Science

EYFS

The New Early Years Framework is structured into seven main areas of learning, with seventeen subsections and Early Learning Goals. The most relevant areas of learning for Science are as follows:

- Understanding the World – Provides coverage of scientific topics and focus areas including the teaching of age-appropriate scientific skills
- Mathematics – Aids with the learning of new vocabulary and skills related to measure, estimating and predicting.
- Communication and Language – Provides children with the communication tools to be able to share, demonstrate, discuss and explain science topics/skills.
- Personal, Social and Emotional Development – Provides coverage of health and self care topics and skills.

Science topics covered in Reception change each year due to Reception Planning being based mainly on child interests, core books and teacher observations and assessments. Topics taught are also often very cross curricular, especially with humanities and so will cover many learning areas of the Early Years Framework. Topics often covered are outlined below:

- **Understanding the World**
  Space/Solar System
  Life Cycles (Plant and animal)
  Dinosaurs and Volcanoes
  People who Help Us
  Habitats (under the sea, arctic, woodland etc.)
  Seasons
  Protecting the Planet

- **Mathematics**
  Height and Length
  Weight and Capacity
  Estimating totals
  Comparing totals

- **Personal, Social & Emotional Development**
  Building Independence (learning key skills appropriate for school e.g. toileting, zips, communicating hunger/thirst)
  Healthy Eating and Living
  Myself and My Family

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Explores the world around them. Respects the natural environment/shows care for animals and plants. Recognises signs of Autumn Comments on the woodland habitat, naming plants and animals. Understand we have 5 senses. Comments on similarities and differences between themselves and their friends.	Recognises signs of winter. Comments on the Antarctic/Arctic habitat, naming animals. Understands changes in matter (e.g. freezing) Comments on why we have night and day. Name some animals are nocturnal.	Recognises the signs of spring. Draws simple information from a map. Experiments and comments on floating and sinking. Names different parts of our body and thinks about keeping fit and healthy. Compare the natural world now with a long time ago. (dinosaurs) Names/comments on natural features of the world. E.g. volcanoes. Can comment on objects/artefacts from the past such fossils, penny farthing, pirate ships	Recites and understands the life cycle of an animal and plant. Enjoys planting and caring for seeds. Compares their environment to a contrasting one.(city to country) Understands we live on Planet Earth and what the globe looks like e.g. blue = water. Discusses ways to protect the planet, including recycling. Can name different materials e.g. plastic/metal Comments on the Ocean Habitat	Recognises the signs of summer. Explain the changes in a tree over the four seasons. Understands that different animals live in different places. Can explain the purpose of farms and zoos. Explore the strength of materials E.g. to make a house for the 3 Little Pigs. Can reflect on the changes they have made during their time in reception (e.g. learning, height, likes/dislikes) Explore and talk about the world using what I know from stories/ non-fiction	Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.

Year 1

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Plants **Content:** - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees - identify and describe the basic structure of a variety of common flowering plants, including trees. **Skills:** -ask questions in science lessons and recognise that they can be answered in different ways - observe closely using simple equipment, collect information and record data to help answer a question. **Maths x curricular:** pictogram for results	**Seasonal Changes 1** **Content:** -observe changes across autumn and winter - observe and describe weather associated with the seasons and how day length varies. **Skills:** -ask questions and recognise that they can be answered in different ways -observe carefully using simple equipment. collect information to help answer a question.	**Animals Incl Humans (humans)** **Content:** -identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Skills:** -ask questions and recognise that they can be answered in different ways - observe closely using simple equipment and collect information to help answer a question. -record results in simple ways, table/Venn diagram.	**Animals incl Humans (animals)** **Content:** -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 -describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) **Skills:** -ask questions and recognise that they can be answered in different ways - observe closely using simple equipment and collect information to help answer a question.	**Seasonal Changes 2** Content: -observe changes across spring and summer - observe and describe weather associated with the seasons and how day length varies. **Skills:** - ask questions and recognise that they can be answered in different ways -observe carefully using simple equipment. -collect information to help answer a question.	**Everyday Materials** **Content:** -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. **Skills:** - identify and classify -conduct simple tests -answer my science questions - measure and record my results

				-record results in simple ways, table/Venn diagram.		
	Key Vocab *Trees - deciduous, evergreen, ash, birch, beech, rowan, oak, horse chestnut, apple, sycamore, fir, pine, holly Wild flowering plants - daisy, dandelion, plantain, red clover, Garden plants – crocus, daffodil, bluebells, Parts of plants – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twig.*	*Key Vocab* *Seasons; spring, summer, autumn, winter Time; year, months, days Weather; hot, warm, mild, cold sunny, cloudy rain, sleet, snow, hail, thunder, lightning, rainbow, wet, damp, dry, windy, breezy, gust Temperature; degrees Celsius, thermometer, weather vane, anemometer*	*Key Vocab* *Compare, describe, similar, different, baby, adult, changes, growing, ears, senses, hearing, patterns, Touch, sight, smell, taste, hear, sense*	*Key Vocab* *Birds, fish, amphibians, reptiles, mammals and invertebrates Feathers, scales, gills, fins, hair, land, water, backbone, skeleton Carnivores, herbivores, omnivores, meat, plants*	*Key Vocab* *Seasons; spring, summer, autumn, winter Time; year, months, days Weather; hot, warm, mild, cold sunny, cloudy rain, sleet, snow, hail, thunder, lightning, rainbow, wet, damp, dry, windy, breezy, gust Temperature; degrees Celsius, thermometer, weather vane, anemometer*	*Key Vocab* *Types of materials: wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil Properties of materials: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, Senses: touch, see, hear, smell and taste transparent/not transparent, sticky/not sticky Verbs associated with materials: crumble, squash, bend, stretch, twist*

Year 2	Autumn 1/2 **Animals including humans** **Content:** **-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)**	Spring 1 **Uses of everyday materials** **Content:** **-identify and compare the suitability of a variety of everyday**	Spring 2 **Plants** **(Two weeks in autumn term to plant bulbs)** **Content:** **-observe and describe how seeds and bulbs grow into mature plants**	Summer 1 **All living things & their habitats - survival** **Content:** **-explore and compare the differences between things that are living,**	Summer 2 **All living things & their habitats - habitats** **Content:** **-identify that most living things live in habitats to which they are suited**

	-describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **<u>Skills:</u>** **-use observations to suggest answers to questions,** **-observe using simple equipment** **- test an idea, record data in a tally chart/table.** *Key vocabulary* *Life cycle – grow, change, develop, age, older, Survive – live, die, eat, grow, drink, exercise, feed, excrete, safe Healthy – diet, water, mindfulness, clean, wash, medicine Movement, respiration, sensitivity, growth, reproduction, excretion, nutrition* ***Use 2 weeks in autumn to plant bulbs for Plants unit***	**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.** **<u>Skills</u>:** **- look closely to answer questions** **-ask questions and recognise that they can be answered in different ways** **-test an idea, measure to gather data**	**-find out and describe how plants need water, light and a suitable temperature to grow and stay healthy** **<u>Skills:</u>** **-observe using simple equipment** **- test an idea and record my findings**	**dead, and things that have never been alive** **-describe how animals obtain their food from plants and other animals using the idea of a simple food chain** **-identify and name different sources of food.** **<u>Skills:</u>** **-ask questions and recognise that they can be answered in different ways** **-observe using simple equipment** **- test an idea,** **-gather and record data in a tally chart to help in answering a question, and record in a bar chart.**	**-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** **-Compare habitats** **<u>Skills:</u>** **- ask questions and recognise that they can be answered in different ways** **- observe using simple equipment** **-test an idea** **-gather and record data in a tally chart to help in answering a question, and record in a bar chart.**
		Key vocab: *Materials – plastic, metal, wood, glass, fabric, rock, Properties – strong, weak, bendy, stretchy, flexible, stiff, transparent, opaque, waterproof, permeable, Measure – length, depth, strength, Changes – twist, stretch,*	*Key Vocab* *Plants – seed, bulb, root, stem, shoot, leaf, leaves, flower, petal, Conditions – light, soil, water, warmth, sun, rain, Healthy, dying, growing, flowering*	*Key vocab:* *Living, alive, dead, survival, needs, diet, protection, safety, warmth, food. Food chain – prey, predator, eat, hunt, track, scavenge, forage, find Producer, consumer*	*Key vocab:* *Habitat – under, behind, inside, below, hidden, warm, damp, moist, dry, cool, hot, near survival, needs, diet, protection, safety, warmth, food, shelter, natural, environment microhabitat - Pond, logs, leaf litter,*

		pull, push, scrunch, cut, break, scratch.			

Year 3	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Rocks **Content:** **-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.** **Skills:** **-make careful observations** **-carry out a fair test** **-measure accurately and record results** **-present information in a branching key**	**Forces & magnets** **Content:** **-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**	**Animals including humans - skeletons** **Content:** **-identify that humans and some other animals have skeletons and muscles for support, protection and movement.** **Skills:** **-choose an appropriate approach to answer a question** **-record my results** **-be able to report on findings from enquiries**	**Animals including humans - nutrition** **Content:** **-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** **Skills:** **- choose an appropriate approach to answer a question** **- record my results** **- be able to report on findings from enquiries**	**Plants** **Content:** **-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**	**Light** **Content:** **-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.** **Skills:**

		-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.** **<u>Skills:</u>** **-make careful observations** **-set up a fair test** **- record our findings** **- say what our results show** **-make predictions**			**pollination, seed formation and seed dispersal.** **<u>Skills:</u>** **- plan an enquiry to observe and measure accurately** **-record my results** **-say what I have found out** **X curricular:** **Art – Recreating plants and the key features, either through sketching or modelling** **Geography – Physical geography including biomes and vegetation belts, locating plants by their countries or regions** **English – Writing an information text about plants and flowers**	**-plan a fair test to observe and measure** **-accurately record my results as a bar chart** **-use my results to make predictions**
	Key vocab: Compare, group together, different, kinds	*Key vocab: forces - attract, repel, objects, magnetic force, Surfaces*	*Key vocab: skeleton, muscle, tendon, support, protection,*	*Key vocab: Animals, humans, nutrition, food, diet, consumer,*	*Key Vocab: Function, plants, roots, stem/trunk, leaves,*	*Key vocab: Light, see, dark, travels, straight, lines, reflect, surfaces,*

	appearance, physical properties, hardness, permeability, fossils, rock, soil, organic matter, metamorphic, sedimentary, igneous	*contact magnets - poles Materials - metal, wood, plastic, glass, fabric*	*movement, bone, femur, spine, shoulder blade, skull,*	*producer, diet, carbohydrates, proteins, vitamins, sugars and fats, dairy. Herbivore, carnivore, vegetarian, pescatarian*	*flowers, variation grow, life, growth air, light, water, nutrients, soil, room to grow, transported, life cycle, pollination, seed formation, dispersal*	*sun, sources, eyes, shadow, object, distance, torch, mirror, reflective, protect,*

Year 4	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Animals including humans (digestion) **Content:** **-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.** **Skills:** **-select and plan an appropriate approach to answer a question**	**Sound** **Content:** **-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**	**Living things and their Habitats (classification)** **Content:** **-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** **Skills:** **- gather, record, classify and present data in a variety of ways (including constructing keys) to help in answering questions**	**States of matter** **Content:** **-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.** **Skills:**	**Electricity** **Content:** **-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**	**Living things and their habitats (environments)** **Content:** **-recognise that environments can change and that this can sometimes pose dangers to living things** **Skills:** **-gather, record, classify and present data in a variety of ways (including constructing keys) to help in answering questions** **-report on findings from enquiries (including both oral and written explanations)**

	-use evidence to form a conclusion **-report what I have found out**	**sound source increases.** **<u>Skills:</u>** **-to use a scientific enquiry to answer a question** **-set up a simple fair test** **- make systematic and careful measurements with a data logger** **-report on findings from an enquiry** **-identify differences, similarities or changes related to simple scientific ideas**	**-report on findings from enquiries (both oral and written explanations)**	**-make observations over time to answer a question** **- conduct a fair test, use results to draw simple conclusions** **-record findings using simple scientific language, drawings, labelled diagrams.** **-report on findings from enquiries** **-use straightforward scientific evidence to answer questions or to support findings** **-measure accurately**	**lamp lights in a simple series circuit** **-recognise some common conductors and insulators, and associate metals with being good conductors.** **<u>Skills:</u>** **-investigate** **-record results** **- use results to make predictions**	
	Key Vocab *digestive system - humans, stomach, mouth, oesophagus, intestines, bowel, teeth – canine, incisors, molars, premolars, tongue, filling, dentine, enamel, gums, decay, herbivores, carnivores, food chain, producers, predator, prey*	*Key Vocab* *Ear, sound, vibration, waves, pitch, volume, distance, frequency*	*Key Vocab* *Living things plants, animals, micro-organisms, classification system, mammals, insects, fish, vertebrates, invertebrates, reptiles, amphibians, birds, Flowering, grass, moss, fern,*	*Key vocab* *States of matter, solid, liquid, gas, oxygen, hydrogen, helium, carbon dioxide, methane, water, milk, juice, petrol, oil, wood, rocks, metal, plastic, glass, wool, leather, melting, condensation, evaporation, solidifying, freezing, water cycle, water vapour, steam, heating, cooling*	*Key Vocab* *Electricity, appliances, battery, bulb, bulb holder, buzzer, crocodile clip, leads, wires, switch, brighter, duller, slow, fast, quiet, loud, conductor, insulator, light, sound, movement, heat, switches, open, close*	*Key Vocab* *environment, changes, impact, dangers, human, positive, negative, nature reserve, ecology, population, pollution, deforestation,*

Year 5

Autumn 1/ Autumn 2 + Spring 1		Spring 2	Summer 1	Summer 2
Earth & space **Content:** -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. **Skills:** -plan a scientific enquiry to answer a question -report a presentation of an explanation	**Forces** **Content:** -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. **Skills:** -measure accurately -plan a fair test - identify if results are reliable -make and use predictions	**Properties & changes of materials** Reversible and Irreversible changes **Content:** -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 -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	**All living things** **Content:** -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. **Skills:** -plan an enquiry -recognise which secondary sources will be most useful -record results using scientific diagrams and labels -draw conclusions explaining findings, giving reasons based on evidence	**Animals including humans** **Content:** -describe the changes as humans develop to old age. -describe changes during puberty. **Skills:** -Use a scatter graph to record my results - Say what I have found out - Use evidence to support findings

			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)** **<u>Skills:</u>** **-plan a fair test,** **-make accurate measurements using digital equipment and record results** **- make predictions, evaluate my results, -plan a scientific inquiry that will answer a question.** **- recognise control variables** **-use results to draw conclusions**		
	Key vocab: Movement, Earth, planet, Neptune, Pluto, Mars, Venus, Saturn, Jupiter, Uranus, relative, Sun, solar system, rotation, day, night, Moon, spherical bodies, celestial body, orbit, geocentric, heliocentric	*Key vocab: Gravity, earth, force, resistance, friction, fall, motion, Newton, opposite, direction, mechanism, movement, pulley, gear, lever, effort, rotation,*	*Key vocab: Materials, properties, hardness, solubility, transparency, conductivity, electrical, thermal, magnetic, dissolve, liquid, solution, recover, substance, solids, liquids, gases, mixture, separated, evaporate, condensation*	*Key vocab: life cycle, mammal, amphibian, insect, bird, life process, reproduction, plants, anther, pollination, stigma*	*Key vocab: Human, baby, infant, child, teenager, elderly, puberty, changes, grow, mammal,*

Year 6

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Living things & their habitats **Content:** -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. **Skills:** - To decide on the best way to present evidence. - To interpret observations and use them to develop explanations.	**Electricity** **Content:** -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. **Skills:** -plan investigations -conduct experiments -record evidence -report findings -make predictions and draw conclusions	**Light** **Content:** -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. **Skills:** -use evidence to support ideas -use results to make further predictions -plan a fair test to test predictions - evaluate results	**Animals including humans** **Content:** -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. **Skills:** -plan a pattern-seeking enquiry -record results -report findings	*SATs Revision*	**Evolution & inheritance** **Content:** -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. **Skills:** -understand how evidence can be used to support an idea - plan how to answer a question -record results -measure accurately

	Key Vocab *vertebrate, invertebrate, insect, mammal, bird, amphibian, reptile, fish fungi, mushroom, microbe, bacteria, species, genus, organisms, bacteria*	*Key Vocab* *Electricity, appliances, battery, bulb, bulb holder, buzzer, component, crocodile clip, leads, wires, switch, brighter, duller, conductor, insulator, light, sound, movement, heat, switches, open, close, voltage, resistance*	*Key Vocab* *Light, source, distance, intensity, direction, straight, opaque, shadow, translucent, transparent, absence of light, sun, position,*	*Key Vocab* *Circulatory system - Internal organs, , Heart, Blood vessels, Artery, Lungs, Vein, Capillary, health, substances, harmful, diet, lifestyle, exercise,*		*Key Vocab* *living things, change, fossils, inhabited, Earth, produce, offspring, variation, identical, adapt, evolution, evolve, environment,*