in movement songs and activities which require jumping.• Take part in activities and games that require objects to be dropped into a bucket.• Drop objects from heights to experience what happens (water balloons, balls, wet sponges, eggs).• Explore activities with parachute games.• Explore making and testing parachutes.• Drop an object onto different materials to make sounds (drums, tin foil, tambourine). Vary the object dropped.• Create simple confetti canons to explore tissue paper falling.• Participate in songs and stories related to falling.
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Use skills ladders for assessment

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<ul style="list-style-type: none"> Create models with torches in a dark room to demonstrate why we have seasons on Earth. 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Probe, Gravitational Pull, Gravity, Light Year, Galaxy, Sun, Star, Solar System, Planet, Moon, Force, Newton.	Sun, Star, Solar System, Planet, Moon, Gravity.	Drop, Fall, Pull.

Cycle 7 Spring 2 - Biology		
M – Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Space Physics Interdependence and Photosynthesis Understand the interdependence in ecosystems; Food webs and the importance of insect pollinated crops. [Know how organisms affect, and are affected by, their environment, including the accumulation of toxic materials.] Name the reactants in, and products of, photosynthesis, and a word summary for photosynthesis. Understand the adaptations of leaves for photosynthesis.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>The Environment Know what a habitat is. Know what a food chain is and how animals depend on each other. Know the function of the parts of flowering plants including their lifecycle (pollination, seed formation and seed distribution). Know what a plant needs to be healthy and how water is transported within them</p> <p>Scientific enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Living things and their Habitats Examples of habitats and animals and being to explore food chains. (begin to name and match).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to make connections or generalisations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none">• Build simple food chain using images. Include arrows to show the movement of energy. Begin to build a range of food chains with more complex examples.• Explore an animal and introduce its diet. Introduce the concept animals have multiple source of energy.• Begin to use images to build simple food webs. Begin to build or complete more complex food webs.• Explore the consequences of population changes in simple food chains. Provide examples. Explore the role of the sun within food chains and the consequences if we did not have sunlight.• Play Higher and Lower game to explore the consequences of population changes.• Explore examples of changes in population; buffalo cull in North America, Increase of the wolf in mainland Europe and the impact on the ecosystem.• Explore the damage of pollution in food chains. Explore the build-up of pollutants / poison within the food chain.• Explore and create a fact file about the dangers and damage of pollution on our ecosystem. Explore the role of plants to help the ecosystem.• Create an environmental awareness activity: litter pick, recycle drive etc.• Explore what a plant needs to grow using cress or bean sprouts. Plan and design an experiment. Collect a range of data.• Explore the equation for photosynthesis using card sorting.• Dissect leaves. Use a microscope to explore their structure. Use pre-prepared slides to explore the organelles within the leaf.	<ul style="list-style-type: none">• Explore some animals and examples of their habitats.• Create a model of contrasting habitats.• Build simple food chain using images of familiar animals. Begin to build a range of food chains with arrows to show energy movement.• Begin to use images to build simple food webs.• Dissect and label a flowering plant.• Explore how seeds can be distributed. Create sycamore seed helicopters and test their dispersal. Use a sealed plastic bag full of water to explore explosive seed dispersal.• Create an experiment to test the conditions for health plant growth (light, water, heat).• Explore how water is transported in plants through putting a flower into water with coloured dye.• Use celery to cut up and explore xylem.	<ul style="list-style-type: none">• Use models and pictures of animals to begin to recognise and name some familiar animals.• Explore stories and songs related to animals and their habitats.• Complete a bug hunt in Forest Schools.• Create a bug hotel for Forest School area.• Explore / use the motion detecting camera to find out which animals use the Forest Schools area.• Visit a park to explore the animals that live there.• Create a bird survey to identify any familiar birds.• Create a model of an animal habitat.• Pair animals into predator / prey.
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Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> Create 2D/3D models of the structure and function of leaves. 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Gas Exchange, Stoma, Diffusion, Pores, Glucose, Chlorophyll, Carbon Dioxide, Oxygen, Energy, Photosynthesis, Food Chain, Food Web, Interdependence, Pollution.	Pollution, Roots, Stem, Leaf, Habitat, Sunlight, Water.	Animal, Plant, Home, Hunt.

Cycle 7 Summer 1 Chemistry		
M – Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Pure and Impure Substances Describe the concept of a pure substance. Understand mixtures, including dissolving. Understand diffusion in terms of the particle model. Name simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography. [Be able to describe the identification of pure substances.]</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>Separating Mixtures Be able to describe a pure and impure substance. Be able to describe a mixture. Be able to understand substances can be soluble or insoluble dissolving is a reversible change. Understand we can separate mixtures by filtration. Be able to name some soluble and insoluble substances. Understand we can separate mixtures by distillation.</p> <p>Scientific enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Mixtures Explore activities where mixtures and materials are separated in a number of ways. (Explore objects and materials in a variety of ways and begin to make simple observations).</p> <p>Scientific enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Recap the work on Atoms, Elements and Compounds. • Evaporate tap water to identify dissolved substances contained within it. • Distil water to then evaporate to show how it is a pure substance. • Complete an experiment by dissolving quantities of salt in water. Explore the maximum amount of salt that can be dissolved (record mass). Evaporate water to explore collecting and measure the mass of the salt. • Evaporate a sugary drink to explore what is dissolved. • Explore experiments related to substances which are soluble and insoluble. • Introduce pure and impure substances. Explore mixture; use food to create recipes with mixtures which can be separated (e.g. fruit salad) and ones that can't as a chemical change has taken place (frying an egg). • Complete experiments to explore separate mixtures (iron filings and sand - magnet / different pasta shapes – sorting / rice and salt – sieving / sandy water – filtering). • Collect a sample of local water (or create one) to analyse (appearance / dissolved particulates). Use filtering to separate and measure particulates. • Complete an experiment to identify the purest water (provide examples with different levels of dissolved substances and particulates). • Explore chromatography with ink. Create a whodunit experiment to identify the killer's pen. 	<ul style="list-style-type: none"> • Take part in a range of activities to separate mixtures (pasta, blocks, etc.). • Complete an experiment by dissolving quantities of salt and/or sugar in water. Evaporate water to explore how the substances are still present. • Evaporate a sugary drink to explore what is dissolved. • Explore experiments related to exploring which substances which are soluble and insoluble. • Identify a range of soluble and insoluble items in the home. • Introduce pure and impure substances. Explore mixture; use food to create recipes with mixtures which can be separated (e.g. fruit salad) and ones that can't as a chemical change has taken place (frying an egg). • Complete experiments to explore separate mixtures by filtering (water with rocks and sand). • Use filtering to clean dirty water. • Use filtering to make tea or coffee. • Explore chromatography with ink to create art. Introduce that ink is a mixture of different colours. 	<ul style="list-style-type: none"> • Separate mixtures of different types of pasta into groups. • Group a mixture of materials into a range of given criteria (colour, shape etc.). • Create slime and add different materials. Use hands and tweezers to remove the materials from the slime. • Use sieves and colanders to separate mixtures of flour and rice. • Use frozen mixed vegetable and separate into groups and cook. • Use magnets on fishing lines to separate nails from flour. • Copy and build simple Lego / brick patterns or shapes and then deconstruct. • Separate Orbeez from different coloured water using hands and sieves.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Soluble, Insoluble, Dissolve, Filter, Evaporate, Condense, Distillation, Distil, Filter, Separate, Chromatography, Pure, Impure.	Soluble, Insoluble, Dissolve, Filter, Evaporate, Separate.	Sieve, Mixture, Separate.

Use skills ladders for assessment

Science medium term planning

Cycle 7 Summer 2 Physics		
M – Pathway	M/E - Pathway	E Pathway
<p>Key Knowledge.</p> <p>Sound Understand how waves on water behave. Understand echoes, reflection and absorption of sound. Understand sound needs a medium to travel. Understand sound is produced by vibrations of objects. <i>[Understand the difference between longitudinal and transverse waves.]</i> Understand the auditory range of humans and animals. <i>[Understand how pressure waves transfer energy.]</i></p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>Key Knowledge.</p> <p>Sound Know how sounds are made by vibrating objects. Describe how sound travels. Know how pitch and loudness of sounds can change. Understand sounds can be reflected or absorbed. Describe how we are unable to hear certain sounds. Describe how the ear helps us hear sounds.</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Key Knowledge.</p> <p>Sound Explore sensory activities related to making sounds and altering sounds (observe the results of their actions).</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Recap how sounds are made and how they travel. Explore creating sounds with percussive instruments to feel/observe vibration. • Create an experiment to identify how sound travels slower than light (observe / measure the gap between a hearing sound and seeing an action like hitting a drum – needs to be a considerable distance). • Explore how we are able to hear, use 3D models to explore the inner ear. Label the parts of the ear. • Create a model of an ear drum with tissue paper and a card tube. Explore the dangers of a perforated ear drum. • Explore the different ways we can have hearing impairments. Explore how these can be overcome. Explore the dangers of exposure to very loud sounds or repeated loud sounds. • Explore how sound is a pressure wave. Explore explosions and how the pressure wave from them can harm our hearing and we can feel these vibrations (explore loud music on the body/chest). • Explore how sound can be reflected or absorbed. Design and create sound proofed boxes to reduce the sound of a loud Bluetooth speaker. • Explore how sound can travel through different materials, including solids and liquids. • Explore using a large slinky how waves can be longitudinal or transverse. Explore frequency and amplitude of the wave. • Understand how sound frequency is measured in Hertz. Explore the hearing ranges of the class using different frequencies. Create data to compare age to hearing range. • Create a presentation about hearing ranges of different animals. 	<ul style="list-style-type: none"> • Recap how sounds are made and how they travel. Explore creating sounds with percussive instruments to feel/observe vibration. • Explore how we can change pitch of instruments. • Create a shoe box guitar to explore pitch. • Create an experiment to compare different pitches of instruments. • Create an experiment to identify how sound travels across a distance and still can be heard from a long distance away. • Explore how we are able to hear. Create a model of an ear drum with tissue paper and a card tube. Explore how we should keep our ears safe (not put objects down them). • Explore how sound can be reflected, explore how sound can be reflected in the Performance Hall. • Design and create sound proofed boxes to show how sound can be absorbed from a loud Bluetooth speaker. • Explore how using a funnel can help us hear sounds and how the outer ear helps us hear. • Explore how other animals use their outer ears to help them hear well. 	<ul style="list-style-type: none"> • Mystery sounds – match the object with the sound it creates. • Place glitter or rice over a speaker to observe how sound makes the rice move. • Record sounds and play them back. • Build a simple drum with a balloon and toilet roll. • Build a shaker with a bottle and rice. • Build a cardboard box guitar with elastic bands. • Create different sounds with these instruments. Record the sounds. • Use the instruments to join in with songs. • Play instruments in different spaces to explore how they sound different (echoes, reverberation). • Use GarageBand to record sounds and manipulate them.
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>

Use skills ladders for assessment

Science medium term planning

Longitudinal, Transverse, Frequency, Amplitude, Ear Drum, Malleus, Incus, Stapes, cochlea, Implant, Impairment, Pressure Wave, Vibration.	Sound, Loud, Quiet, Pitch, Vibration.	Sound, Loud, Quiet, Shake, Hit.
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Cycle 8 Autumn Term 1 - Biology		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Human Reproduction and Health Understand reproduction in humans, including the structure and function of the male and female reproductive systems. Understand the menstrual cycle fertilisation, gestation and birth. Understand the effect of maternal lifestyle on the foetus through the placenta. Understand the effects of recreational drugs (including substance misuse) on behaviour, health and life processes.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results</p>	<p>Reproduction and Health. Name and locate the key parts of the male and female reproductive systems. Understand the key concepts of reproduction in humans. Understand the key concepts within the menstrual cycle. Understand the dangers of alcohol on the foetus. Understand the dangers to health on taking recreational drugs.</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings</p>	<p>Health Explore health and hygiene routines (being active, varied diet, mental health, cleaning bodies). (Respond to options or choices and request events or activities.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Create a large picture of the body. Identify key parts and organs. Create one for a male and female. Identify similarities and differences. 	<ul style="list-style-type: none"> • Create a large picture of the body. Identify key parts and organs. Create one for a male and female. 	<ul style="list-style-type: none"> • Take part in handwashing routines. Use glitter to show if they have washed their hands correctly. • Join in with handwashing songs and routines.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Discuss differences between males and females. • Use models to explore and label the male and female reproductive system. • Explore the name and function of the parts of the reproductive system. • Explore reasons for having babies. Show model/diagram of basic facts involved in intercourse. • Explore the path of sperm through the female reproductive system. Explore images of sperm and egg cells. • Complete sort activities to order the process of fertilisation. • Explore images and models of the development of the foetus from fertilisation. • Look at images of the foetus and label the umbilical cord and placenta. • Create a model of the uterus to show how the foetus is protected (use a balloon with water / jelly). • Explore how the foetus receives nutrition through the placenta, explore the function of the umbilical cord and amniotic fluid. Explore the importance of the mother's health and the dangers of alcohol and Tabaco on the foetus. • Explore the process of vaginal and caesarean birth. • Explore the menstrual cycle. Use card sorts to identify and order the menstrual cycle. • Explore health and healthy lifestyles; diet, exercise. • Explore the dangers of smoking on the lungs and the increase risks of cancer. • Explore the importance of a balanced diet and the dangers of obesity. • Explore recreational drugs and their dangers to health. 	<ul style="list-style-type: none"> • Create models of the organs to place on the model. • Explore the differences between males and females. • Use simple diagrams to label the male and female reproductive system. • Explore the function of the main parts of the reproductive system (uterus, testes). • Explore reasons for having babies and the requirement of care for babies. • Explore how we provide care for babies (feeding, keeping warm etc.). • Explore images and models of the development of the foetus from fertilisation to birth. • Look at images of the foetus and label the umbilical cord. • Explore how we have belly buttons from the umbilical cord. • Create a model of the uterus to show how the foetus is protected (use a balloon with water / jelly). • Explore how babies can be born either vaginally or through caesarean section. • Explore key aspects of the menstrual cycle. Use social stories to identify the simple steps of the menstrual cycle and personal care. • Explore sanitary female sanitary products. • Explore healthy lifestyles; balanced diet, regular exercise. • Explore the dangers of smoking to lung health. 	<ul style="list-style-type: none"> • Explore personal cleaning products (hand soap, shampoo). Explore how they are used, feel / create foam and lather. • Use plastic dolls and ink to simulate dirt and have children clean the dolls. • Understand we need to clean our whole bodies including our private parts, particularly as we are getting older. Use correct terminology. • Understand we need to change our underwear once a day. • Explore ordering simple hygiene routines (taking off clothes before having a shower). • Join in with songs and activities linked to cleaning our bodies. • Take part in preparing and eating a range of healthy snacks. • Explore food labels and food packaging and a range of healthy and unhealthy foods. • Create healthy meal plates with cut out pictures of foods. • Join in with songs related to balanced meals and healthy eating. • Take part in relaxation and mindfulness sessions. • Take part in sessions to keep us active and elevate our heart rate. • Take part in a range of movement songs and movement activities.
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Use skills ladders for assessment

Science medium term planning

Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Uterus, Vagina, Ovaries, Fallopian Tube, Egg and Sperm Cell, Cervix, Penis, Testis, Sperm Duct, Scrotum, Lining, Umbilical Cord, Amniotic Fluid, Fertilisation, Intercourse, Menstruation.	Uterus, Vagina, Ovaries, Egg, Sperm Cell, Testis, Scrotum.	Penis, Vagina, Clean, Wash.
Cycle 8 Autumn Term 2 - Chemistry		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Chemical Reactions <i>[Understand chemical reactions as the rearrangement of atoms.]</i> Be able to represent chemical reactions using formulae and using equations. Understand combustion as a displacement reaction. <i>[Understand thermal decomposition, and oxidation and displacement reactions.]</i> Know the order of metals and carbon in the reactivity series. <i>[Know the use of carbon in obtaining metals from metal oxides.]</i> Describe the properties of ceramics, polymers and composites.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results</p>	<p>Chemical Reactions Be able to describe a range of chemical reactions. Understand chemical reactions like combustion are irreversible changes. Be able to write simple explanations about chemical reactions. To know some chemicals are more reactive than others.</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings</p>	<p>Reactions Explore a range of experiments and activities involving reactions or change. (Observe the results of their own actions and begin to recognise change.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations</p>

Use skills ladders for assessment

Science medium term planning

Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Reintroduce the Periodic Table. Reintroduce the chemical symbols and the elements within the Periodic Table. • Play Periodic Table Bingo. • Reintroduce atoms, elements and compounds. • Explore how a range of materials including elements, and compounds are used in everyday life. • Explore what composite materials are and how they are used to build houses; straw and mud, paper mache, wattle and daub, concrete, reinforced concrete, fiberglass. • Explore alloys and how these are mixtures and not chemically linked, explore their uses and history; red gold, white gold, steel, brass, bronze. • Explore the use of plastics and how they have changed the world. Explore the dangers of plastic pollution. • Complete some experiments showing chemical reactions. Burning Magnesium. Magnesium in Hydrochloric acid. Combustion of Hydrogen. Hydrochloric acid and Iron. • Write these as word and symbol equations. • Complete a rusting nail experiment. Explore the conditions of how the nail rusts. • Explore how rust is a chemical reaction with water and oxygen called oxidisation. • Explore combustion reactions. Burn different materials and measure temperature change to explore how this reaction produces energy. • Explore how combustion is • [Highest ability] Introduce the electron configuration model to show how atoms are 	<ul style="list-style-type: none"> • Explore how a range of materials including elements, and compounds are used in everyday life. • Explore the use of plastics and metals and how they are used. • Name a range of a range of elements which are used in everyday life. • Complete some experiments showing chemical reactions. Burning Magnesium. Magnesium in Hydrochloric acid. Combustion of Hydrogen. Hydrochloric acid and Iron. • Describe a range of chemical reactions. • Use cooking to explore chemical reactions and reversible changes. Separate food mixtures (separate fruit salad and explore cooking an egg and cake which are irreversible) • Cook and write down a range recipes as simple word equations – eggs + sugar + flour à Cake • Complete a rusting nail experiment. Explore the conditions of how the nail rusts. Explore this takes a long time. • Explore different decomposing foods and how they decompose at different rates. • Explore quick reactions – burning magnesium, popping hydrogen. 	<ul style="list-style-type: none"> • Explore games and activities which include cause and effect. • Observe a range of activities which explore sound, movement, smell, light etc. • Explore how materials change; crushing cooking ingredients, melting butter and cooling it, melting and cooling wax, cooking ingredients like eggs and vegetables. • Explore changes in temperature; ice packs and hot water bottles. Explore different conditions (in hot room / cold playground). • Explore changes in colour; introduce dye to beakers of water. Explore paint and mixing colours. • Explore smells; smell familiar and unfamiliar ingredients. Make potions of mixed ingredients. • Make slime and add colourings and scents to change the smell and flavour. • Explore combustion reactions; burning wire wool or wooden spills. Take pictures and zoom in on the IWB. • Make and explore Oobleck (corn starch and water). • Make and explore salt dough, changing the ratio of ingredients to change the composition. Cook the mixture to compare differences. • Observe a range of simple chemical reactions in the lab or on the IWB. Popping hydrogen, Mg and HCl etc.

Use skills ladders for assessment

Science medium term planning

constructed. Explore how chemical reactions involve changes to electron configuration.		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Electron configuration, Reversible, Irreversible, Energy, Particle, Model, Symbol, Periodic, Element, Compound, Atom.	Reversible, Irreversible, Separate, Mixture.	Change, Colour, Small, How, Cold, Smell.

Cycle 8 Spring term 1 - Physics		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Light Understand that light can travelling through a vacuum. <i>[Understand the similarities and differences between light and sound waves.]</i> Understand the transmission of light through materials and reflection from a surface. <i>[Understand absorption, diffuse scattering of light.]</i> Understand the use of ray model to explain the path of light. <i>[Describe the role of the convex lens in focusing the human eye.]</i> Understand how light transfers energy from source to absorber. Understand how light is reflected or absorbed and how this is related to the perception of colour.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations.</p>	<p>Light Know light is reflected from surfaces for us to be able to see them. Know the dangers of the sun (sunburn / eye damage). Understand light travels in straight line and this is how shadows are formed. Describe how the eye helps us see. Describe how light being reflected / absorbed helps us see colours.</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings</p>	<p>Light Explore light and dark and exploring shadows (Observe the results of their own actions and begin to recognise change.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings.</p>

Use skills ladders for assessment

Science medium term planning

Use mathematical concepts to calculate and present results		Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Recap how light is reflected from surfaces for us to be able to see them and how shadows are formed. • Explore the different speeds of light and sound. Explore footage of explosions from a distance to experience the different speeds of light and sound. • Recap how sound travels and explore videos of experiments where sound is unable to travel in a vacuum. Explore how light can travel through the vacuum of space. • Use a light box / ray models to explore and draw the path of light. Explore how light reflects from reflective surfaces. • Explore how light travels through different materials, introduce opacity, translucence and transparency. Complete an experiment to predict and test the behaviour of a range of materials. • Use a light box / ray models to explore how light travels through different materials. • Explore using prisms to show the composition of white light. • Explore how colours are created from absorption or reflection of light. • Explore the eye and the function of the lens, retina and pupil. • Use a light box / ray models to explore the function of the lens in the eye. Use magnifying glasses to explore focusing light from torches / the sun. • Explore the dangers of the sun. Explore the energy of the sun (magnifying light / solar panels / solar farms). • Explore the use of solar energy across the world. Explore the Bleach Bottle Bulb. 	<ul style="list-style-type: none"> • Explore how light is reflected from a range of surfaces. Use mirrors in a dark room to explore reflecting light. • Sort materials into shiny and dull. • Explore how light reacts to shiny and dull surfaces. • Explore how shadows are formed. Create 2D shadow models of animals. • Use torches to explore the path of light and relate to how shadows are formed. • Give reasons how we keep safe in the summer sun. • Explore models of the eye and how light travels through the pupil to help us see. Explore experiments where we put different materials in front of the eyes to see the effect. • Explore how colours are created from the reflection of coloured light. 	<ul style="list-style-type: none"> • Explore how torch light is reflected from a range of shiny surfaces and materials; use glitter balls and mirror balls to create interesting light displays. • Use mirrors in a dark room to explore reflecting light. • Use a dark room with torches to create interesting portraits or self-portraits with an iPad. • Create 2D/3D art with a range of materials which reflect light, use torches to explore how light reflects off the surfaces. • Use colour filters to change the colour of the light. • Create stained glass windows with tissue paper to display and observe how light passes through them. • Use the IWB to create shadows and use templates to project shadows of shapes and recognisable objects. • Explore videos of shadow puppet theatre. • Create 2D card shadow puppets to hang and create a shadow display. • Use magnifying glasses to explore how light can change. • Explore songs and books related to dark, light and shadows.

Use skills ladders for assessment

Science medium term planning

Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Light, Opaque, Translucent, Transparent, Ray Diagram, Light Box, Diffuse, Absorb, Scatter, Reflect.	Reflect, Mirror, Shiny, Dull.	Light, Dark, Shadow, Torch.

Cycle 8 Spring term 2 - Biology		
M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Breathing and Digestion Know the structure and functions of gas exchange system in humans. Understand the mechanism of breathing to move air in and out of the lungs. Understand the impact of exercise, asthma and smoking on the human gas exchange system. Understand the contents of a healthy human diet. Understand the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. Name the tissues and organs of the human digestive system. Describe the role of the organs within the digestive system and the path of food.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results</p>	<p>Digestion Name and locate some of the key organs within the digestive system. Name and describe the function of different teeth. Describe the path of food through the digestive system.</p> <p>Describe some of the ways how to follow a healthy lifestyle. Describe some of the dangers of following an unhealthy lifestyle. Describe a healthy and balanced diet.</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings</p>	<p>Digestion Explore food, diet and our digestive system (teeth, stomach, and using the toilet). (Begin to respond to scientific questions.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings.</p>

Use skills ladders for assessment

Science medium term planning

Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Dissect or watch a dissection of animal lungs. Watch how they expand. • Create a simple balloon model of the lungs with straws. • Label a diagram of the lungs. • Create a model of the lungs and diaphragm using a plastic bottle. Watch videos showing the mechanism of breathing. • Use the model skeleton to place lungs and diaphragm to show their position and function. • Use a spirometer to measure lung capacity. Compare across age ranges. • Explore how gas exchange happens in the lungs. Explore the composition of air we breathe out (breathing through lime water). • Use images to show how asthma impacts on breathing and how medicine helps asthma sufferers. Explore videos showing how smoking tobacco introduces tar into the lungs. Show the chemicals in cigarettes by placing some tobacco in water over time. • Use the Eat Well plate to explore healthy lifestyles and the role and function of nutrients in food; carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water. • Create a fact sheet to share the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. • Create a model of the digestive system. Create an audio story to show the path of food through the digestive system. 	<ul style="list-style-type: none"> • Draw around a child to create a life size outline. Draw on the organs of the digestive system (oesophagus/gullet, Stomach, Small Intestine, Large Intestine, Rectum.) • Use plasticine / clay to build 3D organs on the body. • Create an audio story of the path of food through the body. • Create a video to create a story about food moving through the body. • Use equipment to demonstrate food as it moves through the body (pestle and mortar, plastic bag for stomach, Bunsen tubing for intestines). • Use the teeth model to explore teeth and their job. • Use scissors and a pestle and mortar to demonstrate the function of teeth. • Take part in teeth cleaning activities with model teeth and glitter. • Practice teeth cleaning. Use disclosing tablets to identify if teeth are clean. • Create a cartoon to share the function of teeth. • Use the Eat Well plate to explore healthy lifestyles and the role of a balanced meal. • Use food labels to create a balanced diet/meal. • Explore the dangers of obesity. 	<p>Begin to respond to scientific questions, to match objects in terms of single features, to make connections or generalisations</p> <ul style="list-style-type: none"> • Revisit cleaning teeth activities. Follow cleaning teeth routines and practice cleaning teeth. • Clean the large scale teeth models. Use glitter to show when teeth are fully clean. • Participate in songs and movement activities related to cleaning teeth. • Take and explore pictures of teeth, use the skeleton and teeth models to explore teeth and their shape. • Explore favourite foods and explore food labels and food packaging. • Participate in songs on stories about eating, the stomach and digestion. • Use a full sized model to show the mouth, oesophagus and stomach. • Use a pestle and mortar and food to show the process of chewing. Use clear plastic bags to show how food is stored in the stomach. • Explore how different foods look like when in the stomach. Explore how fibrous foods can help bind the food together. • Follow routines; washing hands and cleaning ourselves. Begin to order simple sequences. • Take part in cleaning and hygiene songs and activities.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> Label the tissues and organs of the human digestive system. 		
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Imbalance, Diet, Balance, Diaphragm, Lungs, Bronchi, Bronchus, Alveoli, Asthma, Stomach, Oesophagus, Small and Large Intestine, Rectum, Carbohydrates, Lipids (fats and oils), Proteins, Vitamins, Minerals, Dietary Fibre and Water.	Stomach, Oesophagus, Small and Large Intestine, Rectum, Imbalance, Diet, Balance.	Food, Mouth, Stomach, Teeth.

Use skills ladders for assessment

Science medium term planning

Cycle 8 Summer 1 - Chemistry

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Periodic Table Understand the varying physical and chemical properties of different elements. Understand principles underpinning the Mendeleev Periodic Table. Understand the Periodic Table: periods and groups; metals and non-metals. <i>[Know how patterns in reactions can be predicted with reference to the Periodic Table.]</i> Describe the properties of metals and non-metals. <i>[Understand the chemical properties of metal and non-metal oxides with respect to acidity.]</i> Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results	Key Knowledge. Periodic Table Know the name of a range of elements. Be able to describe the properties of a range of materials. Be able to group elements based on their properties. Be able to describe and identify metals and non-metals. Be able to observe and describe the reactions of elements. Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings	Key Knowledge. Solids, Liquids and Gases Explore sensory activities related to solids, liquids and gases. Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations
Lesson Ideas <ul style="list-style-type: none"> Recap the Periodic Table. Continue to explore the elements and their location in the table. Explore the physical and chemical properties of a range of elements. Use real examples to observe the material and the reactions with heat / water / oxygen over time. 	Lesson Ideas <ul style="list-style-type: none"> Introduce the Periodic Table. Identify some familiar elements. Play Element Bingo. Explore a range of materials and elements through images and physical examples. Describe and group them based on given choices. 	Lesson Ideas <ul style="list-style-type: none"> Explore how a range of liquids pour, drip and fill containers. Explore how coloured oil and water mix and behave.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Use videos to explore other materials. • Name and describe the properties of a range of the metals in the Periodic Table. Explore their uses currently and over time. Create fact files or presentations. • Explore why gold has been used for millennia. • Create element Top Trumps cards based on the properties of a range of Elements. • Explore the use of Elements in our daily lives (lithium batteries, neon signs, copper cables etc.) • Cut the periodic table and begin to group Elements into properties (state, appearance, metallic, non-metallic, reactivity). • Use images to explore how they could be grouped into tables based on similarities and differences. • Explore how the Periodic Table is organised into groups of Elements with Similar properties. • Colour the Periodic Table to identify metals and non-metals. Explore the Elements in the Group 1 and 2 metals and Group 8 Nobel Gases. 	<ul style="list-style-type: none"> • Explore materials and introduce a range of properties; hard, soft, metal, non-metal, shiny, dull etc. begin to describe and group materials based on their properties. • Use materials to complete sorting activities. • Explore the uses of a range of familiar materials; metals, plastics, glass, paper etc.) • Create designs for a range of objects (cooking pot, bicycle, spoon, car etc.) and select the appropriate materials to use to build it. • Explore the uses of a range of familiar metals. • Group metals and non-metals based on their appearance. • Take part in a range of chemical reactions, observe and describe the reactions (burning magnesium, burning iron filings, popping hydrogen, metals and acid, combustion of material, pH colour changes etc.). • Observe a range of chemical reactions through videos (screaming jelly baby, group 1 metals etc.) 	<ul style="list-style-type: none"> • Explore how water flows and can move objects; create small rivers beds with sand and gravel and explore how the water moves the particles. • Explore waterwheels and how objects move on and under water. • Explore creating waves in a wave tank or large tray. • Use light to reflect of the surface of water so observe how the surface of the water moves. • Create balloon rockets to show how air can move. • Create windmills to explore how air can flow through objects. • Use straws to blow through to move paint and materials and experience how air moves. • Use straws and soapy water to blow through a liquid to make bubbles. • Explore making bubbles with soapy water and wire to make different sized bubbles. • Explore soft and hard materials and combine them to make shapes and simple models (blocks and plasticine).
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Group, Periodic Table, Reactivity, Reactive, Non-Reactive, Organisation, Properties, Element.</p>	<p>Periodic Table, Material, Chemical Reaction, Properties, Metal, Non-Metal, Observation.</p>	<p>Solid, Liquid, Gas, Flow, Blow.</p>

Use skills ladders for assessment

Science medium term planning

Cycle 8 Summer 2 - Physics

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Electricity and Electromagnetism Understand electric current is measured in amperes. Identify series and parallel circuits are currents. <i>[Understand potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current.]</i> Understand conducting and insulating materials. Understand the effects of static electricity. Understand magnetic poles, attraction and repulsion. Be able to plot magnetic fields lines. <i>[Understand Earth's magnetism, compass and navigation.]</i> <i>[Understand the magnetic effect of a current, electromagnets, D.C. motors.]</i> Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results	Key Knowledge. Electricity and Electromagnetism Understand the dangers of electricity and how to keep safe around electricity. Know how to construct a simple series circuit and name the parts (cell, wire, bulb, switch, buzzer). Name materials which are conductors and insulators. Describe the effect of static electricity. Understand magnetism (know force acts at a distance, magnets attract and repel each other, they are attracted to certain metals, they have poles and which poles attract/repel). Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings	Key Knowledge. Electricity and Electromagnetism Engage with activities and which explore magnetism and operating simple electrical circuits (Respond to options or choices and request events or activities.) Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> Recap how to construct simple series circuit and name the parts (cell, wire, bulb, switch, buzzer). 	<ul style="list-style-type: none"> Identify what devices we use at home and around school use electricity. 	<ul style="list-style-type: none"> Take pictures of objects which use electricity around the school.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Name a range of materials which are conductors and insulators. Name some Elements from the Periodic Table. • Create both parallel circuits and series circuits and explore the impact on bulb brightness. • Use an ammeter and voltmeter to measure V and A in a circuit. • Create an experiment with a balloon and tissue paper to measure the charge on a balloon. Use and compare different materials. • [Most able: explore the transfer of electrons, forces between charged objects creates static electricity.] • Explore the problems / dangers of static electricity; shocks, dust attracted to screens, risk of fire and explosions. • Recap magnets and poles. Explore attraction and repulsion using magnets. Create and experiment to measure the force of the attraction using magnets and weights. • Use iron filings and mini compasses to plot magnetic field lines. • Use compass to map to navigate north on a map of the school. • [Most able: explore how magnets can be used to generate electricity). • Explore the various uses of electromagnets. 	<ul style="list-style-type: none"> • Sort objects which use batteries, use mains and do not require electricity to work. • Create posters to warn about the dangers of electricity – around pylons, dangers in the home. • Explore hazard symbols related to electricity. • Complete spot the danger activities related to electrical hazards in the home. • Create comics about keeping safe at home around electricity. • Use circuits to create simple circuits. • Use chalk to draw simple circuits on the playground. Have children move around the circuit acting as electrons. • Create an experiment where different materials are tested to decide if they are conductors or insulators. • Complete a sorting activity of a range of materials based on the property of conducting or insulating. • Use a balloon and tissue paper to explore static electricity. • Explore changing variables to pick up more or less tissue paper. • Use magnets to explore attraction and repulsion. Design simple games that could be played and use magnets (magnet fishing, pushing a toy car etc.) 	<ul style="list-style-type: none"> • Sort pictures of objects and devices which use electricity and those that do not. • Use games and toys which use electricity to create cause and effect. • Use games and toys which can be turned on and off which create light, sound and movement. • Use iPads to explore cause and effect games and using switches and power buttons to turn off and on components (sound, light etc.). • Take picture of objects and devices that use switches. • Use a simple created circuit to operate a range of switches. • Explore magnetism with magnetic building blocks and games that use magnets. • Use magnets to build simple games (magnet fishing, magnet race cars with magnets under paper or desk, pick up nails in a large bottle and count or remove). • Use magnets and empty cans to make a robot face.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Electromagnet, Magnet, Poles, Field Line, Attraction, Repulsion, Force, Parallel, Series, Circuit, Volts, Amps.	Magnet, Poles, Attract, Repel, Push, Pull, Circuit, Bulb, Wire, Buzzer, Cell, Battery, Electricity, Danger.	Magnet, Switch, Bulb, Light.

Use skills ladders for assessment

Science medium term planning

Cycle 9 Autumn term 1 - Biology

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Respiration Understand aerobic and anaerobic respiration in living organisms. Be able to write a word summary for aerobic respiration. Understand the process of anaerobic respiration in humans. Understand the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>The Respiratory system Name and locate the organs within respiratory system. Understand how we breathe air in and out of the lungs. Understand the dangers of smoking on the lungs. Understand how asthma effects breathing. Understand how the circulatory system transports blood around the body.</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>The Respiratory system Explore breathing and the respiratory system. Explore changes in breathing. (Observe the results of their own actions and begin to recognise change.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings, to respond to scientific questions, to match objects in terms of single features, to make connections or generalisations</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Explore and create lists of what humans need to survive and be healthy. • Create an experiment to explore the changes in our bodies after exercise (heart and breathing rate). • Explore how we need energy for our bodies to function. Make a distinction between respiration and ventilation. 	<ul style="list-style-type: none"> • Draw around a child to create a life size outline. Draw on the organs of the respiratory system (Trachea, Lungs, Diaphragm.) • Use plasticine / clay to build 3D lungs and trachea on the drawing. • Dissect or watch a dissection of animal lungs. Watch how they expand. 	<ul style="list-style-type: none"> • Find images of the lungs in and other familiar organs in tuff tray activity. • Complete exercise and relaxation activities to experience how our breathing changes when we are resting and exercising. • Take videos or record the sound of our breathing when we are breathing slowly and quickly.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> Recap the organs within the cell and recap the role of the mitochondria to make energy. Explore how in our cells a chemical reaction creates energy for our bodies to function. Explore the equation for aerobic respiration: glucose + oxygen → carbon dioxide + water. Identify where we receive and release each of the chemicals. Explore how we get glucose (use food labels to compare the energy of different foods) onto our bodies and how this is the fuel to help create energy. Create an experiment to put our bodies into anaerobic respiration and explore the effects of the build-up of lactic acid. Explore how in situations where the body does not have enough oxygen it moves to a different type of respiration to make energy. Explore the equation for anaerobic respiration: glucose → lactic acid. Explore how the build-up of lactic acid feels. Making bread from yeast and observe the changes and the effect of carbon dioxide. Explore making different types of bread which don't produce carbon dioxide (sourdough). Explore fermentation and design an experiment to use balloons and test tubes to collect carbon dioxide. Change temperature and amount of yeast / glucose). 	<ul style="list-style-type: none"> Create a simple balloon model of the lungs with straws. Label a diagram of the lungs. Create a model of the lungs and diaphragm using a plastic bottle. Watch videos showing the mechanism of breathing. Use the model skeleton to place lungs and diaphragm to show their position and function. Explore how asthma affects individuals. Explore how medicine can manage the condition. Create a poster to explain asthma. Explore videos showing how smoking tobacco introduces tar into the lungs. Show the chemicals in cigarettes by placing some tobacco in water over time. Use the drawing outline to place a picture of the heart. Draw the blood vessels, showing how blood moves around all of the body. Explore blood vessels on their bodies; wrists, eyes. Explore finding their pulse and how their heart rate changes with exercise. Draw the body with chalk on the playground and have children pretend to be blood cells moving around the body. 	<ul style="list-style-type: none"> Use balloons and spirometers to experience our lungs emptying oxygen. Take part in activities and games where we blow and use our breath to move objects (blow football, blowing tissue shapes). Take part in songs and activities linked to breathing out and in. Create a life sized model of a person on paper. Draw the mouth and the lungs onto the model. Use plasticine to build up a 3D model to show lungs, windpipe and mouth. Use balloons to add to the model to experience how our lungs inflate when we breath in.
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Yeast, Microorganism, Fermentation, Respiration, Ventilation, Anaerobic, Aerobic, Lactic Acid, Glucose, Carbon Dioxide.</p>	<p>Trachea, Lungs, Diaphragm, Asthma, Medicine, Tobacco, Tar.</p>	<p>Lungs, Breathing, Mouth, Slow, Fast.</p>

Use skills ladders for assessment

Science medium term planning

Cycle 9 Autumn term 2 - Chemistry

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Acids and Alkalis Be able to define acids and alkalis in terms of neutralisation reactions. Know the pH scale for measuring acidity/alkalinity; and indicators <i>[Understand reactions of acids with metals to produce a salt plus hydrogen.]</i> Know reactions of acids with alkalis to produce a salt plus water. <i>[Know what catalysts do.]</i> Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.	Key Knowledge. Acids and Alkalis Be able to name some products in the home which are acids and alkalis. Be able to use universal indicator to identify if a solution is an acid or alkali. To know how to handle acids and alkalis in the home safely. To know how to identify hazard and warning labels and what they mean. Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.	Key Knowledge. Safety Take part in following safety routines related to safety in the home and in school. (Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities.) Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Explore hazard labels on household chemicals. Identify hazard labels and their meaning. • Explore how to safely handle and store chemicals in the home (bleach, cleaning products). • Explore the dangers of some common chemicals in the home and how what to do if we come in contact with them accidentally. 	<ul style="list-style-type: none"> • Explore a range of bottles and labels of house hold cleaners. • Create posters about how to be safe / dangers of cleaning products in the home. • Create an experiment to explore what cleaning products can do to materials (e.g. bleach on clothing, dish cleaner on oils). 	<ul style="list-style-type: none"> • Take photographs of warning signs around school. • Explore warning and hazard labels on products. • Explore a range of photographs and product labels of cleaning products used in the home. • Explore and follow routines in washing up equipment in the kitchen (using washing up liquid safely).

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Begin to group some common household products and ingredients in to Acid and Alkali groups. • Measure the pH of a range of everyday items around the home using universal indicator paper. • Measure the pH of a range of cleaning items using universal indicator solution. • Introduce the pH scale and create a pH scale. Create a large scale pH chart and have children stand where they think the pH of common substances would be. • Explore the effect of adding water to a lightly acidic solution. Create an experiment to explore. • Explore a range of common pH neutral substances such as distilled water. Design an experiment to identify a hand soap which is the most neutral. • Use universal indicator solution to explore neutralising a solution with sodium hydroxide and hydrochloric acid. • Explore and describe acid reacting with metals (iron, magnesium, zinc, copper.). • Explore the word and symbol equations of the reactions (creation of metal salt – metal chloride and hydrogen). 	<ul style="list-style-type: none"> • Explore the tastes of acidic foods (citrus fruits, sour sweets etc.). • Create an experiment to use UI paper to measure the pH of a range of household products (soap, shampoo etc.). Create a large scale pH chart to place the chemicals on. • Create a podcast / video about how to be safe in the laboratory and around chemicals. • Create a podcast / video about how to be safe in around chemicals in the home. • Identify warning signs around school and in the home. • Create warning posters / hazard symbols. 	<ul style="list-style-type: none"> • Explore and follow routines in wiping a surface down. Spraying a safe cleaning product (or water). • Follow cleaning routines using a spray and a mop by adding some cleaning product to water. • Join in with cooking activities to use cooking equipment safely with support. Explore the dangers of using the equipment (sharp knives, hot ovens, breakable glass, hygiene routines.)
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Metal Salt, Reaction, Chemical Change, Irreversible, pH scale, Acid, Alkali, Hazard.</p>	<p>Acid, Alkali, Safety, Hazard, Symbol, Danger.</p>	<p>Symbol, Safety, Cleaning, Danger.</p>

Use skills ladders for assessment

Science medium term planning

Cycle 9 Spring term 1 Physics

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Motion and Forces Understand speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time). Understand forces as pushes or pulls, arising from the interaction between two objects. Use force arrows to label and describe balanced and unbalanced forces. Understand forces are needed to move, stop or change objects directions. Understand contact forces: stretching and squashing – springs; friction between surfaces, with pushing things out of the way; resistance to motion of air and water. Understand non-contact forces: gravity, forces between magnets and forces due to static electricity. Understand upthrust effects, floating and sinking in water. Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.	Key Knowledge. Motion and Forces Understand friction as a force and how this changes over different surfaces. Understand the forces of gravity, air resistance, water resistance and friction. Understand how levers, pulleys and gears allow forces to have a greater effect. Be able to use force arrows in diagrams to show forces. Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.	Key Knowledge. Forces Use toys and games to explore how forces act on objects – gears, levers and pulleys (Observe the results of their own actions and begin to recognise change.) Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features.
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> Explore the meaning of speed (the rate at which an object is moving). 	<ul style="list-style-type: none"> Design an experiment to measure the distance a car travels over different surfaces using ramps. 	<ul style="list-style-type: none"> Explore games and activities which explore push and pull forces.

Use skills ladders for assessment

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<ul style="list-style-type: none"> • Explore the speed of a range of objects. Sort objects based on their speed. • Create an experiment to measure the speed of some objects (a ball being kicked, falling from a height, a car down a ramp, a car on the road). • Calculate speeds of objects and explore and interpret distance-time graphs. • Recap and explore forces including push, pull, gravity, air resistance, friction, water resistance. • Explore how we can reduce forces including air resistance, friction and water resistance. • Use force arrows to label diagrams of a range of forces. • Explore the impact of balanced and unbalanced forces. Explore objects accelerating and travelling at a constant speed. Use force labels describe balanced and unbalanced forces. • Create an experiment to explore air resistance (create a design to increase the drag of an object being dropped from height). • Create an experiment to explore water resistance (create a design to reduce the drag of an object being dropped through a water cylinder). • Create an experiment to create a design that floats and can carry the most mass. • Create an experiment to measure the length of a spring when weights are incrementally added to the spring. Plot a line graph of the results. 	<ul style="list-style-type: none"> • Design an experiment to measure distance of an object after water or a lubricant is added to the surface. • Take part in an experiment to use force meters to measure the forces over pulling shoes over different surfaces. • Take part in an experiment to use force meters to measure the forces over pulling different shoes over a surface. • Take part in an experiment to show different objects will fall at the same speed. • Explore and sort images of objects that travel fast and slow. Use plasticine to create similar shapes. • Design an object to increase air resistance and time its drop to the ground. • Design an object to decrease air resistance and time its drop to the ground. • Explore and sort images of objects that travel quickly through water. Use plasticine to create similar shapes. • Use a large measuring cylinder full of water to make and test a range of streamlined shapes. • Use force arrows to label falling objects and objects moving forward. • Explore how mechanical devices can be used in everyday life. Use mechanical devices (tin opener, opening a tin of paint with a lever etc.). • Create a simple game or toy which uses a mechanical device. 	<ul style="list-style-type: none"> • Use a range of equipment (scooters / bikes / wheeled boards) to have children experience being pushed and pulled and the experience of pushing and pulling others. • Use cars to explore how they can move and how far they can move when we change the push force. • Explore games and activities which use a range of mechanical devices like levers, pulleys and gears. • Explore gears and use cut outs to join gears together and explore how they move together. Explore turning and gears rotate. • Explore levers through seesaw activities. Use seesaws to experience moving up and down and how we use force to do this. • Use small seesaws and weights to experience how a seesaw moves up and down. • Use small seesaws to flick tiddlywinks into a cup. Explore how we can change how far it moves with the force we use.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Mass, Upthrust, Force, Air Resistance, Drag, Balanced, Unbalanced, Speed, Water Resistance, Mass, Measure, Average.	Force, Force Arrow, Air Resistance, Friction, Gravity, Water Resistance, Pulley, Gear, Lever.	Move, Push, Pull, Seesaw, Spin, Up, Down.

Use skills ladders for assessment

Science medium term planning

Cycle 9 Spring term 2 Biology

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Evolution and Inheritance Know heredity as the process by which genetic information is transmitted from one generation to the next. Know a simple model of chromosomes, genes and DNA in heredity. <i>[Understand the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model.]</i> Describe variation between species. Understand the variation between individuals within a species. Understand the role of inheritance in driving natural selection. Understand the role of inheritance in driving natural selection which in turn may lead to extinction. Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.	Key Knowledge. Evolution and Inheritance Understand how genetic information is passed from one generation to the next. Explore how genetic traits can be passed on in animals and humans. Describe variation within a species like dogs. Understand how selective breeding in animals can drive variation. Understand how variation can have a positive or negative impact. Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.	Key Knowledge. Inheritance Explore how offspring of animals are similar to their parents. Explore similarity and variation. (Begin to make simple recordings of their findings.) Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings, to respond to scientific questions, to match objects in terms of single features, to make connections or generalisations
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> Explore through images how offspring are similar to their parents but there might be variation. 	<ul style="list-style-type: none"> Explore, compare and sort images of parents and offspring in a range of animals. 	<ul style="list-style-type: none"> Explore any changes in their lives, change of home, change of school etc.

Use skills ladders for assessment

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<ul style="list-style-type: none"> • Recap fertilisation and how the egg and sperm carry genetic information. • Explore some hereditary traits within families. • Identify and group hereditary traits and environmental traits. • Create models of DNA and chromosomes to explore how they carry information which is passed on to offspring. • Create a presentation on Watson and Crick and the development of the DNA model. • Explore how selective breeding has created variation between dogs. Explore a range of breeds and how they have been bred for a role or function. • Explore variation in the human population. Use data to explore the range (height, eye colour, hair colour, skin colour, life length etc.) Use data to present the variation within the human population. • Explore the extremes of variation in the human population (height, age, life length). • Explore natural selection and how animals have slowly evolved over time. (Explore Peppered Moths and how they changed colour during the industrial revolution). • Explore how humans have slowly evolved over time and the importance of intelligence in our success. • Explore the extinction of species like the Dodo and the importance of biodiversity 	<ul style="list-style-type: none"> • Explore images of family members and identify similarities and differences. • Explore and images of siblings and identify similarities and differences. • Recap how genetic information is passed on during fertilisation. • Play a game where genetic traits (eye colour, skin colour, hair colour etc. are picked out at random to draw siblings. • Complete a game of Chinese whispers to explore how information can be passed on but can change over time. • Explore examples of variation between different species. Explore the biggest / smallest within species. • Use pictures to show how selective breeding in plants based of the fruit size can lead to bigger fruit being grown. • Explore how selective breeding has created variation between dogs. Explore a range of breeds and how they have been bred for a role or function. • Explore some common genetic abnormalities (albinism, CF, Cleft Lip/Palate). 	<ul style="list-style-type: none"> • Use mirrors to explore their facial features. Use cut out facial parts to construct their faces. • Explore images of the children as they were babies or younger and explore how they have changed. • Explore images of their parents and close family members use cut out facial parts to explore the similarities and differences. • Explore images of a variety of animal babies. • Begin to match the baby with the adult. • Explore how some animals and plants grow and develop. Explore the lifecycle of a chicken. • Grow a bean sprout to show how it develops and grows over time. Take home the plant to continue to grow at home. • Explore variation within school. Compare heights within the class or with other classes. Take photographs of people who we are similar or different to. Explore how height changes when we grow through the school. • Explore images of the tallest and shortest person to have lived. • Create life sized cut outs of height extremes to have children stand or lie next to. • Explore the variation in dog breeds.
<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>	<p>Key Vocab / symbols/ Sign</p>
<p>Biodiversity, Inheritance, Natural Selection, Selective Breeding, Variation, DNA, Chromosomes, Genes, Hereditary.</p>	<p>Selective Breeding, Variation, Genetic, Inherit, Trait.</p>	<p>Parent, Child, Baby, Adult, Same, Different.</p>

Use skills ladders for assessment

Science medium term planning

Cycle 9 Summer 1 – Chemistry

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge.	Key Knowledge.	Key Knowledge.
<p>Earth and Atmosphere Know the composition of the Earth's structure. Know the rock cycle and the formation of igneous, sedimentary and metamorphic rocks. Know the Earth as a source of limited resources and the efficacy of recycling <i>[Describe the carbon cycle.]</i> Describe the composition of the atmosphere. Know production of carbon dioxide by human activity and the impact on climate.</p> <p>Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.</p>	<p>The Earth Know the simple composition of the Earth's structure. Know the simple composition of the Earth's atmosphere. Know the different types of rock and composition of soil. Know how fossils are formed. Know how and why we recycle. Understand pollution and its impact on the Earth. Understand the impact of climate change</p> <p>Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.</p>	<p>Earth Participate in activities related to recycling. (Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities.)</p> <p>Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings. Begin to respond to scientific questions. Begin to match objects in terms of single features. Begin to make connections or generalisations.</p>
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Create a 3D model of the Earth's structure using plasticine or paper mâché. • Explore tectonic plates and create a model with cake pieces and jam. • Explore the composition of other planets within the solar system and compare them to Earth, include the composition of the atmosphere. 	<ul style="list-style-type: none"> • Create a 3D model of the Earth's structure using plasticine or paper mâché. • Explore the composition of air by burning a candle then removing the oxygen. • Collect different soil samples. Explore the samples with a magnifying glass and under a microscope. 	<ul style="list-style-type: none"> • Collect a range of empty wrappers and products to explore the materials they are made from. • Complete a litter pick around school or the local community. • Complete a paper collection around the school to be recycled.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Explore images and examples of different rock types. Describe and group the rocks based on properties. • Explore examples of igneous, sedimentary and metamorphic rocks. • Create an experiment to create igneous rocks using heated and cooled sugar or make honeycomb. • Create an experiment to create metamorphic rocks by heating and melting different crayons then cooling them. • Create an experiment to create sedimentary rocks by using a large see through container (plastic bottle) of water and adding layers of sand, gravel and rocks then shaking. This can be done by breaking up different coloured cake and then mixing and squashing together. • Explore how the Earth's resources are limited and how recycling can reduce pollution and is more sustainable. • Explore the Carbon cycle and create a 2D shoebox model of the Carbon Cycle. Explore the impact of Carbon on the climate and how we can reduce this. 	<ul style="list-style-type: none"> • Explore examples of different rocks and begin to describe and sort them. • Create fossils with animals imprinted into salt dough. • Use plaster of Paris to create moulds from imprints. • Place animals in plaster of Paris to explore chipping away to reveal the creature. • Complete a recycling drive in school. • Create an environmental awareness activity: litter pick, recycle drive etc. • Create recycling posters or video presentations to highlight the problems with pollution and climate change. • Explore and respond to photographs of pollution around the world. 	<ul style="list-style-type: none"> • Use recycled packaging to create a new product (piggy bank from a bottle, old shirts to make a simple textiles cushion, use CDs to make animal mobiles etc.). • Sort a range of materials into different recycling boxes. Plastic, paper, metal etc.). • Use paper to create seedling starter pots. • Make seed paper (blend paper together with some water, make flat plate like shapes, add seeds and then dry). • Create a compost drive. Explore the compost heap in Forest Schools. • Explore how organic material degrades over time.
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Carbon Cycle, Recycling, Rock Cycle, Igneous, Sedimentary, Metamorphic, Atmosphere, Pollution, Techtronic.	Recycling, Pollution, Rock, Core, Crust, Fossil.	Recycle, Rubbish.

Use skills ladders for assessment

Science medium term planning

Cycle 9 Summer 2 – Physics

M - Pathway	M/E - Pathway	E Pathway
Key Knowledge. Energy To be able to compare energy values of different foods (from labels) (kJ) Be able to compare power ratings of appliances in watts (W, kW) <i>[Understand domestic fuel bills, fuel use and costs.]</i> Understand fuels and energy resources. Understand how temperature difference between two objects leads to energy transfer from the hotter to the cooler one. Understand how energy can be transferred by conduction or radiation and how use of insulators can reduce this transfer. Be able to compare the starting with the final conditions describing increases and decreases in the temperatures. Scientific Enquiry Ask questions, based on observations of the real world. Make predictions using scientific understanding and knowledge. Plan and carry out scientific enquiries. Use a range of appropriate apparatus and techniques. Make and record observations and measurements with increasing accuracy and precision. Evaluate the reliability of their investigations and results. Share reasoned explanations. Use mathematical concepts to calculate and present results.	Key Knowledge. Energy To be able to able to identify foods which are high and low in energy. To be able to compare the power ratings for a range of familiar household appliances. Understand how we use fuels to heat our homes and power machines. Understand heat moves from hot to cold. Understand how different types of heaters can transfer heat by conduction and radiation. Understand how insulators can reduce heat loss. Scientific Enquiry Ask simple questions, based on observations. Begin to make simple predictions. Help to plan and carry out scientific experiments. Use scientific apparatus. Make and record observations. Begin to evaluate their work. Use mathematical concepts to calculate results. Begin to share their findings.	Key Knowledge. Energy Explore sensory experiences involving temperature changes. (Respond to options or choices and request events or activities.) Scientific Enquiry Explore objects and materials in a variety of ways and begin to make simple observations. Observe the results of their own actions and begin to recognise change. Respond to options or choices and request events or activities. Participate in shared activities and sustain concentration and begin to contribute to experiments or practical activities. Begin to make simple recordings of their findings, respond to scientific questions, match objects in terms of single features. make connections or generalisations
Lesson Ideas	Lesson Ideas	Lesson Ideas
<ul style="list-style-type: none"> • Collect and explore a range of food labels. Compare and play Top Trumps style games related to nutrient content, including energy in KJ). • Group foods based on their food labels. 	<ul style="list-style-type: none"> • Use food labels to identify foods high and low in energy. • Create and cook recipes that use alternative ingredients to reduce the energy content. 	<ul style="list-style-type: none"> • Explore the clothing we wear in different temperatures. • Match weather conditions to the appropriate clothing.

Use skills ladders for assessment

Science medium term planning

<ul style="list-style-type: none"> • Complete an experiment where food is burned to heat water. Explore which foods contain the most energy. • Complete a survey around school and at home about the power ratings of different appliances. • Use the internet to compare the Power ratings of a range of common household appliances (TV, washing machine, fridge, vacuum cleaner). • Use given equations to compare the amount of energy transfer. • Explore domestic fuel bills and how to reduce energy consumption at home and the average cost of using various appliances per hour. • Explore the variety of fuels used across the world to heat and create power (oil, gas, petrol, diesel, wood, charcoal). • Create an experiment to measure the heat transfer of heat within beakers of hot water with different types of insulation (bubble wrap, textiles etc.). • Create an experiment to measure the insulation of ice (thermos flasks, open beakers, insulated beakers). • Explore how energy can be transferred in the home (radiation from fires, conduction through materials, convection through the room). • Explore conduction through heating a metal clamp rod and measuring the temperature of the end of the pole with an IR thermometer. • Explore convection currents in a beaker with dye. • Explore radiation by measuring the temperature inform of a UV heat source. 	<ul style="list-style-type: none"> • Group foods based on their food labels. • Burn different foods to observe the foods containing the most energy. • Collect the power rating for a range of electronic devices around school. • Use the internet to compare the Power ratings of a range of common household appliances (TV, washing machine, fridge, vacuum cleaner). • Explore the ways we heat our homes and how people heat their homes across the world. • Explore the ways we fuel cars and different types of transport. • Create an experiment to measure how a heat reduces in a beaker of hot water over time. • Explore the different heaters we use in our homes and the ways we can keep our houses insulated. • Experience conduction by feeling how heat is transferred through solids. • Experience radiation through having a campfire in forest schools. Use thermometers to measure temperature differences. 	<ul style="list-style-type: none"> • Explore how we keep ourselves cool and warm in different weather conditions. • Explore how fans and water spray can help keep us cool. • Explore tuff trays with hot and cold water to experience different temperatures. • Explore ice and observe how ice melts over time. • Explore and observe how water boils in a beaker. • Make hot and iced drinks. • Explore how we heat our homes or cool them down when it is hot. • Explore the different ways we can heat our homes. • Explore the different ways we can cook food and take part in cooking simple recipes involving different cooking methods
Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign	Key Vocab / symbols/ Sign
Heat Transfer, Insulator, Conductor, Conduction, Radiation, Convection, Power Kilojoule, Fuel, Consumption.	Insulator, Conductor, Radiation, Fuel, Power.	Hot, Cold, Weather, Cool, Warm.

Use skills ladders for assessment

Science medium term planning

For KS4 planning see AQA Unit Award Unit Planning for Pre ELC, AQA ELC Block planning for Entry Level or AQA GCSE Block planning for GCSE Synergy.

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p><u>Biology</u></p> <p>Pre ELC – The Human Body Unit 1</p> <p>ELC - Component 1 - The Human Body</p> <p>GCSE - Block 2 and 3</p>	<p><u>Chemistry</u></p> <p>Pre ELC – Chemicals and Hazards</p> <p>ELC - Component 3 – Elements, Mixtures and Compounds</p> <p>GCSE - Block 5 and 8</p>	<p><u>Physics</u></p> <p>Pre ELC – Electricity</p> <p>ELC Component 5 – Energy, forces and the structure of matter</p> <p>GCSE - Block 6 and 7</p>	<p><u>Biology</u></p> <p>Pre ELC – Looking After Plants Unit 1</p> <p>ELC Component 2 - Environment, evolution and inheritance</p> <p>GCSE - Block 2 and 4</p>	<p><u>Chemistry</u></p> <p>Pre ELC – Introduction to Everyday Materials</p> <p>ELC - Component 4 – Chemistry in Our word</p> <p>GCSE - Block 1 and 8</p>	<p><u>Physics</u></p> <p>Pre ELC – Recycling</p> <p>ELC - Component 6 – Electricity, magnetism and waves</p> <p>GCSE - Block 6 and 7</p>
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p><u>Biology</u></p> <p>Pre ELC – The Human Body Unit 1</p> <p>ELC - Component 1 and 2</p> <p>GCSE - Block 2, 3 and 4</p>	<p><u>Chemistry</u></p> <p>Pre ELC – Materials and their uses</p> <p>Component 3 and 4</p> <p>GCSE - Block 1, 4, 5 and 8</p>	<p><u>Physics</u></p> <p>Pre ELC – Sound and Hearing</p> <p>Component 5 and 6</p> <p>GCSE - Block 6 and 7</p>	<p><u>Biology</u></p> <p>Pre ELC – Looking After Plants Unit 2</p> <p>ELC/GCSE Revision or Portfolio Preparation</p>	<p><u>Chemistry</u></p> <p>Pre ELC – Materials and their Properties.</p> <p>ELC/GCSE Revision or Portfolio Preparation</p>	<p><u>Physics</u></p> <p>Pre ELC – Solids and Liquids</p>

Use skills ladders for assessment