



## Science knowledge and skills progression map

- Work scientifically:** this concept involves learning the methodologies of the discipline of science.
- Understand plants:** this concept involves becoming familiar with different types of plants, their structure and reproduction.
- Understand animals and humans:** this concept involves becoming familiar with different types of animals, humans and the life processes they share.
- Investigate materials:** this concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.
- Investigate living things and habitats:** this concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.
- Understand evolution and inheritance:** this concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.
- Understand movement, forces and magnets:** this concept involves understanding what causes motion.
- Understand the Earth's movement in space:** this concept involves understanding what causes seasonal changes, day and night.
- Investigate light and seeing:** this concept involves understanding how light and reflection affect sight.
- Investigate sound and hearing:** this concept involves understanding how sound is produced, how it travels and how it is heard.
- Understand electrical circuits:** this concept involves understanding circuits and their role in electrical applications.

### work scientifically

Nursery	<p><b>Continuous provision:</b></p> <p>Use water and sand toys to explore how water and sand can be used in different ways and can be used to make a sequence of changes.</p> <p>Use observations to talk about what they see in the environment around them using a range of vocabulary.</p> <p>Use resources and role play for exploration to investigate how things work.</p> <p>Use all of their senses through resources, environment and role play to learn through trial and error.</p> <p>Talk about what they see during the season of autumn, using a range of vocabulary – <i>leaves, brown, red, orange, falling, yellow, green, curvy, pointy, smooth, sharp, rough, spikey, conker, pine cones, twigs</i></p> <p>Describe and label objects linked to autumn that they find in the natural environment in school and at home.</p> <p>Sort different autumn materials found in the school grounds using simple categories – <i>colour and size</i>.</p> <p>Explore how materials can be changed to make playdough.</p> <p>Using pumpkins, talk about what they see and use all their senses in hands on exploration.</p> <p>Use simple language to talk about animals found on a farm.</p>
---------	---

	<p>Talk about what they see during the season of winter, using a range of vocabulary – <i>ice, cold, snow, frost, wet, icicle, snowman, melt, frozen, water, leaves, branches, tree, fallen, bare</i></p> <p>Use all their senses to explore ice.</p> <p>Talk about what they see in the environment when looking for signs of new life.</p> <p>Talk about what they see when finding flowers in the outdoor area – <i>colour, size, shape</i> – and begin to make comparisons between different flowers based on their observations.</p> <p>Talk about what they see after planting flowers in the outdoor area.</p> <p>Explore how plants grow.</p> <p>Use simple language to talk about how a plant grows.</p> <p>Use drawings to record the different stages of a caterpillar's life cycle.</p>
Reception	<p><b>Continuous provision:</b> use senses to describe the taste, smell, touch, sound and appearance of the world around them.</p> <p>Collect autumn materials around the school grounds and describe them.</p> <p>Sort and compare different autumn materials found in the school grounds and local area – <i>shapes, colours, texture, size</i></p> <p>Collect observations about autumn in our school grounds and record data in a tick sheet.</p> <p>Use observations to answer – What is autumn like in our school grounds?</p> <p>Record favourite fruit and vegetables that they have found in our school grounds in a tally chart.</p> <p>Sort images of nocturnal animals.</p> <p>Observe and describe nocturnal animals.</p> <p>Record likes and dislikes on a tick chart linked to Diwali food.</p> <p>Record observations on a tick chart to show what objects they can find using a torch in the dark.</p> <p>Draw around shadows on different objects in the school ground.</p> <p>Sort images of different types of vehicles that travel on the road, water or air – <i>ambulance, car, helicopter, boat, plane, parachute, bike, bicycle, submarine</i></p> <p>Create tally of favourite foods linked to the taste of fruits from Handa's Surprise.</p> <p>Make observations to describe different African animals.</p> <p>Draw different African animals and select own materials to create textures.</p> <p>Use internet research to identify different endangered animals in the world.</p> <p>Ask and answer simple questions to identify different fruits and animals in Africa.</p> <p>Use simple time vocabulary to explain observations of a bean growing.</p> <p>Draw diagrams to show the life cycle of a bean.</p> <p>Make observations about the life cycle of a tadpole and name each stage.</p> <p>Observe mini-beasts and the hatching of chicks in the classroom – <i>what they look like, how they move</i></p> <p>Explore school grounds and collect different types of minibeasts at different stages in their life cycle.</p> <p>Record the lifecycle of a butterfly and ladybird using sentences and pictures.</p> <p>Make observations and describe different groups of minibeasts.</p>

	Sort different types of minibeasts from observations.
Year 1	<p>Draw different parts of the human body – <i>foot, leg, hip, arm, shoulder, neck, head</i></p> <p>Record data when identifying a range of different tastes, smells, textures, sounds and images.</p> <p>Observe the signs of autumn on a walk around the school grounds and present findings as a weather report.</p> <p>Observe the signs of winter on a walk around the school grounds and present findings as a weather report.</p> <p>Identify objects by describing the properties of the material from which they are made.</p> <p>Perform a simple test to find out which material would be the best material to make a house for the Three Little Pigs.</p> <p>Identify and classify everyday materials based on their properties.</p> <p>Observe the signs of spring on a walk around the school grounds and present findings as a weather report</p> <p>Use observations to answer - What common plants are found in our school area?</p> <p>Record the types, and amounts, of common wild plants found in our school area using a block graph.</p> <p>Use observations to answer – How does a bean plant change over time?</p> <p>Use observations to name and describe deciduous and evergreen trees in our school area.</p> <p>Observe the signs of summer on a walk around the school grounds and present findings as a weather report.</p>
Year 2	<p>Classify different objects and the properties of the materials that they are made from using a carroll diagram.</p> <p>Use observations and ideas to answer question – How can you change the shape of this object?</p> <p>Perform a simple test to identify the best material to make a raincoat.</p> <p>Record data in and table and present results in a block graph to answer the question – Which material is the most suitable to make a raincoat?</p> <p>Use observations and ideas to answer – How do different animals grow?</p> <p>Perform a simple test to show the importance of exercise – What exercise can we do to keep fit?</p> <p>Perform a simple test to show the importance of hygiene – What is the best way to get rid of germs when washing your hands?</p> <p>Use observations and idea to answer the question – What is the best way to get rid of germs when washing your hands?</p> <p>Observe closely different habitats in the school area using simple equipment.</p> <p>Gather and record data of the animals and plants found in the habitats around school.</p> <p>Observe plants in the school area closely using magnifying glasses.</p> <p>Perform a simple test to find out if their seed/bulb can grow healthily.</p> <p>Gather data – height of plant – to find out how fast the seed/bulb grows.</p> <p>Use observations to answer – What does a seed/bulb need to grow healthily?</p>
Year 3	<p>Use simple scientific language to record the different types of rocks found in the school grounds.</p> <p>Gather and record data on a table to answer the question – How have different types of rocks been used in our school?</p> <p>Use labelled diagrams to show how rocks have changed over time – church visit</p> <p>Classify different types of rocks using a carroll diagram.</p> <p>Record findings into a table to identify magnetic and non-magnetic materials found in school.</p>

	<p>Set up a simple practical enquiry to find out how far the force can attract the paper clip over a distance.</p> <p>Make accurate measurements and record observations about how far a force can attract a paper clip over a distance.</p> <p>Investigate which 1p and 2p coins are magnetic based on their date of manufacture.</p> <p>Use scientific evidence to answer – Which coins are magnetic?</p> <p>Develop skills of systematic observations to identify different parts of a plant recording as a labelled diagram.</p> <p>Identify differences and similarities related to a simple scientific enquiry – Are all roots the same on a plant?</p> <p>Set up a comparative and fair test to find out what a plant needs to grow.</p> <p>Gather and record data to answer the question – what does a plant need to grow? In a table and bar chart.</p> <p>Use scientific evidence to answer – what does a plant need to grow?</p> <p>Use a labelled diagram to identify the reproductive parts of a plant.</p> <p>Make accurate measurements to measure the distance between a light source and an object and the height of the shadow.</p> <p>Record findings of how the distance between a light source and an object can change a shadow using labelled diagrams.</p>
Year 4	<p>Classify materials according to their state of matter and present data.</p> <p>Set up a comparative and fair test to investigate which fizzy drink has the most CO<sub>2</sub> in it.</p> <p>Make accurate measurements using a range of equipment to show the results of which fizzy drink has the most CO<sub>2</sub> in it.</p> <p>Set up a comparative and fair test to investigate how the temperature affects the speed in which water evaporates.</p> <p>Make accurate measurements using a range of equipment to investigate how the temperature affects the speed in which water evaporates.</p> <p>Report on findings from enquiry to answer – does the temperature affect how quickly ice melts?</p> <p>Use labelled diagrams to show what happens during the water cycle.</p> <p>Use a scientific drawing to show simple series circuits that they have created.</p> <p>Set up a practical enquiry to identify some common conductors and insulators.</p> <p>Record findings of insulators and conductors using scientific tables.</p> <p>Set up a practical enquiry to investigate how the amount of cells in a circuit affects the light in a bulb.</p> <p>Use scientific language and drawings to show how a switch is used to open and close a circuit.</p> <p>Set up a comparative and fair test to find out how different liquids affect the enamel of teeth.</p> <p>Record findings using a labelled diagram to show how different liquids affect the enamel of teeth.</p> <p>Use scientific evidence to answer – How does different liquids affect tooth enamel?</p> <p>Use results to make predictions about how other liquids would affect tooth enamel.</p> <p>Use a classification key to identify different plants and animals found in the school environment.</p> <p>Use drawings to record what animals and plants are found in the school environment.</p> <p>Ask relevant questions about a range of animals to create a classification key.</p> <p>Make accurate measurements using a sound level meter.</p> <p>Record the measurement of sounds around school using a table.</p> <p>Set up a practical enquiry to find out what happens to sound as you get further away from a sound source.</p>

	Record on a bar chart how the volume of sound is affected by the distance from the source.
Year 5	<p>Plan an enquiry to find out if there is a relationship between weight and mass.          Make accurate measurements using a Newton Metre.          Record data to show the relationship between weight and mass with increasing complexity - <i>line graph</i>.          Report findings about the relationship between weight and mass and provide explanations.          Plan an enquiry to find out if the surface area of a parachute affects the rate in which it falls.          Record in a table the area of the parachute and the time taken to fall.          Record data to show the surface area of a parachute and the time taken to fall with increasing complexity – <i>bar chart</i>.          Plan an enquiry, recognising variables to support or refute ideas – <i>the heavier the object the quicker it falls</i>          Plan an enquiry to find out which shaped of an object is the most streamlined.          Measure and record the different shapes and time taken to sink in a table.          Report findings to identify which was the most streamlined shape and provide explanation.          Record data and results of evaporating a solution (salt water) using labelled photos.          Use test results of salt water evaporation to make predictions to set up further tests.          Plan an enquiry, recognising variables, to identify which material is the best thermal insulator.          Use a display to present findings in which material would make the best ice bag from results.          Use simple models to describe Aristotle’s theory that the Earth was a spherical shape.          Plan an enquiry and recognise variables to find out how a sundial can be used to record the time based on the movement of the Sun.          Suggest which observations to make when using a sundial to record the time based on the movement of the Sun.          Record data and results in a table to record the time given on a sundial and the degrees moved.          Report on findings to explain how the shadow moving on a sundial tells you about the movement of the Earth around the Sun.</p>
Year 6	<p>Explain why variables need to be controlled when planning an enquiry about measuring heart rate when exercising.          Plan an enquiry how show how exercise affects heart rate.          Take and repeat heart rate measurement with increasing accuracy and precision.          Record data and results of how exercise affects heart rate – <i>line graph</i>.          Classify different types of animals using a carroll diagram.          Classify different types of plants using a carroll diagram.          Use a classification key to identify different types of plants at Newbold quarry.          Use shadow puppets as a simple model to support the argument that light travels in straight lines.          Use test results to make predictions and set up further tests when adding components to a series circuit.</p>
<b>understand plants</b>	
Nursery	Identify that different trees have different leaves using text ‘We’re going on a leaf hunt’

	<p>Name the basic parts of a flower – <i>stem, petal, leaf</i></p> <p>Identify flowers in the outdoor area.</p> <p>Care for flowers in outdoor provision.</p> <p>Plant sunflower seeds and cress and begin to understand how to care for growing plants – <i>water</i></p> <p>Understand the key features of the life cycle of a plant.</p>
Reception	<p>Understand how plants change during autumn – <i>leaves falling, conkers and pine cones on the ground, change of tree appearance</i></p> <p>Know that some trees hibernate over the winter.</p> <p>Name autumn materials found in the school grounds – <i>trees, leaves, twigs, sycamore, evergreen, branches, bark, conker, berries</i></p> <p>Identify and name a range of fruits and vegetables grown in the school grounds – <i>apples, pears, blackberries, turnips, plums, pumpkin, potatoes</i></p> <p>Know how different fruits can be used as well as for eating - <i>orange, tangerine, banana, avocado pear, guava, pineapple, passion fruit, mango</i></p> <p>Name the different parts of a bean plant.</p> <p>Know how a bean plant grows.</p>
Year 1	<p>Name a variety of common wild plants - <i>dandelions, daisies, buttercups, clover, nettles, brambles, poppy, dog roses, ivy.</i></p> <p>Name a variety of common garden plants – <i>iris, lavender, lily, marigold, pansy, rose, sunflower, wallflower.</i></p> <p>Name the different parts of the flowering plant – <i>flower, leaves, stem, roots, seed</i></p> <p>Identify how plants change over time – <i>sunflower growing from seed.</i></p> <p>Name a variety of deciduous and evergreen trees</p>
Year 2	<p>Describe how seeds and bulbs grow into mature plants.</p> <p>Know what plants need to grow and stay healthy – <i>water, light and suitable temperature.</i></p>
Year 3	<p>Know about the different parts of the plant and their functions.</p> <p>Know the differences and similarities between the tap and fibrous root systems.</p> <p>Know the requirements of plants for life and growth.</p> <p>Know how water is transported through plants.</p> <p>Understand the plants life cycle and how seeds are formed.</p> <p>Identify the reproductive parts of a plant.</p> <p>Explain the process of pollination.</p> <p>Explain how seeds can be dispersed.</p>
Year 4	
Year 5	
Year 6	

**understand animals and humans**

Nursery	<p><b>Continuous provision:</b> Name features on body – <i>face, eyes, ears, mouth, nose, eyebrow, lips, eyelashes, eyeball, teeth, tongue, hair, arms, legs, fingers, toes, tummy, neck, body</i> Begin to identify changes in the body when exercising – <i>being hot/cold, out of breath, tired, hungry, thirsty</i></p> <hr/> <p>Describe themselves using basic language. Name animals found on a farm and identify the sounds they make – <i>cow, moo, sheep, baa, pig, oink, duck, quack, horse, neigh, dog, woof and bark, cat, meow, goat, bleat</i> Know that it is important to wash hands and when to wash hands. Use senses to talk about the taste and texture of pumpkins. Taste and explore Diwali food giving likes and dislikes. Taste and explore Easter food giving likes and dislikes. Taste and explore Chinese New Year food giving likes and dislikes. Know how and when to brush our teeth and what to use – <i>toothbrush, toothpaste, water</i> Use senses to talk about the taste and texture of different fruits used in a fruit salad. Know the different stages in a caterpillar's life cycle.</p>
Reception	<p><b>Continuous provision:</b> Name features on head – <i>face, eyes, ears, mouth, nose, eyebrow, lips, eyelashes, pupil, iris, eyeball, nostrils, teeth, tongue, forehead, chin, cheeks, freckles, hair</i></p> <hr/> <p>Identify and name animals which hibernate in our local area and wider world – <i>squirrel, hedgehog, badger, dormouse, fox, bear</i> Explain how and why some animals hibernate. Name and label animals that are awake in the day. Know the types of animals that are awake in the day in our local environment. Taste and describe Diwali food – <i>sweet, sour, spicy, hot, cold</i> Know that it is important to brush our teeth and visit the dentist. Know which foods are healthy or not healthy for humans to eat. Know that it is important to have a balanced diet and to exercise regularly. Taste and describe Chinese food – <i>sweet, sour, spicy, hot, cold</i> Name and describe different African animals and create fact cards to show knowledge – <i>zebra, leopard, lion, elephant, giraffe, gazelle, ostrich, monkey</i> Taste and describe fruit native to Africa – <i>orange, tangerine, banana, avocado pear, guava, pineapple, passion fruit, mango</i> Know the differences and similarities between a frog and a toad. Name the different stages of a caterpillars lifecycle. Name and describe different minibeasts and create fact cards to show knowledge – <i>bee, caterpillar, butterfly, spider, cricket, grasshopper, locus, mealworm, dragonfly, snail, slug, worm, ladybird</i></p>

Year 1	<p>Name and label parts of the human body – <i>foot, leg, hip, arm, shoulder, neck, head</i></p> <p>Identify which part of the body is used for which sense.</p> <p>Name the different animal groups – <i>fish, bird, mammal, reptile, amphibian</i>.</p> <p>Describe and compare the different animal groups – <i>fish, bird, mammal, reptile, amphibian</i>.</p> <p>Identify the different diets for each animal group.</p>
Year 2	<p>Describe how animals change as they grow.</p> <p>Identify the basic needs of human and animals – <i>food, air, water, shelter</i></p> <p>Explain how humans can stay healthy.</p>
Year 3	
Year 4	<p>Know about the different types of teeth and their functions.</p> <p>Identify and name the basic parts of the digestive system – <i>mouth, teeth, oesophagus, stomach, large intestine, small intestine, anus</i></p> <p>Explain how the digestive system digests food.</p> <p>Explain what causes tooth decay.</p> <p>Construct and interpret food chains – <i>producers, prey and predators</i>.</p>
Year 5	<p>Know the different stages in the growth and development of humans – <i>prenatal, infancy, adolescence, early adulthood, middle adulthood, late adulthood</i></p> <p>Identify how the body changes during puberty.</p> <p>Know how a baby's height and weight changes over time.</p> <p>Compare the gestation periods of different animals.</p>
Year 6	<p>Identify and name the main parts of the human circulatory system.</p> <p>Explain the role of the heart in the circulatory system.</p> <p>Recognise the impact of exercise and how it affects the heart rate.</p> <p>Know how alcohol, cigarettes, e-cigarettes and caffeine affect the body.</p> <p>Explain how cigarettes affect the lungs.</p> <p>Understand how diet can affect the body.</p>
<b>investigate materials</b>	
Nursery	<p><b>Continuous provision:</b></p> <p>Use a range of different objects for different purposes.</p> <p>Name objects found in classroom environment and outdoor provision.</p> <p>Explore what material objects are made from – <i>wood, plastic, metal, glass</i></p>
	<p>Begin to name autumn materials found outside in our school grounds.</p> <p>Investigate the properties of water when freezes and melts as a whole class.</p> <p>Begin to understand that ice is cold and hard and water can be poured.</p>



	<p>Begin to understand that chocolate is hard and turns runny when heated and can be poured.</p> <p>Explore how toys work.</p>
Reception	<p><b>Continuous provision:</b></p> <p>Name objects found in classroom environment and outdoor provision.</p> <p>Identify the material that objects are made from – <i>wood, plastic, metal, glass, rubber, stone</i></p> <p>Name autumn materials found outside in our school grounds.</p> <p>Know that water freezes when it is cold and ice melts when it is warm.</p> <p>Know that ice is cold.</p> <p>Know that chocolate turns runny when heated.</p> <p>Know that melted chocolate turns back to being hard when cooled.</p>
Year 1	<p>Name everyday materials – <i>wood, plastic, glass, metal, rock</i></p> <p>Name objects and the materials that they are made of.</p>
Year 2	<p>Identify objects and the materials that they are made from.</p> <p>Learn about different materials and their uses using an information text.</p> <p>Identify what makes a material suitable for an object.</p> <p>Decide on the suitability of a material for a given object and provide an explanation for a more suitable material.</p> <p>Know that the shape of an object can sometimes be changed because of the material that they are made from.</p> <p>Know which material is the most suitable to make a raincoat.</p>
Year 3	<p>Learn about different types of rocks using a non-chronological report.</p> <p>Identify which types of rocks are found on the school grounds.</p> <p>Know why rocks are used for different purposes.</p> <p>Visit Cemex to find out how rocks can be used to make building materials.</p> <p>Identify how rocks change over time – local church visit.</p> <p>Explain how different types of rocks (<i>metamorphic, sedimentary, igneous</i>) are formed.</p> <p>Explain how soil is made.</p> <p>Explore how fossils are formed.</p>
Year 4	<p>Identify the different states of matter – <i>solid, liquid, gas</i>.</p> <p>Describe the properties of different states in relation to the particles.</p> <p>Know that temperature effects the speed in which water evaporates.</p> <p>Explain how evaporation and condensation play a role in the water cycle and how the temperature affects the rate in which evaporation occurs.</p>

Year 5	<p>Compare and group everyday materials based on their properties – <i>hardness, solubility, transparency, conductivity and response to magnets.</i></p> <p>Know that some materials will dissolve to form a solution.</p> <p>Know how to separate a solution using evaporation – <i>salt and water</i></p> <p>Know how to separate a range of materials at a mini beach – <i>filtration, evaporation, magnets, sieving</i></p> <p>Explain what reversible and irreversible changes are and give examples.</p>
Year 6	
<b>investigate living things and habitats</b>	
Nursery	<p>Know where farm animals live – <i>farm, pens, field, grass, pond, stable</i></p> <p>Identify different farm animals – <i>lamb and sheep, pig and piglet, puppy and dog</i></p>
Reception	<p>Know what type of home or environment is used by different diurnal or nocturnal animals.</p> <p>Know how to look after – including diet and habitat - a range of insects in the classroom - <i>caterpillar, cricket, locust, mealworm</i></p> <p>Suggest different habitats that a range of insects could use in the school area.</p> <p>Know how to look after – including diet and habitat – chicks hatched from eggs in the classroom.</p>
Year 1	
Year 2	<p>Identify the differences between things that are living and things that are not.</p> <p>Identify what makes something living.</p> <p>Create a food chain to identify different sources of food.</p> <p>Identify how different habitats provide for different animals and plants.</p> <p>Identify why some habitats are suitable for animals and why others are not using an information text.</p>
Year 3	
Year 4	<p>Know that living things can be grouped in a variety of different ways.</p> <p>Explain how environments can change and present dangers to living things.</p> <p>Research an endangered species and create a presentation to share what the threats are to that species and what is being done to conserve the species.</p>
Year 5	<p>Know how sexual reproduction happens in plants.</p> <p>Know how asexual reproduction happens in plants.</p> <p>Identify the disadvantages and advantages of sexual and asexual reproduction in plants.</p> <p>Know about the different life cycles of mammals – <i>marsupials, monotremes and placentals</i> – and compare the lifecycle of a rabbit, platypus and kangaroo.</p> <p>Make comparisons between the life cycles of different animals – <i>mammals, reptiles, amphibians, birds and fish</i></p> <p>Learn about the work of Jane Goodall.</p>
Year 6	<p>Know about the life of Carl Linnaeus and his work on classification.</p>

	<p>Explain how animals can be classified in different ways and subdivided – <i>vertebrate groups, diet</i></p> <p>Explain how plants can be classified in different ways and subdivided – <i>vascular/non-vascular, flowering/non-flowering, methods of seed dispersal</i></p>
--	--

**understand evolution and inheritance**

Nursery	
Reception	
Year 1	
Year 2	
Year 3	
Year 4	
Year 5	
Year 6	<p>Explain how fossils provide information about how living things have changed over time.</p> <p>Understand variation in offspring and how offspring are not always identical to their parents.</p> <p>Explain how adaptation in plants and animals may lead to evolution.</p> <p>Know about the work of Mary Anning and Charles Darwin.</p>

**Understand movement, forces and magnets**

Nursery	<p><b>Continuous provision:</b></p> <p>Explore movement through sand and water play.</p> <p>Use magnets to explore and investigate different materials and what they attach to.</p> <p>Begin to identify if objects sink or float through water play.</p> <p>Know that wind can move things around.</p>
Reception	<p>Know that wind can push kites in the sky.</p> <p>Know that some vehicles travel on the ground, in the air or in water.</p> <p>Know that sinking in the water means they are beneath the water and that floating is that they are on top of the water.</p> <p>Know which fruit and vegetables float and sink in water.</p> <p>Identify a range of materials that float and sink in water.</p>
Year 1	
Year 2	
Year 3	<p>Identify magnetic and non-magnetic materials around school.</p> <p>Know that magnets will attract some materials and not others.</p> <p>Know how magnets are used for different purposes.</p>

	<p>Know that a force can attract the magnetic material over a distance.</p> <p>Understand that magnets will attract or repel depending on which poles are facing.</p> <p>Identify how different surfaces affect how things move.</p> <p>Know that magnets have two poles.</p>
Year 4	
Year 5	<p>Explain how different forces affect moving objects – <i>air resistance, gravity, buoyancy, water resistance</i></p> <p>Know about Isaac Newton and his discovery of gravity.</p> <p>Know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance and the relationship between air resistance and the surface area of an object.</p> <p>Know that friction is the act between two moving surfaces.</p> <p>Identify how the shape of an object affects the water resistance.</p> <p>Identify how some mechanisms allow a smaller force to have a greater effect – <i>levers, pulleys and gears</i></p> <p>Design a product for a purpose that uses mechanisms.</p>
Year 6	
understand the Earth's movement in space	
Nursery	<p><b>Continuous provision:</b> explore objects in our school grounds during the different seasons.</p> <p>Identify objects linked to the four seasons – <i>autumn, winter, spring, summer</i>.</p>
Reception	<p><b>Continuous provision:</b> explore and know the changes in our school grounds during the different seasons.</p>
Year 1	<p>Learn about the signs of autumn.</p> <p>Learn about the signs of winter.</p> <p>Learn about the signs of spring.</p> <p>Learn about the signs of summer.</p>
Year 2	
Year 3	
Year 4	
Year 5	<p>Name and identify the planets in our solar system.</p> <p>Know about the size and distance of the planets in our solar system in relation to one another and how they orbit the Sun.</p> <p>Know that the Earth, Moon and Sun are spherical bodies.</p> <p>Describe the movement of the Earth around the Sun and how this provides us with day, night and seasons.</p> <p>Describe the movement of the Moon relative to the Earth.</p>

Year 6	
<b>investigate light and seeing</b>	
Nursery	<p><b>Continuous provision:</b>          Use environment to talk about what they can see when it is light and dark.          Begin to use torches to explore different areas of the environment.          Begin to identify own shadow.          Explore rainbows.</p>
Reception	<p>Know what they can see when it is light and can not when it is dark.          Know that a torch provides light in a dark area.          Identify shadows and know what objects they are shadows of.          Know that objects have shadows when there is light.</p>
Year 1	
Year 2	
Year 3	<p>Know that light travels from a source, to an object and then to our eye.          Compare different light sources and know which one would be most suitable for a specific scenario.          Know that the sun can be dangerous and there are ways to protect our eyes.          Explain how a shadow is formed and use a range of objects to make shadows.          Explain how shadows can change.</p>
Year 4	
Year 5	
Year 6	<p>Know that light appears to travel in straight lines.          Explain how light travels in straight lines.          Explain how light can be refracted.          Explore the light spectrum.          Understand why shadows have the same shape as the objects that cast them through making shadow puppets.</p>
<b>investigate sound and hearing</b>	
Nursery	<p><b>Continuous provision:</b>          Identify different sounds in the classroom provision and outdoor area.          Know that different instruments make different sounds.</p>
Reception	<p><b>Continuous provision:</b>          Identify different sounds in the classroom provision and outdoor area.</p>

Year 1	
Year 2	
Year 3	
Year 4	<p>Know that sounds are made by something vibrating.</p> <p>Understand how sounds travel.</p> <p>Explore how different pitches are created through different musical instruments.</p> <p>Know that sound gets fainter as the distance from the sound source increases.</p> <p>Know how different materials can be used to insulate sound.</p>
Year 5	
Year 6	
<b>Understand electrical circuits</b>	
Nursery	
Reception	
Year 1	
Year 2	
Year 3	
Year 4	<p>Identify appliances that run on electricity around school and home.</p> <p>Name and identify the basic parts of a simple series circuit.</p> <p>Construct a simple series electrical circuit.</p> <p>Identify common conductors and insulators.</p> <p>Know how the amount of cells in a circuit affects the light in a bulb.</p> <p>Know how a switch is used to open and close a circuit.</p> <p>Create an earthquake alarm.</p> <p>Identify how to use electricity safely.</p>
Year 5	
Year 6	<p>Know which symbols represent which component in a circuit.</p> <p>Explain what would happen to the brightness of a lamp or the volume of a buzzer when the number and voltage of cells is increased.</p> <p>Give reasons for how components function in a circuit when components are increased or decreased.</p>