

Science

Curriculum

Science Overview

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|  | **Autumn** | | **Spring** | | **Summer** | |
|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Year 3** | **Plants** | **Food and our bodies** | **Rocks, soils and fossils** | **Forces and magnets** | **Light and shadows** | |
| **Year 4** | **Sound** | **Living things** | **States of matter** | **Teeth and eating** | **Electricity** | **Working Scientifically Project: The Big Build Challenge** |
| **Year 5** | **Space** | **Forces** | **Materials** | **Circle of life** | **Growing up and growing old** | |
| **Year 6** | **Light** | **Electricity** | **Classification of living things** | **Evolution and inheritance** | **Healthy bodies** | |

Year 3

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|  | **Autumn** | | **Spring** | | **Summer** | |
|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Overview** | **Plants** | **Food and our bodies** | **Rocks, soils and fossils** | **Forces and magnets** | **Light and shadows** | |
| **Suggested Content** | *Understand what a plant needs for growth.*  *Describe the function of roots and stem.*  *Describe the function of leaves and flowers.*  *Investigate how much water plants need to stay healthy.*  *Explore the part that flowers play in the life cycle of flowering plants.* | *Explain animals need to eat food because they cannot make their own.*  *Recognise food groups and classify food into groups.*  *Name the position of a range of bones in the body.*  *Describe the functions of a skeleton.*  *Describe how muscles and bones work together* | *Understand what rocks are and how they can be classified.*  *Understand what fossils are and the legacy of Mary Anning.*  *Use dough to create fossils and describe how dough fossils are made.*  *Explain how fossils are formed.*  *Examine different types of soils and understand what it is made up of.* | *Compare how things move over different surfaces*  *Carry out a fair test and draw conclusions about which surface a toy car travels the furthest.*  *Examine which types of objects are magnetic.*  *Undertake experiments to measure the strengths of different magnets* | *Demonstrate that darkness is the absence of light.*  *Examine different sources of light.*  *Understand how light allows us to see different objects.*  *Identify surfaces which reflect light.*  *Explain how shadows are made.*  *Predict which materials make the darkest shadows.* | |
| **Key Vocab** | Air, Light, Water, Nutrients, Soil, Reproduction, Pollen, Root, Stem, Veins, Dispersal, Stamen, Ovary | Movement, Muscles, Bones, Skull, Nutrition, Skeleton, Protein, Carbohydrate, Fats, Diet | Fossils, Soils, Sandstone, Granite, , Pumice, Basalt, Chalk, Slate Impermeable, Permeable, Friable, Lustre | Observation, Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull | Light, Light source, Dark, Shadows, Mirror, Reflective, Reflection, Translucent, Transparent, Opaque | |
| **Scientific enquiry** | | | | | | |
| **Observing over time** | What happens to celery when it is left in a glass of coloured water? |  |  |  | How do shadows change throughout a day? | |
| **Pattern seeking** |  | Have girls or boys broken the most bones? |  | Does the size and shape of a magnet affect how strong it is? | Does the number of reflections increase as the angle between the mirror decreases? | |
| **Research** |  |  | Who was Mary Anning? |  |  | |
| **Identifying and classifying** | How do these seeds spread? | Which food groups do I eat? | Which rocks are impermeable, and which are permeable? | Which materials are magnetic? |  | |
| **Comparative and fair tests** | Do plants need light to grow? |  |  | On which surface will a toy car travel the furthest? | Which materials are the best for making shadows? | |

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| **Overview** | **Sound** | **Living things** | **States of matter** | **Teeth and eating** | **Electricity** | | **Working Scientifically Project: The Big Build Challenge** |
| **Suggested Content** | *Identify how sounds are made.*  *Create a box guitar using cardboard and elastic bands.*  *Describe how to change pitch and volume of a sound.*  *Describe how sound changes in relation to distance.*  *Present data in graphical form.*  *Investigate which materials are the best at insulating sound.* | *Sort animals into different groups and explore different ways to classify.*  *Create classification key to sort biscuits.*  *Explore the use of classification keys to identify living thing.*  *Research how bees are good for the environment.*  *Suggest ways in which we can save our bees.* | *Sort materials into solids, liquids and gasses.*  *Build an ice tower and investigate why ice isn’t a good building material?*  *Observe that ice changes state when it is heated or cooled.*  *Investigate which type of chocolate melts the quickest.*  *Describe parts of the water cycle.* | *Identify the different human teeth.*  *Describe the functions of the different types of teeth.*  *Explain how to keep teeth healthy.*  *Make a functioning model of a digestive system.*  *Create food chains*  *Recognise food chains in the school ground* | *Sort objects that run on mains electricity and batteries.*  *Describe how to use electricity safely.*  *Identify components used in electrical circuits.*  *Investigate which materials are the best conductors of electricity.*  *Create functioning circuits* | | *Investigate which shapes are the strongest for building bridges.*  *Apply understanding of structures to build spaghetti towers.*  *Research how common animals build homes, such as bird species and bees.* |
| **Key Vocab** | Volume, Vibration, Wave, Pitch, Speaker | Vertebrates, Invertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Snails, Slugs, Worms, Spiders, Insects, Environment, Classify, Classification | Solid, Liquid, Gas, Evaporation, Condensation, Precipitation, Collection, Temperature, Freezing, Melting, Heating, Thermometer, Water Cycle | Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Anus, Canine, Incisor, Molar, Enamel, Decay, | Wires, Bulbs, Switches, Buzzers, Battery, Cells, Circuit, Series, Conductors, Insulators | | Structure, Tower |
| **Scientific enquiry** | | | | | | | |
| **Observing over time** |  |  | What happens if we leave ice at room temperature? | What happens to eggshell when it is left in different liquids? |  | |  |
| **Pattern seeking** | What are the rules for changing the pitch of a string instrument? |  |  | What food types cause damage to our teeth? |  | | Which shapes are the used the most for bridge building? |
| **Research** |  | Why are bees good for the environment? |  | What is the function of each organ in the digestive system? |  | | How do common animals in the local environment build their homes? |
| **Identifying and classifying** |  | Can we use classification keys to identify animals? | What state are different materials at room temperature? | How can we organise living things into food chains? | Which sources of electricity do appliances use? | |  |
| **Comparative and fair tests** | Which materials are the best insulators of sound? |  | Which type of chocolate melts the fastest? |  | Which materials are the best conductors of electricity? | | Which spaghetti tower is the strongest? |

Year 4

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| **Overview** | **Space** | **Forces** | **Materials** | **Circle of life** | **Growing up and growing old** | |
| **Suggested Content** | *Name and describe plants in the Solar System*  *Describe how planets orbit the sun at different speeds.*  *Explain the occurrence of day and night.*  *Explain why shadows change over the course of a day*  *Describe changes in the moon that they observe.*  *Research information about other plants in our Solar System.* | *Explain Newton and Galileo’s ideas about gravity.*  *Explore the effects of air resistance.*  *Investigate how air resistance is linked to surface area.*  *Understand the effects of water resistance and up-thrust.*  *Describe what happens and talk about friction as a force.*  *Investigate friction of different shoes.* | *Classify common materials according to properties.*  *Describe the properties of materials and how they relate to their uses.*  *Investigate which materials make the strongest carrier bag.*  *Identify materials that are thermal conductors.*  *Explain how crystals form from saturated solutions* | *Describe the life-cycle of a hen and frog.*  *Compare life-cycles of different groups of animals.*  *Carry out a dramatization of pollination.*  *Describe how new plants can be generated from old plants.*  *Investigate why some animals lay so many eggs.*  *Explain ideas of Scientists involved in conservation* | *Describe the changes from a baby to old age.*  *Describe visually how a child changes.*  *Identify key milestones from birth onwards.*  *Explain why changes occur during puberty and describe what those changes are in both sexes.*  *Design and conduct a survey to find out what age they think someone is old.* | |
| **Key Vocab** | Earth, Sun, Moon, Axis, Daytime, Night-time, Orbit, Planet, Star, Heliocentric. | Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys | Hardness, Solubility, Conductivity, Magnetic, Filter, Elastic, Dissolving, Flexible, Mixing, Solution | Reproduction, Fertilisation, Offspring, Pollination, Metamorphosis, Larva, Asexual, Sexual | Foetus, Embryo, Uterus, Gestation, Toddler, Adolescent, Elderly, Growth, Development, Puberty, Menstruation | |
| **Scientific enquiry** | | | | | | |
| **Observing over time** | How does shadow length change throughout the day? |  | How do crystals form from saturated salt solutions over time? |  |  | |
| **Pattern seeking** | Is there a pattern between how long it takes a plant to orbit the sun and distance away from the sun? | Does size effect how quickly a cupcake case falls? |  | Are there similarities between life-cycles of different animals? | Is there a link between gestation period and animal size? | |
| **Research** | What do we know about other plants in our Solar System? | What was Newton and Galileo’s ideas about gravity? |  | What was Jane Goodall’s contribution to Science? | What do older people think about getting old? | |
| **Identifying and classifying** | Can you observe and identify all the phases in the cycle of the moon? |  | Which materials are thermal conductors? |  |  | |
| **Comparative and fair tests** |  | Which shoes do you think have the most friction? Which material makes the strongest carrier | Which material makes the strongest carrier bag? |  |  | |

Year 5

Year 6

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| **Overview** | **Electricity** | **Light** | **Classification of living things** | | **Evolution and inheritance** | **Healthy bodies** | | |
| **Suggested Content** | *Describe how the understanding of electricity developed.*  *Investigate the relationship between voltage and brightness of a bulb.*  *Measure amplitude from different energy sources.*  *Create an electromagnet.*  *Understand how static electricity is created.*  *Investigate the creation of static electricity.* | *Understand that light travels in straight lines.*  *Explain in detail how shadows are created and how they are different to reflections.*  *Investigate shadow size in relation to distance from light source.*  *Explore materials which are reflective.*  *Explain how refraction makes things look different.* | *Create classification keys and describe how items have been sorted.*  *Use Classification keys to identify species of invertebrates and plants.*  *Describe why classification and organisation is important and give examples.*  *Understand that living things are organised into Kingdom* | | *Consolidate knowledge on fossils.*  *Describe that fossils provide us with evidence for what living things looked like millions of years ago.*  *Recognise that humans and other animals produce offspring of the same kind.*  *Understand that animals are adapted to their environment*  *Describe how variations become adaptations* | *Describe the circulatory system.*  *Understand the impact of smoking on the lungs*  *Describe how the heart pumps blood around the body.*  *Examine the effects of exercise on the pulse.*  *Explain the impact of a poor diet on the circulatory system* | | |
| **Key Vocab** | Series, Parallel, Amps, Volts | Refraction, Spectrum, Rainbow, Colour, White light | Micro-organisms, Bacteria, Fungi, Pathogen, Kingdom | | Fossils, Adaptation, Evolution, Extinction, Endangered, Characteristics, Genetics | Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration | | |
| **Scientific enquiry** | | | | | | | | |
| **Observing over time** | How have electrical appliances changed over the years? |  |  | |  | How long does it take for pulse rate to return to normal after exercise? | | |
| **Pattern seeking** | How is bulb brightness and voltage linked? | Is there a relationship between shadow size and distance from light source? |  | | Is there a pattern between the size and shape of a bird’s beak and the food it will eat? |  | | |
| **Research** | How have electrical appliances changed over the years? |  | What was Carl Linnaeus’ contribution to Science? | | How are animals adapted to their environment? | What was John Orr’s contribution to Science? | | |
| **Identifying and classifying** |  |  | What identifiable features can be used to classify plants in our school environment? | |  | Which organs of the body make up the circulatory system? | | |
| **Comparative and fair tests** | How does resistance wire effect the brightness of a bulb? | Which surfaces are the most reflective? |  | |  | Does heartrate increase when exercising? | | |