



Year 3 Science Medium Term Overview

Topic	Autumn 2 Home and Away	Spring 1 A Peachy Adventure	Spring 2 A Step Back In Time	Summer 1 What Lies Beneath	Summer 2 Raiders and Invaders
Science Topic	Rocks and Soils	Animals (Including Humans)	Forces and Magnets	Light	Plants
Unit outcome	Children report which rock is best to build a breakwater from and which soil is best for Old Tom based on their findings from their experiments.	Children will analyse the diets of children in their class and investigate skeletons and muscles.	Children will investigate magnets and forces.	Children will learn about lights and investigate shadows using investigations.	Children will explore the different parts of plants and investigate the factors that affect plant growth.
Hazard Cards	Cards: 13, 14, 15	Cards: 1, 2, 5, 6, 8	Cards: 22, 23, 24	Card: 29	Card: 12
Vocabulary	Rocks, igneous, metamorphic, sedimentary, anthropic, permeable, impermeable, chemical fossil, body fossil, trace fossil, Mary Anning, cast fossil, mould fossil, replacement fossil, extinct, organic matter, top soil, subsoil, base rock.	Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, backbone, muscles, contract, relax,	Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass.	Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent.	Flower, seed, leaf, stem, roots, petal, pollen, life cycle, dispersal, pollination, fertilisation, germination, ovary, ovule, sepal, stamen, anther, filament, stigma, style, photosynthesis.
Topic Specific Vocabulary	permeable/impermeable	skeleton	repel	light source	photosynthesis
Subject Specific Vocabulary	absorb	muscle	friction	reflect	fertilisation
General Vocabulary	properties	nutrition	force	shadow	life cycle
Prior Learning	•May have some understanding of a variety of different rocks in the natural world. •Some understanding of what soil is. (how to identify soil etc) •May have some knowledge of what a fossil is. Prior learning separate from school led learning: • Some children may have a rock collection at home- encourage them to bring in and share. • Some children will know the different rock terminology from video games such as Minecraft.	•Should be able to notice that animals, including humans, have offspring that 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.	•May have an awareness of how to make things stop and start. •Year 2 children will explore 'materials' to find out how they can change the shape of some solid objects using types of pushes and pulls (squashing, bending, twisting).	•May have some knowledge of where light comes from. •Will most likely have seen their shadows and may know they appear when it is sunny. •Some understanding of a reflection. •May understand they need light to be able to see things.	• Children should know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees •They should be able to identify and describe the basic structure of a variety of common flowering plants, including trees. •Children should be taught to observe and describe how seeds and bulbs grow into mature plants •Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Later Learning	In Year 6 pupils will be taught to: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.	In Year 4 pupils will be taught to: Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey. In Year 5 pupils will be taught to: Describe the changes as humans develop to old age. In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	In Year 5 pupils will be taught to: Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	In Year 6 pupils will be taught to: 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 have the same shape as the objects that cast them.	In Year 5 pupils will be taught: To describe the life process of reproduction in some plants
Year 3 National Curriculum Objectives	•Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties •describe in simple terms how fossils are formed when things that have lived are trapped within rock •recognise that soils are made from rocks and organic matter.	•identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. •identify that humans and some other animals have skeletons and muscles for support, protection and movement.	•compare how things move on different surfaces •notice that some forces need contact between two objects, but magnetic forces can act at a distance •observe how magnets attract or repel each other and attract some materials and not others •compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials •describe magnets as having two poles •predict whether two magnets will attract or repel each other, depending on which poles are facing.	•recognise that they need light in order to see things and that dark is the absence of light •notice that light is reflected from surfaces •recognise that light from the sun can be dangerous and that there are ways to protect their eyes •recognise that shadows are formed when the light from a light source is blocked by a solid object •find patterns in the way that the size of shadows change.	•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.
Working Scientifically Objectives	Review: Identify differences, similarities or changes related to simple scientific ideas and processes. Plan: Set up simple practical enquiries, comparative and fair tests. Review: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Review: Use straightforward scientific evidence to answer questions or to support their findings.	Review: Identify differences, similarities or changes related to simple scientific ideas and processes. Review: Use straightforward scientific evidence to answer questions. Plan: Ask relevant questions and use different types of scientific enquiries to answer them.	Plan: Ask relevant questions and use different types of scientific enquiries to answer them. Record: Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Plan: Set up simple practical enquiries, comparative and fair tests.	Plan: Ask relevant questions and use different types of scientific enquiries to answer them. Do: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers. Review: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Record: Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Do: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers. Review: Use straightforward scientific evidence to answer questions or to support their findings.

Resources	Examples of rock types Beakers Pipettes Compost, clay and gravel Basalt	Different animal skulls Human skeleton	Selection of materials that are magnetic/not magnetic Bar magnets	Opaque/ translucent/transparent materials Torches and batteries	Plants Celery
Essential Knowledge	Rocks and Rock Types - Rocks have different properties (permeable/ impermeable, soft, hard). - Plants grow in soil. - Soil is made of different materials (organic matter and rocks) and that there are different types of soil. Fossils - Fossils can be found in rocks. - Bones are trapped in soil and that minerals and pressure cause fossilisation over time.	Food groups, nutrition and balanced diet - Nutrition is what's in the food to help the body grow. - Five different food groups that give nutrition: Carbohydrates, Protein, Dairy Products, Fruits and Vegetables and Fats and Sugars. - Eating a balanced diet is healthy for humans. - A balanced diet is eating more of some food groups and less of others. Skeletons - Some humans and animals have skeletons and some don't. - A skeleton supports a body and protects important organs. Muscles - Muscles are attached to bones and make skeletons move. - Muscles contract (bunch up) and relax to make movement happen.	Forces - Some forces (push and pull) need contact between objects to work. eg: pushing a door open. - Different surfaces change the speed and distance of how an object moves. Magnets - Magnets will attract a magnetic material and repel a non-magnetic material. - A magnet can attract an object without touching it. - A magnet has two poles (North and South). - Two magnets will attract or repel depending on which poles are facing each other.	Light - Dark means there is no light. - We need light to be able to see things. - Light reflects off objects' surfaces into our eyes. - Light from the sun can be dangerous. - There are ways to protect our eyes and skin from the sun: sunglasses, sun cream, materials like foil. - Shadows are formed when an opaque object blocks the light. - Shadows change in size depending on how close they are to the light source.	Plants - Functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. - Plants require air, light, water, nutrients from soil, and room to grow. - The amount of each requirement may vary e.g. cacti need less water than other plants. - Water is transported from the roots and through the stem to the leaves. - The life cycle of flowering plants: - Pollination: <i>Pollen is carried by insects or blown by the wind from one flower to another.</i> - Seed formation: <i>Pollen sticks to the flower and then travels to the ovary where it fertilises egg cells to make seeds - fertilisation.</i> - Seed dispersal- <i>The seeds are scattered by animals or the wind. Some will grow into new plants.</i>
Inspirational People	James Hutton (geologist)	Marie Curie (X Rays)	William Gilbert (invented the magnet)	Alhazen (physicist)	Jane Colder (botany) CHANGE TO FIND A CONTEMPORARY BOTANIST
Linked Texts Purple – Fiction	• Escape from Pompeii (Christina Balit) • The Pebble in my Pocket: A history of our Earth (Meredith Cooper and Chris Coady) • The Rock Factory: A Story about Rocks and Stones (Jacqui Bailey and Matthew Lilly)	• Funny Bones (Janet and Allan Ahlberg) • I Will Not Ever Eat a Tomato (Lauren Child) • The Story of Frog Belly Rat Bone (Timothy Basil Ering)	• The Iron Man (Ted Hughes) • Mrs Armitage: Queen of the Road (Quentin Blake) • Mr Archimedes' Bath (Pamela Allen)	• The Owl Who Was Afraid of the Dark (Jill Tomlinson) • The Dark (Lemony Snicket)	• The Hidden Forest (Jennie Baker) • George and Flora's garden (Jo Elworthy)

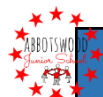


Year 4 Science Medium Term Overview

Topic	Autumn 2 Villagers and Pillages	Spring 1 The Nowhere Emporium	Spring 2 Tragic Titanic	Summer 1 Mission: Survival	Summer 2 S.O.S Save Our Species
Science Topic	Animals, including Humans	Sound	Electricity	States of Matter	Living Things and Their Habitats
Unit Outcome	Children learn about the digestive system and teeth. They also investigate food chains.	Children use an investigation to explore and learn about sound.	Children will learn about electricity and create a simple circuit to use in a lamp made as part of their DT learning.	Children perform survival-linked experiments relating to changes in state of matter and report their findings to the rich read character Beck Granger.	Children will use their learning about living things and their habitats to inform the discussion about the importance of conservation that takes place in their topic outcome.
Hazard Cards	Cards: 1, 2, 3, 4, 5, 6, 7, 8	Card: 30	Cards: 25, 26, 27, 28	Cards: 13, 14, 15, 16, 17, 18, 19, 20, 21	Cards: 1, 2, 9, 10, 11
Vocabulary	Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, rectum, anus, large intestine, liver, duodenum, tooth, canine, incisor, molar, premolar.	vibration, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave.	Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator.	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection,	Environment, flowering, non-flowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation,
Topic Specific Vocabulary	oesophagus	amplitude	electrons	condensation	amphibians
Subject Specific Vocabulary	digestive system	particles	insulator	evaporation	classification
General Vocabulary	organs	pitch	appliances	state	deforestation
Prior Learning	•Should be able to notice that animals, including humans, have offspring, which grow into adults. •Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). •Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. •Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. •Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• May have some understanding that objects make different sounds. •Some understand that they use their ears to hear sounds. •Know about their different senses.	•May have some understanding that objects need electricity to work. •May understand that a switch will turn something on or off.	• 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. •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.	•Comments and questions about the place they live or the natural world. •Shows care and concern for living things and the environment. •Can talk about things they have observed such as plants and animals. •Notices features of objects in their environment. •Comments and asks questions about their familiar world. •Explore and compare the differences between things that are living, dead, and things that have never been alive. •Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. •Identify and name a variety of plants and animals in their habitats, including microhabitats. •Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Later Learning	In Year 5 pupils will be taught to: Describe the changes as humans develop to old age. In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	In KS3 pupils will be taught: Sound waves •frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound •sound needs a medium to travel, the speed of sound in air, in water, in solids •sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal •the auditory range of humans and animals	In Year 6 pupils will be taught to: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.	In Year 5 pupils will be taught to: Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	In Year 5 pupils will be taught: To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. In Year 6 pupils will be taught: To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.
Year 4 National Curriculum Objectives	- describe the simple functions of the basic parts of the digestive system in humans. - identify the different types of teeth in humans and their simple functions. - construct and interpret a variety of food chains, identifying producers, predators and prey.	- Identify how sounds are made, associating some of them with something vibrating. - Recognise that vibrations from sounds travel through a medium to the ear. - Find patterns between the pitch of a sound and features of the object that produced it. - Find patterns between the volume of a sound and the strength of the vibrations that produced it. - Recognise that sounds get fainter as the distance from the sound source increases.	- Identify common appliances that run on electricity. - Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. - Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. - Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. - Recognise some common conductors and insulators, and associate metals with being good conductors.	- Compare and group materials together, according to whether they are solids, liquids or gases. - Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). - Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	- Recognise that living things can be grouped in a variety of ways. - L1 - Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. - L2 - Recognise that environments can change and - L3
Working Scientifically Objectives	Record: Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Review: Use straightforward scientific evidence to answer questions or to support their findings Review: Identify differences, similarities or changes related to simple scientific ideas and processes. Plan: Set up simple practical enquiries, comparative and fair tests.	Plan: Ask relevant questions and use different types of scientific enquiries to answer them. Do: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers. Review: Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Plan: Set up simple practical enquiries, comparative and fair tests.	Record: Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Plan: Ask relevant questions and use different types of scientific enquiries to answer them. Review: Use straightforward scientific evidence to answer questions or to support their findings.	Review: Identify differences, similarities or changes related to simple scientific ideas and processes. Do: Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers. Plan: Set up simple practical enquiries, comparative and fair tests.	Plan: Ask relevant questions and using different types of scientific enquiries to answer them. Record: Gather, record, classify and present data in a variety of ways to help in answering questions. Review: Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Record: Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

Resources	Tights Digestive system figure Plastic cups Pestle and mortar	Ruler, spoons, string, twangy ruler, shaker, elastic band guitar straws Data loggers	lightbulbs, batteries, lightbulb holder, battery holder, crocodile clips and paper clips, variety of conductors and insulators	Food colouring Sandwich bags thermometers	Examples of food webs and food chains Conservation project examples (websites and information leaflets)
Essential Knowledge	The Digestive System - Main body parts associated with the digestive system: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine. - Mouth, tongue and teeth: Food is broken down in the mouth by your teeth, mixed with saliva and swallowed. - Oesophagus: Athin tube that connects the mouth to the stomach. - Stomach: A muscular bag which mixes food and drink with acid. - Small and large intestine: Food is broken down and nutrients and water are absorbed into the blood. The types of teeth in Humans - Humans have four main different types of teeth with different jobs (Incisors, Canines, Premolars and Molars). Food Chains - Food chains start with producers (Plants) and they convert the sun's energy into food. - Animals/humans (Predators) eat other animals (Prey).	Sound - Sound is caused by vibrations. - Air is made of particles and when an object vibrates, the air particles around it vibrate and enter your ear. - Vibrations travel in sound waves. - Sound waves can travel through different mediums/materials. - Pitch is how high or low a sound is and the size and thickness of a vibrating object changes the pitch. - Volume is a measure of how loud or soft something sounds. - The closer you are to a sound source, the louder the sound and the further you are from it, the quieter the sound. - The stronger vibrations have a louder sound and softer vibrations have a quieter sound.	Electricity - Common appliances run on electricity e.g. computer, washing machine, oven, vacuum cleaner. - A simple electrical circuit has cells, switches and wires and either bulbs or buzzers. - The output of a circuit won't work unless it has a complete loop with a battery. - An open switch breaks the loop of the circuit and a closed switch completes the circuit. - A conductor lets electricity flow through it easily e.g. metal. - An insulator does not let electricity flow through it easily e.g. wood and rubber.	States of matter - A solid can hold its shape. - A liquid forms a pool not a pile. - A gas can escape from an unsealed container. - Some materials can change into a solid, liquid and gas when heated or cooled. Evaporation and Condensation - Evaporation: When water is heated, it evaporates into a gas (water vapour) in the sky to form clouds. - Condensation: When the gas (water vapour) in the clouds cools down, it condenses to form a liquid and rain. - The hotter the temperature, the quicker the evaporation process is.	Living things and their habitats - Living things can be classified into different groups: vertebrate animals (backbone) and invertebrates (no backbone). - Plants can be classified into groups: flowering plants and non-flowering plants. - Classification keys help group, identify and name a variety of living things. - Environments can change and this can sometimes pose dangers to living things e.g. deforestation and pollution.
Inspirational People	Megan Rossi - Gut Health Doctor	Alexander Graham Bell - telephone	Thomas Edison - lightbulb	Anders Celsius - temperature scale	Steve Irwin (conservationist)
Linked Texts Purple – Fiction	• Human Body Odessey (Werner Holzwarth) • Crocodiles Don't Brush Their Teeth (Colin Fancy)	• Horrid Henry Rocks (Francesca Simon) • Moonbird (Joyce Dunbar) • The Pied Piper of Hamlin (Natalia Vasquez)	• Until I Met Dudley (Roger McGough) • Oscar and the Bird: A Book about Electricity (Geoff Waring) • Electrical Wizard: How Nikola Tesla Lit Up the World (Elizabeth Rusch)	• Once Upon a Raindrop: The Story of Water (James Carter) • Sticks (Diane Alber)	• The Vanishing Rainforest (Richard Platt) • The Morning I Met a Whale (Michael Morpurgo) • Journey to the River Sea (Eva Ibbotson)



Year 5 Science Medium Term Overview

Topic	Autumn 1 A Land Faraway	Autumn 2 Into the Darkness	Spring 1 Walk Like an Egyptian	Summer 1 A Twist in the Tail		Summer 2 Crumbling Coasts
Science Topic	Properties and Changes of Materials	Space	Properties and Changes of Materials	Animals, including humans & Living things and their Habitats		Forces
Unit Outcome	Children will use their previous and current learning to test and group materials by their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.	Children explore the planets in our solar system with a focus on the relationship between the Earth, the Sun and the Moon.	Children to investigate the properties of materials and if they can make reversible or irreversible changes.	Children investigate the life stages of butterflies to see the different characteristics of each stage.		Children to investigate which material they think will be the best brake pad for a rollercoaster.
Hazard Cards	Card: 13	Card: 29	Cards: 14, 15, 16, 17, 18, 19, 20, 21	Cards: 12, 1, 2, 3, 9, 11		Cards: 22, 23, 24
Vocabulary	Material, conductor, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard.	Earth, sun, moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.	dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture	Animals Including Humans: Puberty, life cycle, gestation, growth, reproduction, foetus, baby, fertilisation, toddler, child, adult, old age, life expectancy, adolescence, childhood, adulthood, womb, life, death.	Living things: Sexual, asexual, reproduction, cell, fertilisation, pollination, male, female, pregnancy, gestation, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant.	Force, push, pull, opposing, gravity, air resistance, water resistance, friction, streamline, brake, gear, mechanism, lever, cog, pulley, machine.
Topic Specific Vocabulary	conductor	solar system	Separation	gestation		air resistance
Subject Specific Vocabulary	change of state	gravity	solution (solutions are simply one thing dissolved in another)	Life cycle		friction
General Vocabulary	property	rotation	reversible/irreversible	reproduction		mechanism
Prior Learning	• 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. • 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. • Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).	• May have some knowledge about space. • May have some understanding about how the earth orbits the sun.	• Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).	Animals including Humans: • Should be able to notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. • Describe the simple functions of the basic parts	Living Things: • Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including microhabitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a	• May have an awareness of how to make things stop and start. • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.

				of the digestive system in humans. •Identify the different types of teeth in humans and their simple functions. •Construct and interpret a variety of food chains, identifying producers, predators and prey.	variety of living things in their local and wider environment. •Recognise that environments can change and that this can sometimes pose dangers to living things.	
Later Learning	In Year 7 pupils will be taught: The particulate nature of matter. Atoms, elements and compounds. Pure and impure substances. Chemical reactions. Periodic table. Materials such as carbon, ceramics, polymers and composites.	In Year 7 pupils will be taught: The composition of the Earth and the structure of the Earth. The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. Earth as a source of limited resources and the efficacy of recycling. The carbon cycle and the composition of the atmosphere. The production of carbon dioxide by human activity and the impact on climate. Gravity forces between the earth and the moon and the earth and the sun. The Sun as a star and stars in other galaxies. Seasons and the Earth's tilt and day length. About light years.	In Year 7 pupils will be taught: The particulate nature of matter. Atoms, elements and compounds. Pure and impure substances. Chemical reactions. Periodic table. Materials such as carbon, ceramics, polymers and composites.	In Year 6 pupils will be taught to: Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	In Year 7 pupils will be taught: Forces as pushes or pulls, arising from the interaction between two objects. Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. Moment as the turning effect of a force. Forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water. Forces measured in newtons, measurements of stretch or compression as force is Changed. Force-extension linear relation; Hooke’s Law as a special case Work done and energy changes on deformation. Non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets and forces due to static electricity.	
Year 5 National Curriculum Objectives	- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. - Describe the movement of the Moon relative to the Earth. - Describe the Sun, Earth and Moon as approximately spherical bodies. - Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.	- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. - Demonstrate that dissolving, mixing and changes of state are reversible changes. - Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	Animals Including Humans: •Describe the changes as humans develop to old age. Living things and their habitats: •To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. •Describe the life process of reproduction in some plants and animals.	- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. - Identify the effects of air resistance, water resistance and friction that act between moving surfaces. - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Working Scientifically Objectives	Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written	Plan: Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Review: Identify scientific evidence that has been used to support or refute ideas or arguments. Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations	Review: Identify scientific evidence that has been used to support or refute ideas or arguments.	

	Do: Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Plan: Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	forms such as displays and other presentations. Review: Identify scientific evidence that has been used to support or refute ideas or arguments. Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Do: Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record: recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Review: Identify scientific evidence that has been used to support or refute ideas or arguments.	of and degree of trust in results, in oral and written forms such as displays and other presentations. Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Do: Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
Resources	Range of everyday materials Magnets Thermometers	Different sized balls Torches Trundle wheels	Filter paper Sieves Petri dishes Sand Gravel Bicarbonate of soda Vinegar	Potatoes Caterpillars/ butterfly nets (order from Insect Lore) Measuring Tapes	Pulleys Levers Newton Meters
Essential Knowledge	Properties of Materials - Different properties of everyday materials (hardness, solubility, transparency, conductivity - electrical and thermal -, and response to magnets). - Different materials are used for different reasons because of their properties. - Electricity or heat can pass easily through some materials (e.g wood) and not easily through others (e.g polystyrene) - conductivity.	Planets - There are eight Planets and they are celestial objects that orbit a star like our solar system's Sun. - The planets orbit the sun because of gravitational pull. The Moon - The Moon orbits the Earth. - The moon appears in different shapes at different times as it orbits. The Earth - Day is when the Sun's rays hit the side of the Earth facing the Sun. - Night is when the Earth is not facing the sun. - The Earth orbits the Sun and rotates which makes the Sun appear to move. - It takes the Earth 24 hours to make one complete rotation. - One orbit takes 365 days (a year). Spherical Bodies - The Earth, Moon and Sun are spherical bodies.	Changes of Materials - Materials can be solid, liquid or gas. - A mixture is made of more than one material - Mixtures of solids, liquids and gases can be separated through filtering, sieving and evaporating. - The state of materials that need to be separated helps decide which method to use. - Some changes are reversible and some are irreversible. - Dissolving can be reversed by using evaporation and condensation. - If the change makes a new material this change is not usually reversible (burning)	Living things and their Habitats - Birth, growth, reproduction and death are the four stages of the life cycle of all animals. - Insects, birds and reptiles are born from an egg whereas mammals develop as embryos inside the mothers' bodies - Mammals give milk to feed their young. - Amphibians and insects go through metamorphosis - Some plants have asexual reproduction and some plants have sexual reproduction. - Asexual reproduction in plants means they only have one parent which splits off into more of itself. - Sexual reproduction in plants means there are two parents where pollen from one flower (male) fertilises the egg of another (female) to produce a seed. - Asexual reproductive plants are identical. - Sexual reproductive plants are non-identical. Animals Including Humans - There are six stages in the human life cycle: Foetus, Baby, Childhood, Adolescence, Adulthood and Old age.	Forces - Gravity is a pulling force acting between the Earth and a falling object which pulls objects to the ground. - Air resistance is the force on an object moving through air that affects how fast or slowly objects move. - Water resistance is the force on objects floating on or moving in water. - Friction is the resistance that a surface or object encounters when moving over another surface or object. - A lever is a simple machine which helps us to lift objects. - A pulley is a wheel on a fixed axle with a groove in it to guide a rope or cable. - Gears are wheels with teeth that slot together. They are used to increase speed, increase the turning force or to change direction.
Inspirational People	Jamie Garcia (BP website) – invention of a new plastic	Katherine Johnsn (Mathematician)	Andre Geim and Konstantin Novoselov https://www.bbc.co.uk/teach/class-clips-video/articles/zfsjf4j	Sir David Attenborough (animal behaviourist)	Isaac Newton – Gravity
Linked Texts Purple – Fiction	• Kensuke's Kingdom (Michael Morpurgo)	• Hidden Figures (Margot Lee Shetterly) • Counting on Katherine (Helaine Becker)	• Itch (Simon Mayo)	• The Land of Neverbelieve (Norman Messenger) • Giant (Kate Scott) • You're Only Old Once (Dr. Suess)	• The Enormus Turnip (Katie Daynes) • Leonardo's Dream (Hans de Beer) • The Aerodynamics of Biscuits (Clare Helen Welsh)

		• The Skies above my Eyes (Charlotte Guillain & Yuval Zommer) • George's Secret Key to the Universe (Lucy and Stephen Hawking) • The Way Back Home (Oiver Jeffers)			• The Tin Snail (Cameron McAllister)
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Year 6 Science Medium Term Overview

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Topic	Autumn 2 Born to Survive	Spring 1 Dragonology	Spring 2 Lest We Forget	Summer 1 Lest We Forget	Summer 2 Location, Location, Location
Science Topic	Living things and their Habitats Animals including humans	Evolution and Inheritance	Electricity	Light	
Unit Outcome	Children to investigate the impact exercise has on heart rates and how this corresponds to maintaining a healthy circulatory system.	Children to investigate how genetics play a role in offspring and how fossils are formed.	Children to use their knowledge of electricity to solve a range of problems posed by local business.	Children to investigate how light travels and use this knowledge to find a solution to look around corners.	
Hazard Cards	Cards: 1, 2, 3, 4, 5, 6, 7, 8	Cards: 1, 2, 12	Cards: 25, 26, 27, 28	Card: 29	
Vocabulary	<u>Living things and their habitats</u> Classify, compare, bacteria, characteristics, classification, microorganism, organism, invertebrates, vertebrates, flowering, non-flowering, Linnaean. <u>Animals including humans</u> Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.	Evolution, adaptation, inherited traits, inheritance, adaptive traits, natural selection, Charles Darwin, Alfred Wallace, DNA, genes, variation, parent, offspring, fossil, environment, habitat, fossilisation, plants, animals, living things.	Electricity, electric current, Thomas Edison, Nikola Tesla, Alessandro Volta, alternating current, direct current, battery, cell, bulb, wire, open switch, closed switch, motor, buzzer, circuit, voltage, brightness, loudness.	Shadow, light, filter, colour, reflect, absorb, refract, spectrum, wavelength, prism, visible, lens, angle, incidence, straight, ray, beam, wave, energy.	
Topic Specific Vocabulary	Invertebrate	Genetics	Voltage	Periscope	
Subject Specific Vocabulary	Classification	Inherited traits	Electrical current	Refract (where a light source bounces off a surface in a different direction/bends).	
General Vocabulary	Characteristics	Evolution	Resistance	Opaque	
Prior Learning	<u>Living things and their habitats</u> •Explore and compare the differences between things that are living, dead, and things that have never been alive. •Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including microhabitats. •Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. •Recognise that living things can be grouped in a variety of ways. •Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. •Recognise that environments can change and that this can sometimes pose dangers to living things. •To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. •Describe the life process of reproduction in some plants and animals.	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. •Describe the changes as humans develop to old age. •Describe the life process of reproduction in some plants and animals. • Recognise that environments can change and that this can sometimes pose dangers to living things. •Notice that animals, including humans, have offspring which grow into adults.	•Identify common appliances that run on electricity. •Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. •Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. •Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.	•Recognise that they need light in order to see things and that dark is the absence of light. •Notice that light is reflected from surfaces. •Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. •Recognise that shadows are formed when the light from a light source is blocked by an opaque object. •Find patterns in the way that the size of shadows change.	

Later Learning	<u>Living things and their habitats</u> In Year 7 pupils will be taught: Genetics and evolution. Chromosomes, genes and DNA in hereditary. Differences between species. Variations within a species. Changes in the environment which may lead to a species less well adapted to compete and reproduce. The importance of maintaining biodiversity. <u>Animals including humans</u> In Year 7 pupils will be taught about: Cells and organisation. The skeletal and muscular system. Nutrition and digestion. Gas exchange stems. Reproduction and health.	In Year 7 pupils will be taught: Inheritance, chromosomes and DNA. Hereditary as the process by which genetic information is transmitted from generation to generation. Simple models of chromosomes, DNA and genes including the part played by Watson, Crick, Wilkins, and Franklin. Differences between species. Variation between species. Changes in the environment may leave some species less well adapted to compete successfully and reproduce, leading to extinction. Importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.	In Year 7 pupils will be taught: Electrical currents, measured in amperes, in circuits, series and parallel circuits. Currents add where branches meet and current as a flow of charge. Measuring in volts. Battery and bulb rating, resistance, measured in ohms. Differences in resistance. Static electricity- the separation of positive or negative charges when objects are rubbed together. Force between charged objects. Electrical field and forces acting across the space between objects not in contact.	In Year 7 pupils will be taught: Light waves. Including the speed of light, light waves and the transmission of light through materials. Light refraction and light transferring energy from source to absorber leading the chemical and electrical effects. Colours and different frequencies of light.
Year 6 Curriculum Objectives	<u>Living things and their habitats</u> - describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals - give reasons for classifying plants and animals based on specific characteristics. <u>Animals (including humans)</u> - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function - describe the ways in which nutrients and water are transported within animals, including humans	- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. - Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. - Use recognised symbols when representing a simple circuit in a diagram.	- 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 have the same shape as the objects that cast them.
Working Scientifically Objectives	Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Do: Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Review: Identify scientific evidence that has been used to support or refute ideas or arguments. Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Record: Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Do: Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Plan: Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Plan: Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Review: Identify scientific evidence that has been used to support or refute ideas or arguments. Review: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
Resources	Heart rate monitors Stopwatches Wide range of animal pictures	Pictures of staff & their family members Examples of real fossils	Voltmeters Wires Bulbs Buzzers Cells	Mirrors Torches Card Periscope template

Essential Knowledge	Living things and their habitats - Animals can be classified by vertebrates (have a backbone) and invertebrates (have no spine). - Invertebrates can be classified into different groups depending on their physical appearance and number of legs (insects, annelid, mollusc, arachnid, myriapod & crustacean). - Plants can be classified into five main groups depending on their appearance, if they grow seeds or if they flower (mosses, ferns, conifers, flowering plants and grasses). Animals (Including Humans) - The main parts of the circulatory system are the heart, arteries, veins and blood. - Arteries carry oxygenated blood away from the heart and veins carry deoxygenated blood towards the heart. - Drugs, exercise, diet and lifestyle can cause changes in the human body. - The heart is a muscle. - Doing exercise makes your heart pump oxygenated blood to the muscles you are using more quickly and improves the strength of your heart (a muscle) and the muscles you are using. - Human blood is made of plasma, red blood cells, white blood cells and platelets and they have different functions.	Evolution (Fossils) - Fossils can tell us information about the past and how living things have changed over time. - Fossils show evidence of evolution (e.g. Human fossils). Evolution (Adaptation) - Animals and plants have adapted over time to suit their environment in different ways. - These adaptations can lead to evolution. Inheritance - Living things produce offspring of the same kind. - Offspring will look similar to their parents by passing on their genetics. - Offspring will have similar traits to their parents. - Offspring normally vary and are not identical to their parents.	Electricity - The symbols are in a simple circuit. (Cells, switches and wires and either bulbs or buzzers.) - The symbols for a simple circuit when drawing a diagram. - The voltage and the number of cells in a circuit can change the brightness of a bulb or volume of a buzzer. - Changing the number of bulbs or buzzers, length of wires or positioning of switches changes the output of a circuit.	Light - Light travels in straight lines. - Objects are seen because they give out or reflect light into the eye. - We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. - Light travels in straight lines so shadows have the same shape as the objects that cast them.
Inspirational People	Jane Goodall (zoologist)	Charles Darwin - evolution	Nikola Tesla - alternating currents	James Clerk Maxwell - light waves
Linked Texts Purple – Fiction	Living things and their Habitats • Beetle Boy (M G Leonard) • Insect Soup (Barry Louis Polisar) • Fur and Feathers (Janet Halfmann) Animals including Humans • Pig-Heart Boy (Malorie Blackman) • A heart Pumping Adventure (Heather Manley)	• One Smart Fish (Christopher Wormell) • The Molliebird (Jules Pottle) • Our Family Tree (Lisa Westberg Peters)	• Goodnight Mister Tom (Michelle Magorian) • Blackout (John Rocco) • Hitler's Canary (Sandi Toksvig)	• Letters from the Lighthouse (Emma Carroll) • The Gruffalo's Child (Julia Donaldson) • The King Who Banned the Dark (Emily Haworth-Booth)