

Shirley Heath Junior School:

Science

Vertical Progression: Subject Content (Year 3-6)

<u>Biology</u>	<u>Unit Progression (incl. from KS1)</u>
<u>Year 3</u> <u>Autumn 1</u> <u>Plants</u>	<p><u>The learner should already be able to (Year 2 objectives):</u></p> <ul style="list-style-type: none">• describe how seeds and bulbs grow into mature plants• describe how plants need water, light and a suitable temperature of grow and stay healthy <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none">• 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
<u>Year 4</u> <u>Spring 1</u> <u>Classification</u> <u>and</u> <u>Environments</u>	<p><u>The learner should already be able to (Year 2 objectives):</u></p> <ul style="list-style-type: none">• 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 <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none">• 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
<u>Year 5</u> <u>Autumn 2</u> <u>Life</u> <u>Cycles</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none">• identify the difference between living and non-living things• identify differences between animals, such as the presence or absence of a spine or basic physiological differences between animal groups (birds, mammals)• describe differences between plants and animals <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none">• 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
<u>Year 6</u> <u>Autumn 2</u> <u>Evolution and</u> <u>Inheritance</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none">• describe how parent animals produce offspring of the same kind• describe how animals and plants are generally well suited to their environment• discuss the main stages in the growth and development of an organism included the stage of reproduction <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none">• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago

	<ul style="list-style-type: none"> 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
<u>Spring 2 Classification</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> 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 <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
Human Biology	<u>Unit Progression (incl. from KS1)</u>
<u>Year 3 Spring 1 Body Structure</u>	<p><u>The learner should already be able to (Year 2 objectives):</u></p> <ul style="list-style-type: none"> 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 <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
<u>Year 4 Autumn 1 Digestion, Teeth & Food Chains</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> explain why food needs to be digested by the body and the role of the stomach in digestion describe how some animals eat plants (herbivores) whereas some animals eat other animals (carnivores) <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
<u>Year 5 Spring 2 Growth and Development</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> describe the 4 main stages of life from birth to death describe some of the differences between childhood and adulthood <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> describe the changes as humans develop to old age explain these changes, linking them to the instinct to reproduce explain why old age can present physical challenges and why the body cannot last forever
<u>Year 6 Summer 1 Circulation and Exercise</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> describe the position of the heart in the body and its basic function recall that blood is essential for life and that it is pumped around the body describe healthy food choices and explain the importance of exercise in simple terms <p><u>The learner will go on to:</u></p>

	<ul style="list-style-type: none"> • 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
Chemistry	Unit Progression (incl. from KS1)
Year 3 <u>Spring 2</u> <u>Rocks</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> • describe rocks as naturally occurring materials <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • 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
Year 4 <u>Summer 1</u> <u>States of Matter</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> • recognise that materials exist in either a solid, liquid or gaseous state • describe how water can change state and that this is linked to temperature <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • 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
Year 5 <u>Autumn 1</u> <u>Properties and Changes of Materials</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> • recognise that different materials have different physical properties and this can help us to identify and group them. • describe how some materials appear to disappear when stirred into a liquid such as water • Define the key words evaporation and condensation <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • 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
Physics	Unit Progression (incl. from KS1)
Year 3 <u>Autumn 2</u> <u>Forces & Magnets</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> • recognise that simple forces exist and that these are often invisible (push, pull, gravity, magnetism) • magnets can have attractive or repulsive effects and can act at a distance depending on the strength of the magnet <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • compare how things move on different surfaces

	<ul style="list-style-type: none"> notice that some forces need contact between 2 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 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing
<u>Summer 1</u> <u>Light</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> recognise that light is needed in order to see things and that dark is the absence of light <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
<u>Year 4</u> <u>Autumn 2</u> <u>Electricity</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> describe electricity as the energy we use to run all modern-day appliances and technology identify common appliances that run on electricity <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
<u>Spring 2</u> <u>Sound</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> recognise that sound can be produced in many different ways but that it is all based on vibrations <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
<u>Year 5</u> <u>Spring 1</u> <u>Forces</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between 2 objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> 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
<u>Summer 1</u> <u>Earth & Space</u>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> recognise that we are on Earth and that we orbit the Sun as part of the Solar System

	<ul style="list-style-type: none"> • name the planets of the Solar System in order <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • 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
<p>Year 6 <u>Autumn 1</u> <u>Light</u></p>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> • 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 <p>find patterns in the way that the size of shadows change</p> <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • 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
<p><u>Spring 1</u> <u>Electricity</u></p>	<p><u>The learner should already be able to:</u></p> <ul style="list-style-type: none"> • 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 <p><u>The learner will go on to:</u></p> <ul style="list-style-type: none"> • 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