

Progression Map - Science



		Implementation	Intent
Subject	Year Group	Knowledge - Declarative (Factual information) and Procedural (Skill/application of skills)	Applied Learning and Skills - Used for assessment and retrieval
Science - 1. working scientifically	Y3	<p>Declarative: To know a prediction is used as a 'best guess' for what might happen in an investigation, based on some prior knowledge</p> <p>Declarative: To know that questions can be answered in different ways. STATE ELEMENTS Procedural: To know how to ask relevant questions when prompted.</p> <p>Declarative: To know that an observation involves looking closely at objects, materials and living things. Procedural: To know how to make systematic observations, gather and record data in different formats</p> <p>Declarative: To know that results are information that have been discovered as part of an investigation. Declarative: To know that data can be used to provide evidence to answer questions. Declarative: To know that a conclusion is the answer to a question (that uses the evidence collected). Procedural: To know how to suggest conclusions, based on evidence collected, possible improvements or further questions to a given test, with prompting if necessary.</p> <p>Procedural: To know how to carry out a test following or planning a set of instructions</p>	<p>To be able to use information including data, to make predictions and conclusions about what they have seen</p>

<p>Science - 1. working scientifically</p>	<p>Y4</p>	<p>Declarative: To know that a fair test is one in which only one variable is changed and all others remain constant.</p> <p>Declarative: To know a prediction is used as a statement about what might happen in an investigation, based on some prior knowledge or understanding.</p> <p>Declarative: To know that results are information (such as data or observations) that have been found out from an investigation.</p> <p>Declarative: To know that equipment is used to take measurements in standard units. Examples include: data loggers plus sensors, timers (seconds, minutes and hours); thermometers (°C); metre sticks, rulers or trundle wheels (millimetres, centimetres, metres).</p> <p>Procedural: To know how to answer question using scientific enquiry</p> <p>Procedural: To know how to make observations involving looking closely at objects, materials and living things</p> <p>Procedural: To know how to make observations regularly to identify changes over time.</p> <p>Procedural: To know how to record data and display it in different ways, including tables, charts, graphs, keys and labelled diagrams.</p> <p>Procedural: To know how to state a conclusion that is the answer to a question that uses the evidence collected.</p> <p>Procedural: To know how to identify differences, similarities or changes related to simple scientific ideas and processes</p>	<p>To be able to set up simple comparative and fair tests</p>
<p>Science - 1. working scientifically</p>	<p>Y5</p>	<p>Declarative: To know questions can help us find out about the world and can be answered using a range of scientific enquiries.</p> <p>Declarative: To know a prediction is used as a statement about what might happen in an investigation based on some prior knowledge or understanding.</p> <p>Declarative: To know a method is a set of clear instructions for how to carry out a scientific investigation.</p> <p>Declarative: To know not all results may be trustworthy, through variables (with prompting if necessary).</p> <p>Declarative: To know that accurate observations can be made repeatedly or at regular intervals to identify changes over time.</p> <p>Declarative: To know that data can be recorded and displayed in different ways, including: tables, bar and line charts, classification keys and labelled diagrams.</p> <p>Declarative: To know that results are information, such as measurements or observations, that have been collected during an investigation.</p> <p>Declarative: To know that a conclusion is an explanation of what has been discovered using evidence collected.</p>	

		<p>Procedural: To know how to make observations involving looking closely at objects, materials and living things.</p> <p>Procedural: To know how to use specialised equipment to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres).</p>	
<p>Science - 1. working scientifically</p>	<p>Y6</p>	<p>Declarative: To know a prediction is a statement about what might happen in an investigation based on some prior knowledge, understanding or scientific research.</p> <p>Declarative: To know that questions can help us find out about the world and can be answered using a range of scientific enquiries, including: fair tests, research and observation.</p> <p>Declarative: To know that an observation involves looking closely at objects, materials and living things.</p> <p>Declarative: To know that accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.</p> <p>Declarative: To know that specialised equipment is used to take accurate measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).</p> <p>Declarative: To know that a variable is something that can be changed during a fair test.</p> <p>Declarative: To know that data can be recorded and displayed in different ways, including: tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.</p> <p>Declarative: To know that results are information, such as measurements or observations, that have been collected during an investigation.</p> <p>Declarative: To know that a conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.</p>	

<p>Science 2 - Animals including humans</p>	<p>Y3</p>	<p>Declarative: To know that some animals have skeletons and muscles for support, movement and protection.</p> <p>Declarative: To know that humans cannot make their own food; they survive from what they eat.</p> <p>Declarative: To know that a balanced diet is made up of varying amounts, from different food groups: carbohydrates, fats, protein, fruit, vegetables, dairy.</p> <p>Key vocabulary: skull, ribs, spine, humerus, ulna, radius, pelvis, femur, tibia, fibula, biceps, triceps, abdominals, hamstrings, pectorals, nutrition, carbohydrates, protein, vitamins, minerals, sugars, fibre, fat etc</p>	
<p>Science 2 - Animals including humans</p>	<p>Y4</p>	<p>Declarative: To know that the digestive system is responsible for digesting food and absorbing nutrients and water.</p> <p>Declarative: To know the main parts of the digestive system are the: mouth, oesophagus, stomach, small intestines, large intestines and rectum.</p> <p>Declarative: To know the sequence of the digestive process</p> <p>Declarative: To know incisors are used for cutting; canines are used for tearing; premolars and molars are used for grinding and chewing.</p> <p>Declarative: To know that good oral hygiene is: regular teeth brushing, limiting sugary foods and visiting the dentist.</p> <p>Declarative: To know that there are a variety of food chains which identify producers, predators and prey</p> <p>Key vocabulary: digestive system, digestion, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, excretion, incisor, canine, molar, premolar</p>	<p>To describe the digestive system in humans.</p> <p>To know construct and interpret a variety of food chains, identifying producers, predators and prey</p>
<p>Science 2 - Animals including humans</p>	<p>Y5</p>	<p>Declarative: To know that people's bodies change as they age</p> <p>Declarative: To know that humans go through characteristic stages as they develop towards old age.</p> <p>Declarative: To know that puberty is the transition between childhood and adulthood.</p> <p>Declarative: To know that deterioration occurs in the human body as humans age</p> <p>Procedural: To know how ageing affects people's daily lives in different ways</p> <p>Key vocabulary: changes, aging, stages, puberty, childhood, adulthood, deterioration</p>	

<p>Science 2 - Animals including humans</p>	<p>Y6</p>	<p>Declarative: To know that the circulatory system includes the heart, blood vessels and blood.</p> <p>Declarative: To know that the heart pumps blood through the blood vessels and around the body.</p> <p>Declarative: To know that there are three types of blood vessel: arteries, veins and capillaries.</p> <p>Declarative: To know that the blood carries gases (oxygen and carbon dioxide), water and nutrients to where they are needed.</p> <p>Declarative: To know that red blood cells carry oxygen and carbon dioxide around the body.</p> <p>Declarative: To know that blood also contains white blood cells, which protect the body from infection.</p> <p>Declarative: To know the role of the circulatory system in transporting oxygen, water and nutrients around the body via blood.</p> <p>Key vocabulary: heart, pulse, rate, blood vessels, cells, lungs, oxygen, carbon dioxide, circulatory system, diet, nutrients, exercise, drugs, lifestyle</p>	<p>To be able to identify how lifestyle choices can have a positive (exercise and eating healthily) or negative (drugs, smoking and alcohol) impact on the body.</p>
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Science 4 - Earth and space	Y3		
Science 4 - Earth and space	Y4		
Science 4 - Earth and space	Y5	Declarative: To know that deterioration occurs in the human body as humans age Declarative: To know that people's bodies change as they age Procedural: To know how ageing affects people's daily lives in different ways	To describe the changes as humans develop to old age.
Science 4 - Earth and space	Y6	Declarative: To know that the circulatory system includes the heart, blood vessels and blood. Declarative: To know that the heart pumps blood through the blood vessels and around the body. Declarative: To know that there are three types of blood vessel: arteries, veins and capillaries. Declarative: To know that the blood carries gases (oxygen and carbon dioxide), water and nutrients to where they are needed. Declarative: To know that red blood cells carry oxygen and carbon dioxide around the body. Declarative: To know that blood also contains white blood cells, which protect the body from infection. Declarative: To know the role of the circulatory system in transporting oxygen, water and nutrients around the body via blood. Key vocabulary: heart, pulse, rate, blood vessels, cells, lungs, oxygen, carbon dioxide, circulatory system, diet, nutrients, exercise, drugs, lifestyle	To be able to identify how lifestyle choices can have a positive (exercise and eating healthily) or negative (drugs, smoking and alcohol) impact on the body.

Science 5 - Electricity	Y3		
Science 5 - Electricity	Y4	<p>Declarative: To know that electricity is a type of energy.</p> <p>Declarative: To know that electricity is used to power many everyday items, such as: kettles, computers and televisions.</p> <p>Declarative: To know that electricity can also come from batteries.</p> <p>Declarative: To know that electrical conductors allow electricity to flow through them, whereas insulators do not.</p> <p>Declarative: To know that common electrical conductors are metals.</p> <p>Declarative: To know that common insulators include wood, glass, plastic and rubber.</p> <p>Declarative: To know that 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.</p> <p>Declarative: To know that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Key vocabulary: electricity, mains, plug, battery, circuit, in/complete circuit, cell.</p>	To be able to construct simple series circuits including cells, wires, bulbs, switches and buzzers.

Science 5 - Electricity	Y5		
Science 5 - Electricity	Y6	<p>Declarative: To know there are recognised symbols for different components of circuits.</p> <p>Declarative: To know that a circuit needs a power source, such as a battery or cell, with wires connected to both the positive and negative terminals.</p> <p>Declarative: To know that when a switch is open, it creates a gap and the current cannot travel around the circuit.</p> <p>Declarative: To know that when a switch is closed, it completes the circuit and allows a current to flow all the way around.</p> <p>Declarative: To know that a response can be affected (such as lighting a lamp or turning a motor) when an electric current runs through various types of circuit component (include lamps, buzzers or motors).</p> <p>Procedural: To know how to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>Procedural: To know how to use recognised symbols when representing a simple circuit in a diagram.</p> <p>Key vocabulary: voltage, volts, amp, current.</p>	<p>To be able to 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.</p>

Science 6- Evolution and Inheritance	Y3	Describe in simple terms how fossils are formed when things that have lived are trapped within rock - from Rocks (Golden Nugget)	
Science 6- Evolution and Inheritance	Y4	Recognise that environments can change and that this can sometimes pose dangers to living things - from Living things and their habitats (Golden Nugget)	
Science 6- Evolution and Inheritance	Y5		
Science 6- Evolution and Inheritance	Y6	<p>Declarative: To know that scientists compare fossilised remains from the past to living species that exist today to hypothesise how living things have evolved over time.</p> <p>Declarative: To know that animals that sexually reproduce, generate new offspring of the same kind by combining the genetic material of two individuals.</p> <p>Declarative: To know that adaptation is a physical or behavioural trait that allows a living thing to survive and fill an ecological niche.</p> <p>Declarative: To know that adaptations evolve by natural selection.</p> <p>Declarative: To know that adaptation may lead to evolution.</p> <p>Declarative: To know that environmental factors can affect the distribution of living things within a habitat. (move to evolution and inheritance).</p> <p>Key vocabulary: evolve, fossil, genetics, gene, species, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited and species.</p>	To be able to identify where examples of where animals and plants are adapted to suit their environment in different ways.

Science 7 - Forces and magnets	Y3	<p>Declarative: To know that an object will not move unless a pushing or pulling force is applied.</p> <p>Declarative: To know that some forces require direct contact, and other forces can act at a distance, such as magnetic force.</p> <p>Declarative: To know that some materials have magnetic properties.</p> <p>Declarative: To know that magnetic materials are attracted to magnets.</p> <p>Declarative: To know that magnetic materials are metals, but not all metals are magnetic.</p> <p>Declarative: To know that magnets have two poles (north and south).</p> <p>Declarative: To know that opposite poles (north and south) attract each other, while 'same' poles repel each other.</p> <p>Key vocabulary: force, push, pull, twist, contact force/non-contact force, magnetic force, magnet, poles, north pole, south pole, attract/repel, types of magnet (e.g. bar magnet, horseshoe magnet and button magnet).</p>	To be able to compare how things move on different surfaces.
Science 7 - Forces and magnets	Y4		
Science 7 - Forces and magnets	Y5	<p>Declarative: To know that gravity is a force of attraction.</p> <p>Declarative: To know that Earth's large mass exerts a gravitational pull on all objects on Earth, making dropped objects fall to the ground.</p> <p>Declarative: To know that friction is a force between two surfaces as they move over each other.</p> <p>Declarative: To know that friction slows down a moving object, including air resistance and water resistance.</p> <p>Declarative: To know that smooth surfaces usually generate less friction than rough surfaces.</p> <p>Declarative: To know that mechanisms, such as levers, pulleys and gears, give us a mechanical advantage.</p> <p>Declarative: To know that the bigger the mechanical advantage, the less force we need to apply.</p> <p>Key vocabulary: force, gravity, air resistance, water resistance, friction, simple machines, mechanisms, gears, levers and pulleys.</p>	To be able to identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
Science 7 - Forces and magnets	Y6		

Science 8- Light	Y3	<p>Declarative: To know that light is needed in order to see things and that dark is the absence of light.</p> <p>Declarative: To know that light from the sun can be dangerous and that there are ways to protect eyes.</p> <p>Declarative: To know that a shadow is formed when light from a light source is blocked by an opaque object.</p> <p>Declarative: To know that transparent objects allow light to pass through them and do not create shadows.</p> <p>Declarative: To know that light is reflected from surfaces.</p> <p>Key vocabulary: light source, light/dark, absence of light, transparent/translucent/opaque, shadow and reflect.</p>	To be able to find patterns in the way that the size of shadows change.
Science 8- Light	Y4		
Science 8- Light	Y5		
Science 8- Light	Y6	<p>Declarative: To know that light sources give out light.</p> <p>Declarative: To know that light travels in a straight line.</p> <p>Declarative: To know that light can be natural or artificial.</p> <p>Declarative: To know that light from a source or reflected light enter the eye.</p> <p>Declarative: To know that shadow appears when an object blocks the passage of light.</p> <p>Declarative: To know that shadows are the same shape as the object blocking the light.</p> <p>Key vocabulary: Same as Y3, plus light rays, straight lines, cornea, lens, retina and optic nerve.</p>	To be able to recognise that light travels in straight lines explaining why shadows have the same shape as the objects that cast them.

Science 9 - Plants	Y3	<p>Declarative: To identify and describe the functions of different parts of flowering plants.</p> <p>Declarative: To know that plant's roots anchor the plant in the ground and transport water and minerals from the ground to the plant.</p> <p>Declarative: To know that water is transported in plants from the roots, through the stem and to the leaves.</p> <p>Declarative: To know that the stem (or trunk) support the plant above the ground.</p> <p>Declarative: To know that flowers make seeds to produce new plants.</p> <p>Declarative: To know that plants need air, light, water, minerals from the soil and room to grow, in order to survive.</p> <p>Declarative: To know that different plants have different needs depending on their habitat: cacti, which need less water than is typical; ferns, which can grow in lower light levels.</p> <p>Declarative: To know that flowers are important in the life cycle of flowering plants.</p> <p>Declarative: To know that insects and the wind can transfer pollen from one plant to another (pollination).</p> <p>Declarative: To know that animals, wind, water and explosions can disperse seeds away from the parent plant (seed dispersal).</p> <p>Key vocabulary: photosynthesis, pollen, pollination, seed formation, seed dispersal</p>	To be able to describe the stages of a plant's life cycle include germination, flower production, pollination, fertilisation, seed formation and seed dispersal.
Science 9 - Plants	Y4		
Science 9 - Plants	Y5		
Science 9 - Plants	Y6		

Science 10 - Properties and changes of materials	Y3		
Science 10 - Properties and changes of materials	Y4		
Science 10 - Properties and changes of materials	Y5	<p>Declarative: To know that materials can be grouped according to their basic physical properties.</p> <p>Declarative: To know that properties of materials include: hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism.</p> <p>Declarative: To know that a material's properties dictate what it can effectively be used for (for example, cooking pans are made from metal, which is a good thermal conductor, allowing heat to quickly transfer from the hob to the contents of the pan).</p> <p>Declarative: To know that some materials (solutes) will dissolve in liquid (solvents) to form a solution.</p> <p>Declarative: To know that the solute can be recovered by evaporating off the solvent by heating.</p> <p>Declarative: To know that some mixtures can be separated by filtering, sieving and evaporating.</p> <p>Declarative: To know that sieving can be used to separate large solids from liquids and some solids from other solids.</p> <p>Declarative: To know that filtering can be used to separate small solids from liquids.</p> <p>Declarative: To know that evaporating can be used to separate dissolved solids from liquids.</p> <p>Declarative: To know that reversible changes include heating, cooling, melting, dissolving and evaporating.</p> <p>Declarative: To know that irreversible changes include: burning, rusting, decaying and chemical reactions.</p> <p>Key vocabulary: thermal, electrical, conductor, insulator, change of state, soluble/insoluble, filter, sieve, reversible/non-reversible change, dissolve, solution, burning, rusting and new material.</p>	

Science 10 - Properties and changes of materials	Y6		
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Science 11 - Living things and habitats	Y3		
Science 11 - Living things and habitats	Y4	<p>Declarative: To know the six animal groups: fish, amphibians, reptiles, birds, invertebrates and mammals.</p> <p>Declarative: To know that an adaptation helps an animal or plant survive in its habitat.</p> <p>Declarative: To know that if living things are unable to adapt to changes within their habitat, they are at risk of becoming extinct.</p> <p>Declarative: To know that humans can affect habitats in negative ways, such as: littering, pollution and land development; or positive ways, such as garden ponds, bird boxes and wildflower areas.</p> <p>Declarative: To identify living things in the local and wider environment</p> <p>Key vocabulary: classification, classification keys, adaptation, adapt, environment, habitat, human impact, migration, migrate, hibernation, hibernate, extinction and extinct.</p>	To be able to use classification keys to help group, identify and name a variety of living things.
Science 11 - Living things and habitats	Y5	<p>Declarative: To know that humans reproduce sexually, (one female and one male) and produces offspring that are different from the parents.</p> <p>Declarative: To know that flowering plants reproduce sexually and other plants reproduce asexually.</p> <p>Declarative: To know the reproductive parts of a flower including: the stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal.</p> <p>Declarative: To know that pollination is when the male part of a plant (pollen) is carried, by wind, insects or other animals, to the female part of the plant (carpel).</p> <p>Declarative: To know that pollen travels to the ovary, where it fertilises the ovules (eggs).</p> <p>Declarative: To know that seeds are produced, then dispersed far away from the parent plant and grow new plants.</p> <p>Declarative: To know the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Vocabulary: baby, infant, toddler, child, adolescent, young adult, adult and senior citizen.</p> <p>Key vocabulary: puberty, reproduce, sexual, sperm, egg, live young, fertilises, metamorphosis, asexual, plantlets, runners, bulbs and cuttings, stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal.</p>	
Science 11 - Living things and habitats	Y6	<p>Declarative: To know how living things are classified into broad groups according to common observable characteristics of living things, based upon similarities and differences.</p> <p>Procedural: To be able to classify living things into groups based on specific characteristics, and give reasons for their choice.</p> <p>Declarative: To know that classification keys help us identify living things based on their physical characteristics.</p> <p>Key vocabulary: vertebrates, invertebrates, micro-organisms, flowering and non-flowering.</p>	

Science 12 - Rocks	Y3	<p>Declarative: To know that fossils are the remains of a once living organism and are made over millions of years.</p> <p>Declarative: To know that fossils form where a living thing dies in a watery environment.</p> <p>Declarative: To know that scientists use fossils to find out what life was like in prehistoric times.</p> <p>Declarative: To know that fossils are formed when things that have lived are trapped within rock.</p> <p>Declarative: To know that soils are made from eroded rock, air and organic matter.</p> <p>Declarative: To know the simple physical properties and appearance of different kinds of rocks and soils.</p> <p>Procedural: To know how to compare and group together different types of rock..</p> <p>Key vocabulary: fossil, rock, stone, boulder, grain, crystals, layers, texture, absorb, sandy/chalk/silt/clay soil, peat, slate, granite, sandstone, marble, chalk and erode.</p>	To be able to describe the process of fossilisation: the body gets covered in mud and sand; soft tissues rot away-ground hardens to form sedimentary rock; shell or skeleton then turns to rock.
Science 12 - Rocks	Y4		
Science 12 - Rocks	Y5		
Science 12 - Rocks	Y6	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of year ago. (Golden nugget from year 3)	

Science 13 - Sound	Y3		
Science 13 - Sound	Y4	<p>Declarative: To know that sounds are made, associating some of them with something vibrating.</p> <p>Declarative: To know that sounds are louder the closer you are to the sound source and fainter as the distance from the sound source increases.</p> <p>Declarative: To know that vibrations from sounds travel through a medium to the ear.</p> <p>Declarative: To know the relationship between the pitch of a sound and features of the object that produced it.</p> <p>Declarative: To know the relationship between the volume of a sound and the strength of the vibrations that produced it.</p>	
Science 13 - Sound	Y5		
Science 13 - Sound	Y6		

Science 14 - States of matter	Y3		
Science 14 - States of matter	Y4	<p>Declarative: To know that materials can be grouped according to whether they are solids, liquids or gases.</p> <p>Declarative: To know that solids stay in one place and can be held.</p> <p>Declarative: To know that some solids can be squashed, bent, twisted and stretched.</p> <p>Declarative: To know the names of examples of solids including: wood, metal, plastic and clay.</p> <p>Declarative: To know that liquids move around (flow) easily and are difficult to hold.</p> <p>Declarative: To know that liquids take the shape of the container in which they are held. Examples of liquids include: water, juice and milk.</p> <p>Declarative: To know that gases spread out to fill the available space and cannot be held.</p> <p>Declarative: To know that air is a mixture of gases.</p> <p>Declarative: To know 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).</p> <p>Procedural: To know how to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Key vocabulary: states, solid, liquid, gas, melting, freezing, melting point, boiling point, water cycle, evaporation, condensation, precipitation, temperature and thermometer.</p>	
Science 14 - States of matter	Y5		

Science 14 - States of matter	Y6		
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