NC- Red These objectives can be completed with any unit across the year.

Year 1 Curriculum

| These objectives can be completed with any unit across the year. | <u> </u> | | | | | | | |
|---|---|-------------|---|---|--|----------------|--|---|
| Working Scientifically | Termo | | Need to Know | Steps to Success | Vocabulary | Prior Learning | National curriculum | Significant Scientists |
| Asking questions and recognising that they can be questions and recognising that they can be answered in different ways.• While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, they can be answered in different ways.• The children answer questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how they happen). Where appropriate, they answer these questions.• The children answer answer the children answer the dueloped with the teacher often through a scenario.• The children answer answer the veloped with the teacher often through a scenario.• The children answer the veloped with the teacher often through a scenario.• The children answer the veloped with the teacher often through a scenario.different ways.• While exploring the the ways things work, which alternative is better, how they happen). Where appropriate, they answer these questions.• The children answer through a scenario.• The children answer through a scenario.different ways.• Mile automatic and the veloped answered in different ways.• The children answer the veloped with the teacher often the teacher often through a scenario.• The children answer through a scenario.different ways.• Mile automatic applications were these questions.• The children answer the veloped with the teacher often through a scenario.• The children answer the veloped with the teacher often the veloped with <b< td=""><td>Autumn 1</td><td>ŷ</td><td>Children can distinguish between an object and the material from which it is made. Children can describe materials using their senses (touch, sight, smell, sound). Children can describe materials using their senses, using specific scientific words: rough, shiny, smooth, light, heavy, soft, thick, thin, flexible, strong, waterproof, loud, quiet. Children can explain what material objects are made from and compare similarities and differences. Children can explain why a material might be useful for a specific job. Children can explain why a material might be useful for a specific job. Children can sort materials into groups with a given criteria- size, shape, strength, flexibility. Children can explain how solid shapes can be changed by squashing, bending, twisting and stretching.</td><td>Term 1- What do we already know? Flashback Friday. Prior knowledge , key questions, Key Scientific vocabulary. Assessment opportunity.</td><td>material touch taste smell sound squashing bending twisting stretching size shape strength flexibility wood plastic</td><td></td><td>Pupils should be taught to: distinguish between an object and the material from which it is made identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock describe the simple physical properties of a variety of everyday materials compare and group together a variety of everyday materials on the basis of their simple physical properties.</td><td>waterproof fabric. The mackintosh</td></b<> | Autumn 1 | ŷ | Children can distinguish between an object and the material from which it is made. Children can describe materials using their senses (touch, sight, smell, sound). Children can describe materials using their senses, using specific scientific words: rough, shiny, smooth, light, heavy, soft, thick, thin, flexible, strong, waterproof, loud, quiet. Children can explain what material objects are made from and compare similarities and differences. Children can explain why a material might be useful for a specific job. Children can explain why a material might be useful for a specific job. Children can sort materials into groups with a given criteria- size, shape, strength, flexibility. Children can explain how solid shapes can be changed by squashing, bending, twisting and stretching. | Term 1- What do we already know? Flashback Friday. Prior knowledge , key questions, Key Scientific vocabulary. Assessment opportunity. | material touch taste smell sound squashing bending twisting stretching size shape strength flexibility wood plastic | | Pupils should be taught to: distinguish between an object and the material from which it is made identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock describe the simple physical properties of a variety of everyday materials compare and group together a variety of everyday materials on the basis of their simple physical properties. | waterproof fabric. The mackintosh |
| practical enquiry to answer guestions: Performing simplepractical resources provided to gather evidence to answer questions generated by tests.tests to classify: comparative tests; pattern objects, materials and living things.si s s comparative tests; pattern objects, materials and living things.si s s s objects, materials and living things. | They use imple econdary ources (such is identification heets) to iame living hings. They lescribe the haracteristics hey used to dentify a living hing. | Everyday ma | If the children complete the previous statements try some of these: Challenge: Children can describe similarities and differences between materials. Children can explain what happens to materials when they are heated: bread, ice, chocolate, wax, egg. Children can explain what happens to materials when they are cooled: jelly, heated chocolate, water. | Term 2- What do we already know? Flashback Friday. Prior knowledge , key questions, Key Scientific vocabulary. Assessment opportunity. Working Scientifically - Sorting & comparing. Review different everyday materials. Describe them using physical properties. What is the same? What is different? Sort and compare using scientific vocabulary. Senses Explore materials using sight, smell, touch & sound. Make predictions. Use comparative language. Significant Scientists Charles Mackintosh & Martin Brock What did they invent? Why are their inventions important? How has it impacted our lives? Compare their impact on society. Exploring/ Investigation Explore how solid material? Recap and name solid materials. Investigation Explore how solid material? Can I describe materials using my senses, using scientific words? Can I describe materials using my senses (touch, sight, smell, sound)? Can I sort materials using my materials using my materials. | metal water rock smooth light heavy soft thick thin | | | |
| Making observations and taking measurements: • Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non- standard units. | Spring 1 | anges & WS | Children can observe changes across the four seasons. Children can name the four seasons in order. Children can observe and describe weather associated with the seasons. Children can observe and describe how day length varies and why. Children can explain and understand sun safety. Challenge Children can observe features in the environment and explain that these are related to a specific season. Children can observe and talk about changes in the weather. Children can talk about weather variation in different parts of the world. | | observe seasons winter spring summer autumn weather environment changes length rain sunshine snow sleet hail thunder lightening wind fog | | Pupils should be taught to: observe changes across the four observe and describe weather associated with the seasons and how day length varies. | John Dalton (1766- 1844) John Dalton was a British weather pioneer. In 1787, he used homemade instruments to start recording weather observations. His meteorological instruments helped to turn the forecasting of weather into actual science. Michael E Mann (Born 1965) Michael Evan Mann is an American climatologist and geophysicist. He is the director of the Earth System Science Center at Pennsylvania State University. Mann has contributed to the scientific understanding of historic climate change based on the temperature record of the past thousand years. |
| Recording and presenting evidence: Gathering and recording data to help in answering questions.•The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing.•They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.•They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.Answering questions and ideas to suggest answers to questions.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'best and worst' etc. from their data.•The children recognise 'biggest and smallest', 'biggest and smallest', 'biggest and smallest', 'biggest and smallest', 'biggest and smallest', 'biggest and smallest', 'biggest and sma | Summer 1 Spring 2 | | Children can name the petal, stem, leaf, bulb, flower, seed, stem and root of a plant. Children can identify and name common UK plants and trees. Children can recognise and compare deciduous and evergreen trees. Children can name the trunk, branches and root of a tree. Children can describe the parts of a plant (roots, stem, leaves, flowers). | | plants flowers petals trunk branches roots stem leaves seeds bulbs deciduous evergreen light water warmth grow | | identify and describe the basic | Wangari Maathai (1940-2011) Wangari Maathai was a Kenyan environmentalist who began a movement to plant trees and re-forest her country. She was the first African woman to win a Nobel Peace Prize. |

| | Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. | | Summer 2 | Animals including humans | Children can point out some of the differences between different animals. Children can sort photographs of living things and non-living things. Children can identify and name a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates). Children can describe how an animal is suited to its environment. Children can identify and name a variety of common animals that are carnivores, herbivores and omnivores. Children can name the parts of the human body that they can see. Children can identify the main parts of the human body. Children can name the parts of an animal's body (ears, tail, paws, fins ect) Children can name the parts of an animal's body (ears, tail, paws, fins ect) Children can name a range of domestic animals. Children can compare the bodies of different animals. Challenge Children can pain to classify animals according to a number of given simple criteria. Children can name some parts of the human body that cannot be seen. Children can say why certain animals have certain characteristics- what are they used for? Why do they need them? Children can name a range of wild animals. | | identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores Science – key stages 1 and 2 8 Statutory requirements describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) identify, name, draw and label the | Aristotle (384-322 BC) Is credited with first numbering the senses in his work De Anima. It's certain that the Big Five have been known for thousands of years. Touch, taste, smell, sight, hearing. Linda Buck Born 1947. Co-discovered how our sense of smell works: humans have about 350 different types of odor receptor cell which send signals directly into the brain's olfactory bulb. |
|--|--|--|----------|--------------------------|---|--|---|--|
| predictions for new values, suggest improvements and raise further questions. Communicating findings: Reporting on findings from enquiries, including oral and | Although there are no specific objectives for year 1 & 2, it will not hurt for the children to be exposed to this langauge and way of thinking. Evaluation, questioning and prediction skills are used across all areas of the curriculum. Although there are no specific objectives for year 1 & 2, it will not hurt for the children to be exposed to this langauge and way of thinking. Evaluation, questioning and prediction skills are used across all areas of the curriculum. | This could be done verbally, as a whloe class, in pairs or recorded as a class on flipchart paper or post its. This could be done verbally, as a whloe class, in pairs or recorded as a class on flipchart paper or post its. | | | | | | |

NC- Red

These objectives can be completed with any unit across the year.

Year 2 Curriculum

| These object | ives can be comple | | | year. | Torm | Tonio | Stops to success | Vecabulary | Brier Learning | National Curriculum | Significant scientists |
|--|--|--|--|---|----------|--------------------------|---|--|---|--|---|
| Asking | • While exploring the | • The children | • The children | 1 | rerm | ropic | Steps to success Children can describe what animals need to | Vocabulary | Prior Learning Children can point out some of the differences between different | National Curriculum | Significant scientists Dr Ernest Madu (born 1960) |
| Asking questions and recognising that they can be answered in different ways: Asking simple questions and recognising that they can be answered in different ways. | While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. | • The children answer questions developed with the teacher often through a scenario. | are involved in planning how to use resources provided to | f | Autumn 1 | Animals including humans | Children can describe what animals need to survive. Children can explain that animals grow and reproduce Children can explain why animals have offspring which grow into adults Children can describe the life cycle of some living things (bird:chicken, insect, mammal, amphibian, reptile) Children can explain the basic needs of animals, including humans for survival (water, food, air). Children can describe why exercise, balanced diet and hygiene are important for humans. Challenge Children can explain that animals reproduce in different ways- links to life cycles. | offspring reproduction growth exercise breathing hygiene germs disease needs- air shelter food water healthy- hygiene exercise right amount of food types | Children can point out some of the differences between different animals. Children can sort photographs of living things and non-living things. Children can identify and name a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates). Children can describe how an animal is suited to its environment. Children can identify and name a variety of common animals that are carnivores, herbivores and omnivores. Children can name the parts of the human body that they can see. Children can identify the main parts of the human body. Children can name the parts of an animal's body (ears, tail, paws, fins ect) Children can name a range of domestic animals. Children can classify animals by what they eat (carnivore, herbivore, omnivore). Children can begin to classify animals according to a number of given simple criteria. Children can point out differences between living things and non- | have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | Dr Ernest Madu is a cardiologist. His work focuses on providing affordable healthcare in low- resource nations. |
| Engage in practical enquiry to answer questions: Performing simple tests. | •The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. | | Identifying and classifying. • Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. | • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing. | Autumn 2 | als & WS | Children can describe the simple physical properties of a variety of everyday materials (shape, size, material, weight, texture). Children can compare and group a variety of materials based on their simple physical properties (shape, size, material, weight, texture). Children can explore how the shapes of solid objects can be changed (squashing, bending twisting, stretching). Children can say which materials are natural, which are man-made and make comparisons. Children can find out about people who developed useful new materials (Significant Scientists). Children can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, | , twist stretch natural man-made suitable wood metal plastic glass brick | living things. Children can name some parts of the human body that cannot be seen. Children can say why certain animals have certain characteristics- what are they used for? Why do they need them? Children can distinguish between an object and the material from which it is made. Children can describe materials using their senses (touch, sight, smell, sound). Children can describe materials using their senses, using specific scientific words: rough, shiny, smooth, light, heavy, soft, thick, thin, flexible, strong, waterproof, loud, quiet. Children can explain what material objects are made from and compare similarities and differences. Children can name different everyday materials. e.g. wood, plastic, metal, water and rock Children can explain how solid shapes can be changed by squashing, bending, twisting and stretching. | | John Loudon McAdam (1756-1836) John Loudon McAdam was a Scottish engineer who modernised the way we build roads. He was the inventor of tarmacadam road surfacing – commonly called tarmac. John Dunlop (1840-1921) John Dunlop was a scottish inventor who made the first rubber tyres for bicycles. He was however not the first person that came up with the idea |
| Making observations and taking measuremen ts: Observing closely, using simple equipment. | them. They make careful observations to support identification, | • They begin to take measurements, initially by comparisons, then using non- standard units. | | | Spring 1 | Uses of everyday materi | rock, paper, cardboard for particular uses. Children can explain how things move on different surfaces. Challenge Children can explain how materials are changed by heating and cooling. Children can tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted. Or Challenge Children can describe the properties of different materials using words like, transparent or opaque, flexible, rigid. | rock paper card surface friction John Dunlop John McAdam | If the children complete the previous statements try some of these: Challenge: Children can describe similarities and differences between materials. Children can explain what happens to materials when they are heated: bread, ice, chocolate, wax, egg. Children can explain what happens to materials when they are cooled: jelly, heated chocolate, water. | Pupils should be taught to: identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | or pneumatic tyres. Julie Brusaw Julie is one of the inventors of Solar Roadways. Solar roadways |

| evidence: Gathering and recording | •The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. | • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. | and sorting rings. | Spring 2 | & WS | Children can describe what plants need to survive. Children can observe and describe how seeds and bulbs grow into mature plants. Children can find out & describe how plants need water, light and a suitable temperature to grow and stay healthy. Challenge: Children can describe what plants need to survive and link it to where they are found (environments/ compare). | plants petals roots stem leaves seeds seedling bulbs light Water Air | Children can name the petal, stem, leaf, bulb, flower, seed, stem and root of a plant. Children can identify and name common UK plants and trees. Children can recognise and compare deciduous and evergreen trees. Children can name the trunk, branches and root of a tree. Children can describe the parts of a plant (roots, stem, leaves, flowers). | Pupil ob: bulbs find watel grow and s |
|---|---|---|-----------------------|----------|----------------------------------|--|--|---|--|
| and concluding: | recognise 'biggest and smallest', 'best and worst' etc. from their data. | | | Summer 1 | Plants & | Children can explain how plants grow and reproduce in different ways (compare). | Space Light nutrients warmth survive healthy germinate grow reproduce environment | | |
| | Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. | | | Summer 2 | Living things and their habitats | Children can match certain living things to the habitats they are found in. Children can explain the differences between living and non-living things. Children can decide whether something is living, dead or non-living. Children can describe some of the life processes common to plants and animals, including humans. Children can describe how a habitat provides for the basic needs of things living there. Children can describe a range of different habitats. Children can describe how plants and animals are suited to their habitat. Challenge Cahildren can name some characteristics of an animal that help it to live in a particular habitat. Children can describe what animals need to | habitat micro-habitat food chain woodland pond seashore | | Pupil Pu |
| raising further guestions: Using results to draw simple conclusions, make predictions for new values, suggest | & 2, it will not hurt for the children to be exposed to this langauge and way of thinking. Evaluation, questioning and prediction skills are used across all areas of the | done verbally, as a whloe class, in pairs or recorded as a class on flipchart paper | | | | | | · | |
| ng findings: Reporting on findings from enquiries, including oral and written explanations, displays or | Although there are no specific objectives for year 1 & 2, it will not hurt for the children to be exposed to this langauge and way of thinking. Evaluation, questioning and prediction skills are used across all areas of the curriculum. | or recorded as a class on flipchart paper | | | | | | | |

| ils should be taught to: | David Douglas (1799-1834) |
|---|--|
| bserve and describe how seeds and os grow into mature plants nd out and describe how plants need er, light and a suitable temperature to w stay healthy | David Douglas was a Scottish botanist, best known as the namesake of the Douglas-fir. He worked as a gardener, and explored the Scottish Highlands, North America, and Hawaii. |
| | |
| ils should be taught to: | Jeff Corwin |
| xplore and compare the differences ween things that are living, dead, and gs that have never been alive lentify that most living things live in itats to which they are suited and cribe how different habitats provide the basic needs of different kinds of nals and plants, and how they end on each other lentify and name a variety of plants animals in their habitats, including | Jeff Corwin is an American animal and nature conservationist. He is best known for hosting Animal Planet's 'The Jeff Corwin Experience' and 'Corwin's Quest'. He first experienced the tropical rainforests in 1984 in Belize. Is an active supporter of the tropical rainforest conservation in Central and South America. |
| rohabitats escribe how animals obtain their food n plants and other animals, using the a of a simple food chain, and identify I name different sources of food. | Dr. Archie Fairly Carr Dr. Archie Fairly Carr was a famous zoologist who was best known for his study of sea turtles. He was one of the co-founders of the Caribbean Conservation Corporation, which strives to save |

NC- Red

These objectives can be completed with any unit across the year.

Year 3 Curriculum

| These objectives | s can be completed | | | | - | | r | | | |
|-------------------------|---|---------------------------------|--------------------------------------|--------------|----------|--|-------------------------|----------------|---------------------------------------|---|
| | | cientifically | | | Topic | Need to Know | Vocabulary | Prior Learning | | Significant Scientists |
| Asking questions | | The children | Given a range of | Autumn 1 | | Children can recognise that they need light in order to see things. | light | NA | Pupils should be taught to: | Justus von Liebig (1803-1873) |
| and recognising | consider their prior | answer | resources, the children | | | Children can recognise that dark is the absence of light. | eyes | | | |
| that they can be | knowledge when | | decide for themselves | | | Children can notice that light is reflected from surfaces. | dark | | recognise that they need light in | Justus von Liebig was a German chemist. In 1835 he |
| answered in | asking questions. | | how to gather evidence to | | | Children can recognise that light from the sun can be dangerous | reflect/ reflected | | | developed a process for applying a thin layer of |
| different ways: | They independently | | answer the question. | | | and that there are ways to protect their eyes. | surfaces | | the absence of | metallic silver to one side of a pane of clear glass. This |
| Asking relevant | use a range of | | They recognise when | | | Children can recognise that shadows are formed when the light | shadows | | light | technique was soon adapted and improved, allowing |
| questions and | question stems. | | secondary sources can | | | from a light source is blocked by a solid object. | light source | | notice that light is reflected from | for the mass production of mirrors. |
| using different | Where appropriate, | | be used to answer | | | Children can find patterns in the way that the size of shadows | solid- opaque | | surfaces | |
| types of scientific | they answer these | | questions that cannot be | | | change. | seethrough- transparent | | recognise that light from the sun | |
| enquiries to | questions. | | answered through | | | | blocked | | can be dangerous and that there are | |
| answer them. | | | practical work. They | | | Challenge | dangerous | | ways to protect | |
| | | | identify the type of | | 6 | Children can explain why lights need to be bright or dimmer | protect | | their eyes | |
| | | | enquiry that they have | | WS | according to need. | closer/ further | | recognise that shadows are | |
| | | | chosen to answer their | | ~~ | Children can explain the difference between transparent, | | | formed when the light from a light | |
| | | | question. | | Light | translucent and opaque? | | | source is blocked by | |
| | | | | | | Children can explain why their shadow changes when the light | | | an opaque object | |
| Engage in | The children select | They follow | | Autumn 2 | | source is moved closer or further from the object? | | | □ find patterns in the way that the | |
| practical enquiry | from a range of | their plan to | | | | | | | size of shadows change. | |
| to answer | practical resources to | | | | | | | | | |
| | gather evidence to | observations | | | | | | | | |
| | | and tests to | | | | | | | | |
| practical | generated by | classify; | | | | | | | | |
| practical enquiries, | themselves or the | comparative | | | | | | | | |
| | teacher. | and simple fair | | | | | | | | |
| comparative and | | tests: | | | | | | | | |
| fair tests. | | observations | | | | | | | | |
| | | over time: and | | | | | | | | |
| Making | The children make | , | | Omerica en A | | Children can compare and group different reals on the basis of their | rooko | NA | Dunile should be tought to: | Man (Apping (1700, 1917) |
| | | • They use a | | Spring 1 | | Children can compare and group different rocks on the basis of their appearance and simple physical properties. | soils | NA | Pupils should be taught to: | Mary Anning (1799-1847) |
| observations and | | range of | | | | | | | - compare and group together | Many Apping was an English palacentlegist and |
| taking | careful observations. | equipment for | | | | Children can describe and explain how different rocks can be useful | | | □ compare and group together | Mary Anning was an English palaeontlogist and fossil collecter. She became known around |
| measurements: | | measuring | | | | to us. | sedimentary | | different kinds of rocks on the basis | the world for important finds also made in two second |
| Making | | length, time, | | | | Children can describe and explain the differences between | igneous | | | the world for important finds she made in Jurassic |
| systematic and | | temperature and | | | | sedimentary, igneous and metamorphic rocks and explain how they | metamorphic | | and simple physical properties | fossil beds in Dorset. |
| careful | | capacity. They | | | MS | are formed. | formation | | □ describe in simple terms how | |
| observations and, | | use standard | | | & > | Children can describe in simple terms how fossils are formed- when | | | fossils are formed when things that | Holly Betts |
| where | | units for their | | | S | things that have lived are trapped within rock. | fossilisation | | have lived are | |
| appropriate, | | measurements. | | | Rock | Children can recognise that soils are made from rocks and organic | organic matter | | trapped within rock | PhD student, University of Bristol |
| taking accurate | | | | | Ř | matter. | classify | | □ recognise that soils are made | Holly is a palaeobiologist. She is researching |
| measurements | | | | | | | group | | from rocks and organic matter. | whether fossils are best for establishing a |
| using standard | | | | | | Challenge | uses | | | timescale for recent and ancient episodes in |
| units, using a | | | | | | Children can classify sedimentary, igneous and metamorphic rocks. | | | | our evolutionary history. |
| range of | | | | | | Children can begin to relate the properties of rocks with their uses. | | | | |
| equipment, | | | | | | | | | | |
| including | | | | | | | | | | |
| Recording and | •The children | Children are | | Spring 2 | | Children can compare how things move on different surfaces. | forcesmagnetsmagnetic | NA | Pupils should be taught to: | Michael Faraday (1791-1867) |
| | sometimes decide | supported to | | Spring z | | Children can observe that magnetic forces can be transmitted | lorcesmagnetsmagnetic | | | |
| presenting | how to record and | present the | | | | without direct contact. | | | compare how things move on | Michael Faraday was an |
| | | same data in | | | | Children can observe how some magnets attract or repel each | | | different surfaces | English scientist. |
| Gathering, | present evidence. | different ways in | | | | onituren can observe now some magnets attract or repei each | | | | 5 |
| recording, | , | , | | | | Childron can classify which materials are attracted to magnete and | | | | In 1831, he discovered |
| | observation e.g. using | | | | | Children can classify which materials are attracted to magnets and | | | | electromagnetic induction. |
| | photographs, videos, | with answering | | | MS | which are not. | | | magnetic forces can | This was a very important |
| a ranoty of mayo | | the question. | | | <u>ح</u> | Children can notice that some forces need contact between two | | | act at a distance | discovery for the future of |
| to help in | diagrams or writing. | | | | ots | objects, but magnetic forces can act at a distance. | | | □ observe how magnets attract or | science and technology. |
| anononing | They record their | | | | Jne | Children can compare and group together a variety of everyday | | | repel each other and attract some | |
| questions. | measurements e.g. | | | | 1aç | materials on the basis of whether they are attracted to a magnet. | | | materials and not | |
| Recording | using tables, tally | | | | Σ q | Children can identify some magnetic materials. | | | others | |
| findings using | charts and bar charts | | | | an | Children can describe magnets having two poles (N & S). | | | □ compare and group together a | |
| simple scientific | (given templates, if | | | | es | Children can predict whether two magnets will attract or repel each | | | variety of everyday materials on the | |
| language, | required, to which | | | | Force | other depending on which poles are facing. | | | basis of whether | |
| drawings, labelled | they can add | | | | Ц | | | | they are attracted to a magnet, and | |
| diagrams, keys, | headings). They | | | | | Challenge | | | identify some magnetic materials | |
| bar charts, and | record classifications | | | | | Children can investigate the strengths of different magnets and find | | | describe magnets as having two | |
| tables. | e.g. using tables, | | | | | fair ways to compare them. | | | poles | |
| | Venn diagrams, | | | | | | | | predict whether two magnets will | |
| | Carroll diagrams. | | | | | | | | attract or repel each other, | |
| | | | | | | | | | depending on which | |
| | | J | | 1 | | 1 | 1 | 1 | | 1 |

| Answering | Children answer | | | Summer 1 | | Children can identify and describe the functions of different parts of | netalerootestomtrunkloov | Children can describe what plants | Pupils should be tought to: | Joseph Dalton Hooker (1817-1911) |
|--|---|--|--|----------|-------------------------------|--|---|---|--|--|
| guestions and concluding: Using straightforward scientific evidence to answer questions or to | their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence. | | | | | Children can explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow). Children can explain how the requirements vary from plant to plant. Children can explain how the requirements vary from plant to plant. Children can explain how the requirements vary from plant to plant. Children can explore and explain the way in which water is transported within plants. Children can explore and explain the part that flowers play in the life cycle of flowering plants: pollination, seed formation and seed dispersal. Challenge Children can classify a range of common plants according to many criteria (environment found, size, climate required, etc.) | | need to survive. Children can observe and describe how seeds and bulbs grow into mature plants. Children can find out & describe how plants need water, light and a suitable temperature to grow and stay healthy. Challenge: Children can describe what plants need to survive and link it to where they are found (environments/ compare). Children can explain how plants grow and reproduce in different | identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. | Joseph Hooker was a doctor and travelled to many places. He was a plant collecter and botanist and brought many |
| similarities or changes related to simple scientific ideas and processes. Using results to draw simple conclusions, | Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal They draw conclusions based on their evidence and current subject knowledge. | | | Summer 2 | Animals including humans & WS | Children can explain the importance of a nutritionally balanced diet. Why do we need it? What might happen if we don't? Children can describe how nutrients, water and oxygen are transported within animals and humans. Children can identify that animals, including humans, cannot make their own food: they get nutrition from what they eat. Children can describe and explain the skeletal system of a human. Children can describe and explain the muscular system of a human. Children can describe and explain the muscular system of a human. Children can explain how the muscular and skeletal systems work together to create movement. Children can explain how they have thought of. Children can explain how people, weather and the environment can affect living things. Children can explain how certain living things depend on one another to survive. | vitamins minerals fibre skeleton bones muscles joints healthy skull spine ribcage pelvis colar bone | animals need to survive. Children can explain that animals grow and reproduce Children can explain why animals have offspring which grow into | identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what | Wilhelm Conrad Rontgen (1845-1923) Wilhelm Rontgen was a German physicist who discovered X-rays in 1895. He was awarded many honours and won the Nobel Prize for physics in 1901. |
| raising further guestions: Using results to | their method as they progressed or how they would do it differently if they repeated the enquiry. | their evidence to suggest values for different | Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. | | | | | | | |
| findings from | They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary. | | | | | | | | | |

NC- Red

These objectives can be completed with any unit across the year.

Year 4 Curriculum

| These objective | | cientifically | unit across the j | Term | Tonic | Need to Know | Vocabulary | Prior Learning | National Curriculum | Significant Scientists |
|-------------------------|----------------------------------|--------------------------------|---------------------------------------|----------|---------|---|------------------------|--|---|----------------------------|
| Asking | | The children | • Given a range of | | Topic | Children can describe a range of sounds and explain how they are | sound | N/A | Pupils should be taught to: | Christian Doppler (1803- |
| questions and | consider their | answer | resources, the | Autonini | | made. | volume | | i upilo should be taught to. | 1853) |
| recognising that | | questions posed | I children decide | | | Children can associate some sounds with something vibrating. | louder | | □ identify how sounds are | |
| they can be | | by the teacher. | for themselves | | | Children can compare sources of sound and explain how the sounds | | | made, associating some of | Christian Doppler was an |
| answered in | questions. They | -, | how to gather | | | differ. | vibrating/ | | them with something vibrating | Austrian mathematician |
| different ways: | independently | | evidence to | | | Children can explain how to change a sound- louder/softer. | vibrations | | recognise that vibrations | and physicist. He is |
| Asking relevant | use a range of | | answer the | | | Children can recognise how vibrations from sound travel through a | ear | | from sounds travel through a | celebrated for his |
| questions and | question stems. | | question. They | | S | medium to an ear. | compare | | medium to the ear | principle known as the |
| using different | Where | | recognise when | | MS | Children can find patterns between the volume of the sound and the | travel | | find patterns between the | Doppler effect. This |
| types of scientific | appropriate, they | | secondary | | ~~ ~ | strength of the vibrations that produced it. | patterns | | pitch of a sound and features of | describes how noises |
| enquiries to | answer these | | sources can be | | un or | Children can recognise that sounds get fainter as the distance from | fainter | | the object that produced it | sound different as you |
| answer them. | questions. | | used to answer | | Sol | the sound source increases. | sources | | find patterns between the | move toward or away |
| anowor thom. | | | questions that | | | Children can explain how you could change the pitch of a sound. | pitch | | volume of a sound and the | from a noisy object. |
| | | | cannot be | | | Children can investigate how different materials can affect the pitch | insulation | | strength of the vibrations that | |
| | | | answered through | | | and volume of sounds. | | | produced it | |
| | | | practical work. | | | | | | recognise that sounds get | |
| | | | They identify the | | | Challenge | | | fainter as the distance from the | |
| | | | type of enquiry | | | Children can explain why sound gets fainter or louder according to | | | sound source increases. | |
| | | | that they have | | | the distance. | | | | |
| Engage in | •The children | They follow | · · · · · · · · · · · · · · · · · · · | Autumn 2 | | Children can compare and group materials together, according to | change of state | These may not have been covered as they are | Pupils should be taught to: | Bernard Palissy (1510- |
| practical enquiry | select from a | their plan to | | | | whether they are solids, liquids or gases. | melting | challenges | | 1590) |
| to answer | | carry out: | | | | Children can explain what happens to materials when they are | freezing | | compare and group | |
| questions: | | observations | | | | heated or cooled. | melting point | Year 2: | materials together, according to | Bernard Palissy was a |
| Setting up simple | • | and tests to | | | | Children can measure or research the temperature at which different | | Challenge | whether they are solids, liquids | |
| practical | gather evidence | classify; | | | | materials change state in degrees Celsius. | evaporation | Children can explain how materials are changed by | or gases | scientist. He is often |
| enquiries, | to answer | comparative | | | | Children can use measurements to explain changes to the state of | condensation | heating and cooling. | □ observe that some materials | credited as the man who |
| comparative and | questions | and simple fair | | | | water. | water cycle | Children can tell which materials cannot be changed | change state when they are | 'discovered' the modern |
| fair tests | generated by | tests; | | | S | Children can identify the role that evaporation and condensation | temperature | back after being heated, cooled, bent, stretched or | heated or cooled, and | theory of the water cycle. |
| Making | The children | They use a | | Spring 1 | MS | plays in the water cycle. | compare | twisted. | measure or research the | He asserted that rainfall |
| observations | | range of | | | s S | Children can associate and explain the rate of evaporation with | group | Or | temperature at which this | alone was sufficient for |
| and taking | | equipment for | | | utte | temperature. | solids,liquids, | Challenge | happens in degrees Celsius | the maintenance of rivers |
| measurements: | | measuring | | | me | | gases | Children can describe the properties of different | (°C) | |
| Making | | length, time, | | | of | Challenge | heated | materials using words like, transparent or opaque, | identify the part played by | |
| systematic and | | temperature and | | | es | Children can group and classify a variety of materials according to | cooled | flexible, rigid. | evaporation and condensation | |
| careful | | capacity. They | | | Stat | the impact of temperature on them. | degrees | | in the water cycle and | |
| observations | | use standard | | | 05 | Children can explain what happens over time to materials- puddles | celsius | Year 1: | associate the rate of | |
| and, where | | units for their | | | | on the playground or washing hanging on a line. | materials | Challenge: | evaporation with temperature. | |
| appropriate, | | measurements. | | | | Children can relate temperature to change of state of materials. | changes | Children can describe similarities and differences | | |
| taking accurate | | | | | | | classify | between materials. | | |
| measurements | | | | | | | | Children can explain what happens to materials | | |
| using standard | | | | | | | | when they are heated: bread, ice, chocolate, wax, | | |
| units, using a | | | | | | | | egg. | | |
| range of | | | | | | | | Children can explain what happens to materials | | |
| equipment. | The children | • Children are | | Caring C | | Children can identify and name the basis north of the disection | digostivo svoto | when they are cooled: jelly, heated chocolate, water. | Dupile abouid be tought to: | William Booumant (1795 |
| Recording and | •The children | Children are | | Spring 2 | | Children can identify and name the basic parts of the digestive | digestive system | Children can explain the importance of a nutritionally | Pupils should be taught to: | William Beaumont (1785- |
| presenting | sometimes | supported to | | | | system in humans. Children can describe the simple functions of the basic parts of the | digestion | balanced diet. Why do we need it? What might happen if we don't? | describe the simple functions | 1853) |
| evidence: | | present the same data in | | | | digestive system in humans. | herbivore carnivore | Children can describe how nutrients, water and | of the basic parts of the | |
| Gathering, | record and present | different ways in | | | | Children can identify the simple function and hygiene of different | omnivore | oxygen are transported within animals and humans. | digestive system in humans | William Beaumont was a |
| recording, | evidence. They | order to help | ` | | MS | types of teeth in humans. | producer | Children can identify that animals, including humans, | □ identify the different types of | surgeon in the U.S. |
| classifying and | | with answering | | | ≪ ≈ | Children can compare the teeth of herbivores and carnivores. | consumer | cannot make their own food: they get nutrition from | teeth in humans and their | Army. |
| presenting data | | the question. | | | s | Children can explain what a simple food chain shows. | predator | what they eat. | simple functions | He carried out lots of |
| in a variety of | using | | | | Jan | Children can construct and interpret a variety of food chains, | prey | Children can describe and explain the skeletal | construct and interpret a | experiments and |
| ways to help in | photographs, | | | | hum | identifying producers, predators and prey. | food chain | system of a human. | variety of food chains, | research |
| answering questions. | videos, pictures, | | | | h D | | teeth | Children can describe and explain the muscular | | on human digestion. |
| Recording | labelled | | | | din | Challenge | incisors | system of a human. | and | As a result, he provided |
| findings using | diagrams or | | | | clu | Children can classify living things and non-living things by a number | canines | | | the world with new |
| simple scientific | writing. They | | | | Ë. | of characteristics that they have thought of. | molars and | Challenge | ľ | information about the |
| | record their | | | | als | Children can explain how people, weather and the environment can | premolars | Children can explain how the muscular and skeletal | | digestive process in |
| language, drawings, | measurements | | | | in | affect living things. | intestine | systems work together to create movement. | | living |
| labelled | e.g. using | | | | An | Children can explain how certain living things depend on one | stomach | Children can classify living things and non-living | | human beings. |
| | tables, tally | | | | | another to survive- plants and animals, plants and insects. | oesophagus | things by a number of characteristics that they have | | |
| diagrams, keys, | charts and bar | | | | | | | thought of. | | |
| bar charts, and | charts (given | | | | | | | Children can explain how people, weather and the | | |
| tables. | templates, if | | | | | | | environment can affect living things. | | |
| | | 1 | | | | | | | 1 | 1 |

| Alterna Substrate Bannel 1 | | | | | | | | | | | |
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| Randbard Section Sectio | Answering | Children | | | Summer 1 | | | electricityelectriad | cal appliancemainselectrical circuitcell and batteryelecti | | |
| Approx Provide the maximum provide the m | questions and | | | | | | | | | | 1931) |
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| Auge and a second problem of the second prob | Using | | | | | | | | | | |
| enderstand starting startin startin starting starting starting starting starting | | | | | | | | | | | |
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| Mary Mary Sources, Northwere Northwere | answer | they have taken | | | | | Children can recognise that a switch opens and closes a circuit. | | | | |
| Control Control <t< td=""><td>questions or to</td><td>or information</td><td></td><td></td><td></td><td>Ś</td><td>Children can associate a switch opening with whether or not a lamp</td><td></td><td></td><td>switches and buzzers</td><td>first practical</td></t<> | questions or to | or information | | | | Ś | Children can associate a switch opening with whether or not a lamp | | | switches and buzzers | first practical |
| Addy- service and function | , | they have | | | | 3 | lights in a simple series circuit. | | | identify whether or not a | incandescent light bulb. |
| Containing modeled information workshowskie workowskie workowskie workshowskie workshowskie workshowskie worksho | | gained from | | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | Children can recognise some common conductors and insulators. | | | lamp will light in a simple series | _ |
| Society of the series Inclusion Inclusion <td></td> <td>secondary</td> <td></td> <td></td> <td></td> <td>city</td> <td>Children can associate metals with being good conductors.</td> <td></td> <td></td> <td>circuit, based on whether or</td> <td></td> | | secondary | | | | city | Children can associate metals with being good conductors. | | | circuit, based on whether or | |
| Society of the series Inclusion Inclusion <td></td> <td>sources. The</td> <td></td> <td></td> <td></td> <td>Ę</td> <td></td> <td></td> <td></td> <td>not the lamp is part of a</td> <td></td> | | sources. The | | | | Ę | | | | not the lamp is part of a | |
| Society of the series Inclusion Inclusion <td></td> <td>answers are</td> <td></td> <td></td> <td></td> <td>lle</td> <td>Challenge</td> <td></td> <td></td> <td></td> <td></td> | | answers are | | | | lle | Challenge | | | | |
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| Alternational and the proof frame of t | | | | | | | | | | associate metals with being | |
| Alternational and the proof frame of t | Identifying | Children | | | Summer 2 | | Children can recognise that living things can be grouped in a variety | classification | Children can match certain living things to the | Pupils should be taught to: | Seirian Sumner |
| strature of a logeneral scale special | | | | | | | | | | | |
| dranger below winder winder beinger below winder below winde | | | | | | | | | | recognise that living things | Dr Seirian Sumner is an |
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| plastering - Challenge - Cha | | | | | | p | sometimes pose a danger to living tillings. | | | | (bees, wasps and ants). |
| eusla eusla else Providence Childre can oper seasons for how bry providence and basilization do bry providence and providence andeprovidence andepr | | Ű | | | | ar | Ohallan as | | | | Lucy Evolute Chaseman |
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| and raise further questions:They identify why adpited their methods at indexing its and or not whete indra discussor indra discussor< | | | | | | | | | | | |
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| make prediction for new values, suggestmethod e.g. the distance repeated the repeated the repeated the repeated the enquiry.method e.g. the distanceanswered by extending the same enquiry.Communicating findings: requiries, including oral and witten enquiries, solution: including sor method requiries, solution: solution: | improvements and raise further questions. Evaluating & raising further questions: Using results to | They identify ways in which they adapted their method as | their evidence to suggest values for different | scientific experience, the children ask | | | | | | | |
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| presentations of results and | improvements and raise further questions. Evaluating & raising further guestions: Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Communicating findings: Reporting on findings from enquiries, including oral and written | They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. They communicate their findings to an audience both orally and in writing, using appropriate | their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional | scientific experience, the children ask further questions which can be answered by extending the | | | | | | | |
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| conclusions. | improvements and raise further questions. Evaluating & raising further questions: Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Communicating findings: Reporting on findings from enquiries, including oral and written explanations, displays or presentations of | They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. They communicate their findings to an audience both orally and in writing, using appropriate scientific | their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional | scientific experience, the children ask further questions which can be answered by extending the | | | | | | | |
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| | Working S | with any unit across cientifically | | Term | Topic | | | Prior Learning | National Curriculum | Significant Scientists |
|---|---|---|----------------------------------|----------|-----------|--|--|---|---|--|
| ting questions | Children independently ask | Given a wide range of resources the | | Autumn 1 | | Children can explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and | force gravity | Children can compare how things move on different surfaces. Children can observe that magnetic forces can be transmitted | Pupils should be taught to: | Galileo Galilei (1564-1642) |
| t they can be | scientific | children decide for | | | | the falling object. | force meter | without direct contact. | explain that unsupported objects fall | He was an Italian scientist. He |
| swered in | questions. This may be stimulated | themselves how to gather evidence to | | | | Children can identify the effects of air resistance, water resistance | Newton (N) earth | Children can observe how some magnets attract or repel each other | towards the Earth because of the force of gravity acting between the Earth and the | discovered that if two objects of similar shape and size are |
| erent ways: nning different | by a scientific | answer a scientific | | | | and friction that act between moving surfaces. Children can recognise that some mechanisms, including levers, | air resistance | Children can classify which materials are attracted to magnets | falling object | dropped, they will fall at the same |
| es of scientific | experience or | question. They | | | NS | pulleys and gears, allow a smaller force to have a greater effect. | water resistance | and which are not. | identify the effects of air resistance, | rate. |
| uiries to answer | involve asking further questions | choose a type of enquiry to carry out | | | s S | Challenge | friction surfaces | Children can notice that some forces need contact between two objects, but magnetic forces can act at a distance. | water resistance and friction, that act between | Sir Isaac Newton (1642-1726) |
| estions, including ognising and | based on their | and justify their | | | Ces | Children can describe and explain how motion is affected by | mechanisms | Children can compare and group together a variety of everyday | moving surfaces | |
| ntrolling variables | developed | choice. They | | | ě | forces- gravitational attractions, magnetic attraction and friction. | levers | materials on the basis of whether they are attracted to a | recognise that some mechanisms, | He was an English scientist and |
| ere necessary | understanding following an | recognise how secondary sources | | | | Children can design effective parachutes. Children can work out how water can cause resistance to floating | pulleys gears | magnet. Children can identify some magnetic materials. | including levers, pulleys and gears, allow | concept of gravity when sitting |
| | enquiry. | can be used to | | | | objects. | 3 | Children can describe magnets having two poles (N & S). | smaller force to have a greater effect. | under a tree and an apple fell to |
| | | answer questions that cannot be | | | | Children can explore how scientists such as Galileo, Galilei and Issac Newton helped to develop the theory of gravitation. | | Children can predict whether two magnets will attract or repel each other depending on which poles are facing. | | the ground near him. Contemporary |
| | | answered through | | | | issac inewtoir neiped to develop the theory of gravitation. | | call one depending on milen pace are rading. | | |
| age in practica | The children | practical work | | Autumn 2 | | Children can identify and explain the movement of the Earth and | solar system | Year 1: | Pupils should be taught to: | Nicolaus Copernicus (1473-1543) |
| uiry to answer | select from a range | | | | | other planets relative to the sun in the solar system. | earth | Children can observe changes across the four seasons. | | |
| stions: nning different | of practical resources to gather | | | | | Children can explain how seasons and the associated weather is created. | moon Luna phases: | Children can name the four seasons in order. Children can observe and describe weather associated with | describe the movement of the Earth, and other planets, relative to the Sun in | Nicolaus was a Polish astronomer and mathematician who formulated |
| s of scientific | evidence to answer | | | | | Children can describe and explain the movement of the Moon | Waning Gibbous. | the seasons. | the | the heliocentric model of the solar |
| ines to answer | their questions. They carry out fair | | | | WS | relative to the Earth. Children can describe the sun, earth and moon as approximately | Waxing Crescent. Waning Half | Children can observe and describe how day length varies and why. | solar system describe the movement of the Moon | system that placed the Sun rather than the Earth at the centre of the |
| tions, including qnising and | tests, recognising | | | | ~ | spherical bodies. | Moon. | Children can explain and understand sun safety. | relative to the Earth | universe. |
| olling variables | and controlling | | | | ace | Children can use the idea of the earth's rotation to explain day | Waning Crescent | | describe the Sun, Earth and Moon as | |
| re necessary. | variables. They decide what | | | | dsb | and night and the apparent movement of the sun across the sky. Children can explain the size, shape and position of the Earth,sun | planets | Challenge Children can observe features in the environment and explain | approximately spherical bodies use the idea of the Earth's rotation to | Maggie Aderin-Pocock (born 1968) |
| | observations or | | | | and | and moon. | stars | that these are related to a specific season. | explain day and night and the apparent | |
| | measurements to make over time | | | | Earth | Challenge | seasons | Children can observe and talk about changes in the weather. | movement of the sun across the sky. | Maggie is a British space scientist and science educator. She is |
| | make over time and for how long. | | | | ш | Challenge Children can compare the time of day at different places on the | movement | Children can talk about weather variation in different parts of the world." | | and science educator. She is working on the observation |
| | They look for | | | | | earth. Create shadow clocks. | rotate | | | instruments for the Aeolus satellite, |
| | patterns and relationships using | | | | | Children can begin to understand how older civilisations used the sun to create astronomical clocks- Stonehenge. | orbit spherical bodies | | | which will measure wind speeds to help the investigation of climate |
| | a suitable sample. | | | | | Sun to create astronomical clocks- Stonenenge. Children can explore the work of some scientists? (Ptolemy, | day/ night | | | change. |
| ing | The children | During an enquiry, | | Spring 1 | | Children can compare and group together everyday materials on | hardness | Year 2: | Pupils should be taught to: | Spencer Silver (born 1941) |
| ervations and | select measuring | they make decisions | | | | the basis of their properties including hardness, solubility, | transparency | | | |
| ing | equipment to give the most precise | e.g. whether they need to: take repeat | | | | transparency, conductivity (electrical and thermal), and response to magnets. | conductivity- electrical and | Children can describe the simple physical properties of a variety of everyday materials (shape, size, material, weight, | compare and group together everyday materials on the basis of their properties, | Spencer Silver is an American scientist who together with Arthur |
| asurements: ung | results e.g. ruler, | readings (fair | | | | Children can explain how some materials dissolve in a liquid to | thermal | texture). | including their hardness, solubility, | Fry was the inventor of Post-it |
| asurements, | tape measure or | testing); increase the | | | | form a solution. | magnetic | Children can compare and group a variety of materials based | transparency, conductivity (electrical and | notes in 1974. At the time, he was |
| ng a range of entific equipment | trundle wheel, force meter with a | sample size (pattern seeking); adjust the | | | | Children can describe how to recover a substance from a solution. Children can use their knowledge of solids, liquids and gases to | substance | on their simple physical properties (shape, size, material, weight, texture). | thermal), and response to magnets I know that some materials will dissolve | working to develop new classes of adhesives. |
| entitic equipment h increasing | suitable scale. | observation period | | | | decide how mixtures might be separated through filtering, sieving, | solids,liquids,gas | Children can explore how the shapes of solid objects can be | in liquid to form a solution, and describe | |
| uracy and | | and frequency (observing over | | | ş | and evaporating. Children can give reasons, based on evidence for comparative | es thermal insulator | changed (squashing, bending, twisting, stretching). Children can say which materials are natural, which are man- | how to recover a substance from a solution | Joe Keddie |
| cision, taking eat readings | | time); or check | | | ŝ | and fair tests for the uses of everyday materials, including metals, | thermal conductor | made and make comparisons. | use knowledge of solids, liquids and | Joe Keddie is a professor of Soft |
| en appropriate. | | further secondary | | | hrials | wood and plastic. | electrical insulator | Children can find out about people who developed useful new | gases to decide how mixtures might be | Matter Physics |
| | | sources (researching); in | | | nate | Children can describe changes using scientific words (melting, evaporation, condensation, cooling, freezing) | electrical conductor | materials? (John Dunlop- rubber, Charles Macintosh- waterproof, John McAdam- roads) | separated, including through filtering, sieving and evaporating | at the University of Surrey. He is interested in the fundamental |
| | The children | The children decide | | Spring 2 | of | Children can demonstrate that dissolving, mixing and changes of | dissolve | Children can identify and compare the suitability of a variety of | | processes of soft matter especially |
| cording and senting | I ne children decide how to | The children decide how to record and | | Spring 2 | ges | state are reversible changes. Children can explain that some changes result in the formation of | solution | everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses. | comparative and fair tests, for the | polymer thin films and |
| dence: | record and present | present evidence. | | | han | new materials and that this kind of change us not usually | insoluble | Children can explain how things move on different surfaces. | particular uses of everyday materials, including | nanoparticles. |
| cording data and | evidence. They record | They record observations e.g. | | | q | reversible-changes associated with burning and the action of acid | sieve | | metals, wood and plastic | |
| ults of increasing nplexity using | observations e.g. | using annotated | | | sar | bicarbonate of soda. Children can use the terms 'reversible' and 'irreversible' | filter | Challenge Children can explain how materials are changed by heating | demonstrate that dissolving, mixing | |
| entific diagrams | using annotated | photographs, videos, | | | artie | Children can use the terms reversible and irreversible | evaporation reversible change | | and changes of state are reversible changes | |
| l labels, ssification kevs. | photographs, videos, labelled | labelled diagrams, observational | | | Prope | Challenges | E.g | Children can tell which materials cannot be changed back after | explain that some changes result in the | |
| les. scatter | diagrams, | drawings, labelled | | | ۵. | Children can describe methods for separating mixtures (filtration, distillation) | dissolving, melting, freezing | being heated, cooled, bent, stretched or twisted. | formation of new materials, and that this kind | |
| phs, bar and line | observational drawings, labelled | scientific diagrams or writing. They record | | | | Children can work out which materials are most effective for | Non Reversible | Or | of change is not usually reversible, | |
| phs. | scientific diagrams | measurements e.g. | | | | keeping us warm or for keeping something cold. Children can use their knowledge of materials to suggest ways to | Change | Challenge | including changes associated with burning and | |
| | or writing. They | using tables, tally | | | | classify (solids, liquids, gases). | | Children can describe the properties of different materials using words like, transparent or opaque, flexible, rigid. | the action of acid on bicarbonate of soda. | |
| | record measurements e.g. | charts, bar charts, line graphs and | | | | Children can explore changes that are difficult to reverse, e.g. | | | | |
| | using tables, tally | scatter graphs. They | | | | burning, rusting and reactions such as vinegar with bicarbonate of soda. | | | | |
| | charts, bar charts, | record classifications | | | | Children can explore the work of chemists who created new | | | | |
| swering | Ine graphs and Children answer | e.g. using tables, • They talk about how | They talk about | Summer 1 | | Children can describe the differences in the life cycles of a | life cycle | Children can recognise that living things can be grouped in a | Pupils should be taught to: | J |
| estions and | their own and | their scientific ideas | how new | | | mammal, amphibians, insects and a bird. | reproduction | variety of ways. | | |
| ncluding: | others' questions based on | change due to new evidence that they | discoveries change scientific | | | Children can describe the life cycles of common plants. Children can explore the work of well-known naturalists and | sexual reproduction | Children can explore and use a classification key to group, identify and name a variety of living things (plants, vertebrates, | describe the differences in the life cycles of a mammal, an amphibian, an | |
| ntifying scientific dence that has | observations they | have gathered. | understanding. | | SW | animal behaviourists. (David Attenborough and Jane Goodall) | asexual | invertebrates). | insect and | |
| n used to | have made, | | - | | 8 N | Challenge | reproduction | Children can compare the classification of common plants and | a bird describe the life process of | |
| port or refute as or arguments. | measurements they have taken or | | | | tats | Challenge Children can observe their local environment and draw | fertilise metamorphis | animals to living things found in other places (under the sea, prehistoric). | describe the life process of reproduction in some plants and animals. | |
| | information they | | | | ider | conclusions about life-cycles, e.g. plants in the vegetable garden | runner | Children can recognise that environments can change and this | | |
| | have gained from secondary sources. | | | | eir h | or flower border. Children can compare the life cycles of plants and animals in their | bulb naturalist | can sometimes pose a danger to living things. | | |
| | When doing this, | | | | t p | local environment with the life cycles of those around the world, | behaviourist | Challenge | | |
| | | 1 | | | s an | e.g. rainforests. | environment | Children can give reasons for how they have classified animals | | |
| | they discuss | | 1 | | things | | | and plants, using their characteristics and how they are suited to their environment. | | |
| | whether other evidence e.g. from | | | | | | | Children can explore the work of pioneers in classification (e.g. Carl Linnaeus) | | |
| | whether other evidence e.g. from other groups, | | | | ng t | | 1 | | | 1 |
| | whether other evidence e.g. from | | | | Living t | | | Children can name and group a variety of living things based | | |
| | whether other evidence e.g. from other groups, secondary sources and their scientific understanding, | | | | Living ti | | | Children can name and group a variety of living things based on feeding patterns (producer, consumer, predator, prey, | | |
| | whether other evidence e.g. from other groups, secondary sources and their scientific | | | | Living t | | | Children can name and group a variety of living things based | | |
| | whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. | | | | Living | | | Children can name and group a variety of living things based on feeding patterns (producer, consumer, predator, prey, herbivore, carnivore, omnivore). | | Jane Goodall (Born 1934)Jane Goodi |
| | whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. | | | Summer 2 | Living | Children can describe the changes as humans develop to old | life expectancy | Children can name and group a variety of living things based on feeding patterns (producer, consumer, predator, prey, herbivore, carnivore, ornivore). Children can identify and name the basic parts of the digestive | Pupils should be taught to: | Jane Goodall (Born 1934) Jane Good Sarah Fowler |
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mpanzees. She isknown for her groundbreaking discoveries aboutheir behaviour. She hasshown us the urgent need toprotect chimpanzees fromextiction. David Attenborough (born 1926)Sir David is an Englishbroadcaster and aturalist. He has made manyfamous wildlifeprogrammes. He wasknighted in 1985

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These objectives can be completed with any unit across the year.

Year 6 Curriculum

| These objectiv | | vith any unit across the yea | | Tani | Need to Know | Veeebuleru | Dries Learning | Netienel Currievium | Cignificant Colontists |
|---|---|--|-------------------|-------------------------------|---|--|---|--|---|
| Asking | Working Scie | Given a wide range | lerm | торі | Need to Know Children can recognise that light appears to travel in | | Prior Learning Year 3: | National Curriculum Pupils should be taught to: | Significant Scientists Abu Ali al-Hasan Alhazen) (965- |
| Asking questions and recognising that they can be answered in different ways: Planning differen types of scientific enquiries to answer questions, including recognising and Engage in practical enquire to answer questions: Planning differen types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. | independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. | of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to | Autumn 2 Autumn 1 | Light & WS | Children can explain how different colours of light children can use and explain how simple optical instruments work-periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope. Children can explain how sona pubbles, objects loght ravels from loght sources to our eyes or from light sources to objects and then to our eyes. Children can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Children can explain the difference between transparent, translucent and opaque? Children can explain why their shadow changes when the light source is moved closer or further from the object? | straight lines objects sight reflect/ reflection light sources shadows cast transparent translucent opaque refraction | Children can recognise that they need light in order to see things. Children can recognise that dark is the absence of light. Children can notice that light is reflected from surfaces. Children can recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Children can recognise that shadows are formed when the light from a light source is blocked by a solid object. Children can find patterns in the way that the size of shadows change. Challenge Children can explain why lights need to be bright or dimmer according to need. Children can explain the difference between transparent, translucent and opaque? Children can explain why their shadow changes when the light source is moved closer or further from the object? | recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows | Abd All al-Hasall Alhazell) (965- 1040) Alhazan was an Iranian mathematician, astronomer and physicist. He was the pioneer of modern optics. He carried out experiments with pinhole cameras and candles and explained how the image is formed by rays of light travelling in straight lines. Ben Jensen Ben Jensen Ben Jensen is an inventor at Surrey NanoSystems Ltd and developed Vantablack, a super- black coating that holds the world record as the darkest human- made substance. |
| Making observations and taking measurements: Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. | suitable sample.The children select | During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value). | Spring 1 | Electricity & WS | Children can identify and name the basic parts of a simple electric circuit- cells, wires, bulbs, switches, buzzers. Children can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches. Children can use recognised symbols when representing a simple circuit in a diagram. Challenge Children can explain the danger of short circuits? Children can explain what a fuse is? Children can explain how to make changes in a circuit? Children can explain the impact of changes in a circuit? Children can explain the effect of changing the voltage of a battery? | circuit circuit symbol circuit diagram cell battery switch voltage wire buzzer bulb motor components electrical circuit fuse | Children can identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers. Children can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Children can recognise that a switch opens and closes a circuit. Children can associate a switch opening with whether or not a lamp lights in a simple series circuit. Children can recognise some common conductors and insulators. Children can associate metals with being good conductors. Challenge Children can explain how a bulb might get brighter. Children can recognise if all metals are conductors of electricity and make comparisons. Children can work out which metals can be used to connect across a gap | voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram. | Nicholas Tesla (1856-1943) Nicholas Tesla was a SerbianAmerican engineer and physicist. He invented the first alternating current (AC) motor and developed AC generation and transmission technology. He worked for Thomas Edison when he first moved to New York. Peter Rawlinson Peter Rawlinson Peter Rawlinson is a British engineer based in California. He is working on the development of electric vehicles, providing clear vision for a nextgeneration product. |
| Recording and presenting evidence: Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. | labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using | They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter | Spring 2 | Animals including humans & WS | Children can identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. Children can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Children can describe the ways in which nutrients and water are transported within animals, including humans. Challenge Children can explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learnt about our bodies. Children can compare the organ systems of humans to other animals. Children can explain how parts of the human body work and depend on one another. Children can name the major organs in the human body. Children can locate the major human organs. | pulse blood blood vessels lungs circulatory system diet exercise drugs lifestyle healthy oxygen carbon dioxide | In a circuit. Year 5: Children can describe the changes as humans develop to old age. Children can understand that all living things have lifecycles. Children can identify and compare the gestation periods between animals and humans. Children can explain the importance of gestation periods and the affects on growth and development. Children can identify and compare the life span of humans and other animals. Challenge Children can create a timeline to indicate stages of growth in certain animals- frogs and butterflies. Children can describe the changes experienced in puberty. Children can draw a timeline to indicate stages in the growth and development of humans. | blood | William Harvey (1578-1657) William Harvey was an English physician and the first person to correctly describe blood's circulation in the body. He showed that arteries and veins form a complete circuit. |

| | | | - | | - | - | _ | | | |
|---|--|---------------------------------------|--------------------|--------|------------|--|------------------------------|--|---|--|
| Answering | Children answer their | They talk about how | They talk | | | Children can recognise that living things have | evolution | Year 3: | Pupils should be taught to: | Charles Darwin (1809-1882) |
| questions and | own and others' | their scientific ideas | about how | | | changed over time and that fossils provide | offspring | Children can compare and group different rocks on the basis of their | - recording that living things have | Charles Dahart Danvis was |
| <u>concluding:</u> Identifying | questions based on observations they have | change due to new evidence that they | new discoveries | | | information about living things that inhabited the earth millions of years ago. | inherited characteristics | appearance and simple physical properties. Children can describe and explain how different rocks can be useful to us. | recognise that living things have changed over time and that fossils | Charles Robert Darwin was born in Shrewsbury and was |
| scientific | made, measurements | have gathered. | change | | | Children can recognise that living things produce | variation | Children can describe and explain the differences between sedimentary, | provide | an English naturalist and |
| | they have taken or | nave gamerea. | scientific | | | offspring of the same kind, but normally offspring | adapted | igneous and metamorphic rocks and explain how they are formed. | information about living things that | biologist. His scientific theory |
| been used to | information they have | | understandin | | | vary and are not identical to their parents. | environment | Children can describe in simple terms how fossils are formed- when | inhabited the Earth millions of years ago | of evolution by natural |
| | gained from secondary | | g. | | | Children can give reasons why offspring are not | species | things that have lived are trapped within rock. | □ recognise that living things produce | selection became the |
| | sources. When doing | | - | | | identical to each other or to their parents. | fossil | Children can recognise that soils are made from rocks and organic matter. | offspring of the same kind, but normally | foundation of modern |
| arguments. | this, they discuss | | | | MS | Children can explain the process of evolution and | | Challenge | offspring | evolutionary studies. |
| | whether other evidence | | | | ~~ | describe the evidence for this. | | Children can classify sedimentary, igneous and metamorphic rocks. | vary and are not identical to their parents | |
| | e.g. from other groups, | | | | Ce | Children can identify how animals and plants are | | Children can begin to relate the properties of rocks with their uses. | □ identify how animals and plants are | Alfred Wallace (1823-1913) |
| | secondary sources and their scientific | | | 5 | inheritar | adapted to suit their environment in different ways | | | adapted to suit their environment in different | Alfred Duesel Melless was an |
| | understanding, supports | | | Summer | her | and that adaptation may lead to evolution. | | | ways and that adaptation may lead to | Alfred Russel Wallace was an explorer, naturalist and |
| | or refutes their answer. | | | Ē | . <u> </u> | Challenge | | | evolution. | anthropologist. He |
| | | | | Su | and | Children can explain how some living things adapt to | | | | independently proposed the |
| | | | | | | survive in extreme conditions. | | | | theory of evolution by natural |
| | | | | | Evolution | Children can analyse the advantages and | | | | selection. He worked around |
| | | | | | 8 | disadvantages of specific adaptations, such as being | | | | the world gathering evidence |
| | | | | | | on two rather than four feet. | | | | to support his theory. |
| | | | | | | Children can begin to understand what is meant by | | | | |
| | | | | 1 | | DNA. | | | | Oswald Avery 1877 – 1955. |
| | | | | | | | | | | |
| | | | | 1 | | | | | | Discovered that DNA passes |
| | | | | | | | | | | heredity instructions through successive generations of |
| | | | | | | | | | | organisms – it carries the |
| | | | | | | | | | | chemical code of life, as revealed |
| Reporting and | In their conclusions, | | 1 | 1 | | Children can describe how living things are classified | vertebrate | Year 5: | Pupils should be taught to: | Carl Linnaeus (1707-1778) |
| | children: identify causal | | | | | into broad groups according to common observable | | Children can describe the differences in the life cycles of a mammal, | | |
| | relationships and | | | | S | characteristics and based on similarities and | amphibian | amphibians, insects and a bird. | □ describe how living things are | Carl Linnaeus was a Swedish |
| enquiries, | patterns in the natural | | | | WS | differences including microorganisms, plants and | reptile | Children can describe the life cycles of common plants. | classified into broad groups according to | |
| including | world from their | | | | ര് ഗ | animals based on specific characteristics. | bird | Children can explore the work of well-known naturalists and animal | common | modern system of classifying |
| | evidence; identify | | | | habitats | | mammal | behaviourists. (David Attenborough and Jane Goodall) | observable characteristics and based on | |
| causal | results that do not fit the | | | | abi | | invertebrate | | similarities and differences, including | this the names of living things |
| | overall pattern; and | | | | ir h | Challenge | plants | Challenge | microorganisms, plants and animals | were often very long. He gave |
| · · · · · · · · · · | explain their findings using their subject | | | | the | Children can explain why classification is important. Children can readily group animals into reptiles, fish, | micro- organisms | Children can observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border. | □ give reasons for classifying plants and animals based on specific | them a two-part name. |
| and degree of trust in results, in | knowledge. | | | | and | amphibians, birds and mammals. | classification | Children can compare the life cycles of plants and animals in their local | characteristics. | Chris Nelson |
| oral and written | Kilowicage. | | | | s a | Children can sub divide their original groupings and | flowering | environment with the life cycles of those around the world, e.g. rainforests. | | |
| forms such as | | | | | ing | explain their divisions. | non-flowering | | | Chris Nelson is a horticulturist |
| displays and | | | | | t | Children can group animals into vertebrates and | | | | and a director of Growing |
| other | | | | | /ing | invertebrates. | | | | Underground which uses |
| presentations. | | | | | Ľ. | Children can find out about the significance of the | | | | hydroponic techniques to |
| | | | | 2 | | work of scientists such as Carl Linnaeus, a pioneer | | | | grow pesticide-free crops in a |
| | | | | ler l | | of classification. | | | | former London underground |
| Evaluating & | •They evaluate, for | They identify any | | Summer | | Part of PSHE-SRE | life expectancy | | | |
| raising further | example, the choice of | limitations that reduce | | Su | | | genstation | Children can describe the changes as humans develop to old age. | | |
| questions: | method used, the | the trust they have in | | | | Children can describe the changes as humans | sexual | Children can understand that all living things have lifecycles. | | |
| | control of variables, the precision and accuracy | unen uala. | | 1 | | develop to old age. Children can understand that all living things have | reproduction puberty | Children can identify and compare the gestation periods between animals and humans. | | |
| procenting | of measurements and | | | 1 | | lifecycles. | life cycle | Children can explain the importance of gestation periods and the affects | | |
| in ango nom | the credibility of | | | 1 | | Children can identify and compare the gestation | mentstration | on growth and development. | | |
| including | secondary sources | | | 1 | | periods between animals and humans. | sperm | Children can identify and compare the life span of humans and other | | |
| conclusions, | used. | | | 1 | | Children can explain the importance of gestation | egg | animals. | | |
| causal | | | | 1 | | periods and the affects on growth and development. | foetus | | | |
| relationships and | | | | 1 | | Children can identify and compare the life span of | changes | | | |
| explanations of | | | | 1 | | humans and other animals. | growth | | | |
| and degree of | | | | 1 | | Children can describe the changes experienced in | development | | | |
| 1 | | 1 | 1 | 1 | | puberty. Children can create a timeline to indicate stages of | | | | |
| trust in results, in | | | | | | u putaton can croato a timolino to indicato stados of | 1 | | | |
| oral and written | | | | | | | | | | |
| oral and written forms such as | | | | | | growth in certain animals- frogs and butterflies. | | | | |
| oral and written forms such as displays and | | | | | | | | | | |
| oral and written forms such as displays and other | | | | | | | | | | |
| oral and written forms such as displays and other presentations | Children use the | | | | | | | | | |
| oral and written forms such as displays and other presentations Using test results to make | scientific knowledge | | | | | | | | | |
| oral and written forms such as displays and other presentations Using test results to make predictions to set | scientific knowledge gained from enquiry | | | | | | | | | |
| oral and written forms such as displays and other presentations Using test results to make predictions to set up further | scientific knowledge gained from enquiry work to make | | | | | | | | | |
| oral and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and | scientific knowledge gained from enquiry work to make predictions they can | | | | | | | | | |
| oral and written forms such as displays and other presentations Using test results to make predictions to set up further | scientific knowledge gained from enquiry work to make predictions they can investigate using | | | | | | | | | |
| oral and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and | scientific knowledge gained from enquiry work to make predictions they can | | | | | | | | | |

| Communicating | They communicate | |
|-----------------------------------|---|--|
| findings: | their findings to an | |
| Reporting and presenting | audience using relevant scientific language and | |
| findings from | illustrations. | |
| enquiries, including | | |
| conclusions, | | |
| causal | | |
| relationships and explanations of | | |
| and degree of | | |
| trust in results, in | | |