

Science Long Term Plans

Non Negotiables



Key knowledge – These are the key objectives we want children to know by the end of each unit. They cover all national curriculum objectives and often, some extra objectives (written in green) chosen for our curriculum. In EYFS we have linked science to particular Early Learning Goals.

Key skills – These are the main skills children will focus on throughout the unit.

Key vocabulary – Words identified that will be regularly used in the unit of work, children should be able to use this vocabulary during lessons and it should be added to working walls during the unit.

Key – **green** = extra Hawkinge Primary Curriculum

EYFS

UNIT	ELG	ELG	ELG	ELG	We also cover...
Key Knowledge	Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps	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	Capacity (Maths) Magnets
Key Skills	- Observing - Comparing	- Grouping - Observing	- Questioning - Comparing	- Investigating - Using simple equipment - Questioning - Predicting	Using simple equipment
Key Vocabulary	Environment, observe, look, area, place	Nature, plant, animal	Environments, different, similar, nature	Melting, steam, spring, summer, autumn, winter, season	Magnetic, metal, full, empty, capacity, container

Year 1

UNIT	Biology Plants	Biology Animals including humans (animals)	Biology Animals including humans (humans)	Chemistry Everyday materials	Physics Seasonal change	Working Scientifically Investigations
Key Knowledge	1. Identify where plants grow 2. Name common wild and garden plants 3. Name common trees with key vocab (evergreen and deciduous) 4. Identify, observe and name the parts of a plant (petals, stem, leaf and root) 5. Identify, observe and name the parts of a tree (roots, trunk, branches and leaves) Removed... - Function of each part of a plant, covered in Y3 - Observe what plants need to grow, covered in Y2 and Y3	1. I can name a variety of animals including fish, amphibians, reptiles, birds and mammals. 2. I can sort animals into categories (including fish, amphibians, reptiles, birds and mammals) 3. I can classify and name animals by what they eat (carnivore, herbivore and omnivore) 4. I know what a carnivore, herbivore and omnivore is. 5. I know the features of a carnivore, herbivore and omnivore.	1. I can name the parts of the human body that I can see. 2. I can link the correct part of the human body to each sense. 3. Compare body parts. Recognise living and non-living things.	1. I can distinguish between an object and the material it is made from 2. I can explain the materials that an object is made from 3. I can name wood, plastic, glass, metal, water and rock 4. I can describe the properties of everyday materials 5. I can group objects based on the materials they are made from 6. I understand what a solid, liquid and gas is.	1. I can observe and comment on changes in the seasons. 2. I can name the seasons and suggest the type of weather in each season. 3. I can name the equipment used to measure temperature, wind, rainfall. 4. I can name some different clouds. 5. I understand how day light hours change throughout the year. 6. I have a basic understanding of the water cycle. All Year 1 children keep a weather diary throughout the year and measure the weather weekly for our Geography key assessment.	1. I understand what a fair test is. 2. I can make a prediction. 3. I can record my results. 4. I can write a conclusion.
Key Skills	• I can ask simple scientific questions • I can use simple equipment to make observations	• I can identify and classify things. • I can ask simple scientific questions.	• I can suggest what I have found out. • I can carry out simple tests. • I can identify and classify things.	• I can ask simple scientific questions. • I can use simple equipment to make observations. • I can carry out simple tests. • I can identify and classify things.	• I can ask simple questions. • I can use simple equipment to make observation. • I can identify and classify things. • I can suggest what I have found out.	• I can ask simple scientific questions. • I can use simple equipment to make observations. • I can carry out simple tests. • I can identify and classify things.

				• I can suggest what I have found out. • I can use simple data to answer questions.		• I can suggest what I have found out. • I can use simple data to answer questions.
Key Vocabulary	Wild, common, garden, evergreen, deciduous, tree, plant, petals, stem, trunk, leaves, roots	carnivore, omnivore, herbivore, food groups, fish, amphibian, reptile, bird, mammal	Senses, living, non-living, smell, taste, hearing, sight, feel, sizes, bigger, smaller, compare,	hard, soft, rough, smooth, shiny, dull, magnetic, transparent, bendy, waterproof, strong, wet, sticky ... wood, rock, metal, plastic, glass, fabric classify, solids, liquids, gases, stiff, rigid, flow, pour, particles colour, shape, use, purpose, appearance, texture, recycling	Weather, climate, seasons, spring, summer, autumn, winter, measure, changes, observe, record.	Investigate, test, carry out, equipment, prediction, conclusion, method, plan, change, plants, survive, roots, leaves, petals, water, sunlight, protect, layers, resources, fair test, equal.

Year 2

UNIT	Biology Living things and their habitats	Biology Plants	Biology Animals including humans (animals)	Biology Animals including humans (humans)	Chemistry Uses of everyday materials	Working Scientifically Investigations
Key Knowledge	- Identify things that are living, dead and never lived - Describe how a specific habitat provides the basic needs of things living there (plants and animals) - Identify and name plants and animals in a range of habitats - Match living things to their habitats - Describe how animals find their food - Name some different sources of food for animals - Explain a simple food chain	- Observe and identify plants - Observe and identify seeds - Observe and identify bulbs, label the key parts - Parts of a plant we eat - Predict and observe what seeds and bulbs need to grow (focus on water, light and suitable temperature only) - Growing and observing plants growing - Simple life cycle of a plant - Seed dispersal Removed... - Identify parts of a plant, covered in Y1 and Y3	- Common animals and which group they belong to. - The difference between common animals that are carnivores, herbivores and omnivores - The structure and features of a variety of common animals. - The basic stages in a life cycle for animals and humans and how they change. - What animals and humans need to survive. - Common nocturnal animals. - Features of nocturnal animals.	- The basic stages in a life cycle for animals and humans and how they change. - What animals and humans need to survive. - Know why exercise is important. - Understand the different food groups and how to have a balanced diet, including healthy meals. - The importance of good hygiene and how it keeps us healthy.	- I can identify and name a range of materials including, wood, metal, plastic, glass, brick, rock, paper and cardboard - I can suggest why a material might or might not be used for a specific job. - I can explore how shapes can be changed by squashing, bending, twisting and stretching. - I can explore how materials can be changed by adding heat.	- Know how to plan an investigation. - Carry out a test - Know how to make a prediction. - make measurements to answer a question - Can use findings to write a conclusion.
Key Skills	- I can ask simple questions. - I can use simple equipment to make observations. - I can identify and classify things. - I can use simple data to answer questions.	- I can ask simple scientific questions - I can use simple equipment to make observations - I can carry out simple tests - I can identify and classify things - I can suggest what I have found out	- I can identify and classify things - I can ask simple scientific questions	- I can identify and classify things - I can ask simple scientific questions	- I can ask simple scientific questions - I can use simple equipment to make observations - I can carry out simple tests - I can identify and classify things - I can suggest what I have found out	- I can ask simple scientific questions - I can use simple equipment to make observations - I can carry out simple tests - I can identify and classify things - I can suggest what I have found out

						I can use simple data to answer questions
Key Vocabulary	Minibeasts, habitat, living, non-living, dead, never lived, compare, range, carnivore. Herbivore, omnivore, food chain, vegetation, plant, animal.	Plant, seed, bulb, grow, healthy, water, sunlight, suitable temperature.	Animal, feature, change, life cycle, reproduce	human, grow, change, life cycle, older, reproduce, exercise, fitness, hygiene,	Man-made, natural, metal, glass, plastic, wood, paper, fabric, cotton, silk, change, bend, squash, twist, stretch, heat, reversible, irreversible, melt, melted, solid, liquid, water, ice,	Investigation, investigate, test, predict, change, variable, fair, conclusion, answer, table, record, results, reason, material, best, waterproof, strong, measure, accurate, temperature, best.

Year 3

UNIT	Biology Plants	Biology Animals including Humans	Chemistry Rocks	Physics Light	Physics Forces and magnets	Working Scientifically Focus Famous Victorian Scientists
Key Knowledge	- Describe what plants need to survive and investigate. (Y2 cover, water, light, suitable temperature. Y3 add nutrients, space, carbon dioxide) - Identify the parts of a flowering plant (Y1 recap, petals, stem, leaf and root) - Explain the purpose of; leaves, roots, stems and flowers. - Describe how water is transported in plants. - Describe plant life cycle in simple terms, understanding that the flower is needed for reproduction. - Describe different ways of seed dispersal.	- The importance of a nutritious, balanced diet. - How nutrients, water and oxygen are transported within animals and humans. - To describe and explain the skeletal system of a human. - To describe, identify and explain the muscular system of a human. - To describe the purpose of the skeleton in humans and animals. - Understand what animals and humans need to be healthy and grow. - Identify the food groups. - Understand the impact of sugar on the human body. - Explain the human circulatory system. - Recognise the different types of skeletons. - Understand the effects of exercise on the human body.	- Group rocks based on appearance. - Group rocks based on physical properties. - Understand how rocks suit different purposes. - Understand how sedimentary rocks are formed - Understand how igneous rocks are formed - Describe the rock cycle (children should see how the different types of rock link together) - Define erosion - Understand how soil is formed - Investigate permeability - Describe how fossils are formed - Learn about the impact of Mary Anning	- Understand what light are dark are. - Understand reflection - Understand how a mirror reflects light. - Recognise that we need light to see. - Understand how we see different colours. - Understand how we can protect our eyes from the sun. - Understand how shadows are formed. - Investigate how shadows can change.	- Investigate pushes and pulls - Understand friction - Use a newton metre to measure force - Investigate air resistance - Understand magnets - Group magnetic materials - Identify how magnets are used in everyday life	

Key Skills	• Make predictions with reasons. • Use observations to answer questions. • Set up enquiries • Set up an enquiry to compare two things. • Set up a fair test. • Draw conclusions.	I can ask relevant scientific questions I can use observations and knowledge to answer scientific questions I can set up a simple enquiry to explore a scientific question I can set up a fair test and explain why it is fair I can make careful and accurate observations, including the use of standard units I can gather, record, classify and present data in different ways to answer scientific questions I can draw conclusions and suggest improvements I can make a prediction with a reason	I can ask relevant scientific questions. I can use observations and knowledge to answer scientific questions. I can set up a simple enquiry to explore a scientific question. I can set up a test to compare two things. I can set up a fair test and explain why it is fair. I can make careful and accurate observations, including the use of standard units. I can gather, record, classify and present data in different ways to answer scientific questions. I can use diagrams, keys, bar charts and tables; using scientific language. I can draw conclusions.	I can use observations and knowledge to answer scientific questions I can set up a simple enquiry to explore a scientific question I can make careful and accurate observations, including the use of standard units I can gather, record, classify and present data in different ways to answer scientific questions I can use diagrams, keys, bar charts and tables	I can ask relevant scientific questions I can use observations and knowledge to answer scientific questions I can set up a simple enquiry to explore a scientific question I can set up a test to compare two things I can make careful and accurate observations, including the use of standard units I can gather, record, classify and present data in different ways to answer scientific questions I can use diagrams, keys, bar charts and tables; using scientific language I can use findings to report in different ways, including oral and written explanation, presentation I can draw conclusions and suggest improvements I can make a prediction with a reason I can identify differences and similarities and changes related to an enquiry	
Key Vocabulary	Plant, stem, leaf, root, flower, light, water, nutrients, carbon dioxide, oxygen, temperature, life cycle, transport, photosynthesis, function.	Food groups, balanced diet, healthy eating, muscles, bones, joints, skeleton, exercise, circulatory system, endo/exoskeleton	Rock, soil, sedimentary, igneous, permeable/impermeable, hard/soft, fossil, mineral	Light, dark, reflection, refraction, shadow, mirror, opaque, translucent, transparent, absence, source.	Magnets – bar and horseshoe, attract, repel, north and south poles, magnetic, magnetic field	

Year 4

UNIT	Biology Living things and their habitats	Biology Animals including Humans	Chemistry States of matter	Physics Sound	Physics Electricity	Working Scientifically Focus Investigating materials
Key Knowledge	- Understand what a habitat is - Understand how animals have adapted to live in their habitat - Identify how animals have adapted to live in the rainforest (normally taught with rainforest theme) - Understand environmental changes and how they can impact animals - Identify living organisms (focus on processes required for living) - Group living things by their features - Use a classification key - Create a classification key	- Name and identify parts of the human digestive system. - Explain the functions of the organs in the digestive system. - Identify and describe the function of different human teeth. - Understand how to keep our teeth and gums healthy. - Understand food chains - Create more complex food chains.	- Group materials based on state of matter - Particles and their properties - Investigate gases and their properties - Temperature at which materials change state - Process of evaporation and condensation - Water cycle and part played by condensation and evaporation	- Describe how a sound is made. - Name and identify parts (anatomy) of the ear. - Understand the function of the ear. - Explain the importance of vibrations in hearing. - Understand how sound travels from a source to the ear. - Understand pitch and volume. - Describe what happens to a sound as it travels away from a source.	- Identify electrical appliances - Identify electrical components (parts of a circuit) - Construct a simple series circuit (using a buzzer and a lamp) - Draw a circuit diagram - Predict whether a lamp will light in a circuit - Understand the function of a switch - Identify insulators and conductors	To be able to name the five different types of enquiry
Key Skills	I can ask relevant scientific questions I can use observations and knowledge to answer scientific questions I can make careful and accurate observations	I can use observations and knowledge to answer scientific questions I can set up a simple enquiry to explore a scientific question I can make careful and accurate observations,	I can ask relevant scientific questions I can use observations and knowledge to answer scientific questions I can set up a simple enquiry to explore a scientific question	I can ask relevant scientific questions I can use observations and knowledge to answer scientific questions I can set up a simple enquiry to explore a scientific question	I can make careful and accurate observations, including the use of standard units I can use diagrams, keys, bar charts and tables; using scientific language	

	I can gather, record, classify and present data in different ways to answer scientific questions I can use diagrams, keys, bar charts and tables; using scientific language I can use findings to report in different ways, including oral and written explanation, presentation	including the use of standard units I can gather, record, classify and present data in different ways to answer scientific questions I can use findings to report in different ways, including oral and written explanation, presentation I can draw conclusions and suggest improvements I can make a prediction with a reason I can identify differences and similarities and changes related to an enquiry	I can set up a test to compare two things I can set up a fair test and explain why it is fair I can make careful and accurate observations, including the use of standard units I can use equipment, including thermometers and data loggers to make measurements I can gather, record, classify and present data in different ways to answer scientific questions I can use diagrams, keys, bar charts and tables; using scientific language I can use findings to report in different ways, including oral and written explanation, presentation I can draw conclusions and suggest improvements I can make a prediction with a reason	I can set up a fair test and explain why it is fair I can make careful and accurate observations, including the use of standard units I can use equipment, including thermometers and data loggers to make measurements I can use diagrams, keys, bar charts and tables; using scientific language I can use findings to report in different ways, including oral and written explanation, presentation I can make a prediction with a reason	I can draw conclusions and suggest improvements I can make a prediction with a reason	
Key Vocabulary	Habitat, environment, organism, species, adaptation, classify, classification key	Digestion, digestive system, organ, food chain, producer, predator, prey, incisor, canine, molar, pre-molar.	Solid, liquid, gas, evaporation, condensation, melting, solidifying, freezing, water cycle, water vapour	Sound, Vibration, Pitch, Volume, Travel, Middle Ear, Outer Ear, Inner Ear, Ear drum, Waves, Amplitude	Electricity, electrical appliance, electrical component, bulb, battery, cell, buzzer, wires, switch, conductor, insulator	

UNIT	Biology Living things and their habitats	Biology Animals including Humans	Chemistry Properties and changes of materials	Physics Earth and space	Physics Forces	Working Scientifically Focus Crime Scene ?	Extra Science Unit (usually linked to theme)
Key Knowledge	1. Describe the life cycle of living things, eg. Mammal, amphibian, insect, bird 2. Describe the differences between different life cycles 3. Describe the process of reproduction in plants 4. Describe the process of reproduction in animals 5. Create a timeline to indicate stages of growth in humans	1. Compare and group materials based on their properties and response to magnets. 2. Describe how a material dissolves to form a solution; explaining the process of dissolving. 3. Describe and show how to recover a substance from a solution 4. Describe how some materials can be separated. 5. Demonstrate how materials can be separated. 6. Know and can demonstrate that some changes are reversible and some are not. 7. Explain how some changes result in the formation of a new material and that this is usually irreversible 8. Discuss reversible and irreversible changes. 9. Give evidenced reasons why materials	1. Describe and explain the movement of the Earth and other planets relative to the sun. 2. Describe and explain the movement of the Moon relative to the Earth. 3. Explain and demonstrate how night and day are created. 4. Describe the Sun, Earth and Moon (using the term spherical).	1. Explain what gravity is and its impact on our lives. 2. Identify and explain the effect of air resistance. 3. Identify and explain the effect of water resistance. 4. Identify and explain the effect of friction. 5. Explain how levers, pulleys and gears allow a smaller force to have a greater effect.	1. To understand that scientific ideas are based on evidence. 2. To make predictions based on observations 3. To understand that fingerprints are unique. 4. To understand that fingerprints can be used to identify a person. 5. To understand that substances can have different chemical reactions. 6. To understand that crime scenes need to be processed systematically.	See science plans	

		should be used for a specific purpose.				
Key Skills	Read, spell and pronounce scientific vocabulary accurately	- Plan different types of scientific enquiry. - Control variables in an enquiry. - Measure accurately and precisely using a range of equipment. - Record data and results using scientific diagrams tables and line graphs. - Use the outcome of test results to make a prediction and set up a further comparative test. - Report findings from enquiries in a range of ways. - Explain a conclusion from an enquiry.	- Record data and results using scientific diagrams and labels. - Report findings from enquiries in a range of ways. - Explain a conclusion from an enquiry. - Explain causal relationships in an enquiry - Can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory. - Read, spell and pronounce scientific vocabulary accurately.	- Plan different types of scientific enquiry. - Control variables in an enquiry. - Measure accurately and precisely using a range of equipment. - Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar charts and line graphs. - Explain a conclusion from an enquiry. - Explain casual relationships in an enquiry - Read, spell and pronounce scientific vocabulary accurately.	- Plan different types of scientific enquiry - Control variables in an enquiry - Measure accurately and precisely using a range of equipment <i>Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar charts and line graphs</i> <i>Report findings from enquiries in a range of ways</i> <i>Explain a conclusion from an enquiry</i> <i>Explain casual relationships in an enquiry</i> <i>Relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory</i> <i>Read, spell and pronounce scientific vocabulary accurately</i>	- Read, spell and pronounce scientific vocabulary accurately - I can use the outcome of test results to make a prediction and set up a further comparative test
Key Vocabulary	Animals – amphibians, reptiles, birds, mammals, insects, fish	Thermal conductivity – thermal conductor, thermal insulator Dissolving – solvent, solution, solute, soluble,	Day and night – Earth, axis, rotate Solar system – Star = Sun, Planets = Mercury, Venus, Earth, Mars, Jupiter,	Types of forces: gravity, friction, air resistance, up thrust, weight Measuring forces: Newton meter, Newtons (N)	Prediction, conclusion, variable, factor, evaluation,	See science plans

	Animal development – egg, larva, pupa, nymph, adult, metamorphosis Parts of a flower – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) Processes – pollination, fertilisation, germination	insoluble, solid, liquid, particles, Separating materials – sieve, filter, evaporate, condense	Saturn, Uranus, Neptune (Pluto) Phases of the Moon – full moon, gibbous moon, half moon, crescent moon, new moon, waxing, waning General – orbit, revolve, sphere	General – Particles, surface area, Mechanical devices – gears, levers, pulleys, springs		
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Year 6

UNIT	Biology Living things and their habitats	Biology Animals including Humans	Biology Evolution and inheritance	Physics Light	Physics Electricity	Working Scientifically Focus (WW2 Survivors, linked with theme)
Key Knowledge	- Classify living things into broad groups according to observable characteristics and based on similarities and differences. - Describe how living things have been classified. - Give reasons for classifying plants and animals in a specific way.	- Identify and name the main parts of the human circulatory system. - Describe the function of the heart, blood vessels and blood. - Discuss the impact of diet, exercise, drugs and lifestyle on health. - Describe the ways in which nutrients and water are transported in animals, including humans.	- Describe how the earth and living things have changed over time. - Explain how fossils can be used to find out about the past. - Explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents). - Explain how animals and plants are adapted to suit their environment. - Link adaptation over time to evolution. - Explain evolution.	- Explain how light travels - Explain and demonstrate how we see objects - Explain why shadows have the same shape as the object that casts them - Explain how simple optical instruments work, eg. Periscope, telescope, binoculars, mirror, magnifying glass etc.	- Explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. - Compare and give reasons for why components work and do not work in a circuit. - Draw circuit diagrams using correct symbols.	- Plan different types of scientific enquiry. - Control variables in an enquiry. - Measure accurately and precisely using a range of equipment. - Record data and results using diagrams, tables and line graphs. - Use the outcome of test results to make predictions. - Report findings from enquiries in a range of ways. - Explain a conclusion from an enquiry. - Explain causal relationships in an enquiry. - Relate the outcome from an enquiry to scientific knowledge in order to

						state whether evidence supports or refutes a theory.
Key Skills	- Explain casual relationships in an enquiry - Read, spell and pronounce scientific vocabulary accurately	- Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar charts and line graphs - Use the outcome of test results to make a prediction and set up a further comparative test - Measure accurately and precisely using a range of equipment. - Record data and results using line graphs. - Explain a conclusion from an enquiry.	Read, spell and pronounce scientific vocabulary accurately	- I can plan different types of scientific enquiry - I can control variables in an enquiry - I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - I can explain a conclusion from an enquiry - I can explain casual relationships in an enquiry - I can read, spell and pronounce scientific vocabulary accurately	- I can plan different types of scientific enquiry - I can control variables in an enquiry - I can measure accurately and precisely using a range of equipment - I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - I can use the outcome of test results to make a prediction and set up a further comparative test - I can explain a conclusion from an enquiry - I can explain casual relationships in an enquiry - I can read, spell and pronounce scientific vocabulary accurately	- Plan different types of scientific enquiry - Control variables in an enquiry - Measure accurately and precisely using a range of equipment - Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar charts and line graphs - Use the outcome of test results to make a prediction and set up a further comparative test - Report findings from enquiries in a range of ways - Explain a conclusion from an enquiry - Explain casual relationships in an enquiry - Relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory - Read, spell and pronounce scientific vocabulary accurately
Key Vocabulary	Vertebrate, invertebrate, kingdoms, animal, plant, micro-organism, amphibian, reptile, bird, mammal, scales,	Circulatory system, heart, blood, veins, arteries, pulse, clotting, diet – balanced, vitamins, minerals, proteins,	Evolution, evolve, natural selection, survival, reproduction, offspring, siblings, environment, variation, fossils;	Beam, bouncing, opaque, reflect, reflection, translucent, transparent, optical,	Cell, circuit, components, insulator, conductor, connections, current, dimmer, high resistance,	Balanced diet, food groups, nutrients, sieve, filter, separate, sound, vibrations, travel, air resistance, force, friction, water resistance,

	feathers, flowering plant, non-flowering plant	carbohydrates, sugars, fats, drugs – caffeine, nicotine, alcohol, cannabis, cocaine, heroin, lifestyle – healthy	ammonites, belemnites, micrasters, etc	instrument, periscope, binoculars, telescope	low resistance, parallel circuit, resistance, voltage, volts, renewable, energy	light, reflection, gravity, force, push, pull
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