Science Progression: EYFS to KS3

Working ScientificallyBegin to ask simple questions and recognising that they can be answered in different waysask simple questions and recognising that they can be answered in different waysask simple questions and recognising that they can be answered in different waysBegin to ask relevant questions and using different types of scientific enquiries to answer themBegin to plan different types of scientific enquiries to answer questions, including recognising and controllingBegin to plan different types of scientific enquiries to answer questions, including recognising and controllingplan different types of scientific enquiries to answer questions, including recognising and fair testsBegin to observe comparative and fair testsBegin to set up simple practical enquiries, comparative and fair testsBegin to take make systematic and, where appropriate, take accurateBegin to take measurements, using a range of scientific equipment, with increasingusing a range of accuracy and to take accuratewith increasingwith increasing measurements usingwith increasingwith increasingwith increasing	ttention to ivity and concern curacy, precision, ability and lucibility
Begin to ask simple questions and recognising that they can be answered in different waysask simple questions and recognising that they can be answered in different waysBegin to ask relevant questions and using different types of scientific enquiries to answer themBegin to plan different types of scientific 	ttention to ivity and concern curacy, precision, ability and lucibility
numer deprint splets match bigsts match bigsts match splets match bigsts match splets 	itand that scientific ds and theories p as earlier ations are modified e account of new ce and ideas, er with the ance of ing results and eview ite risks. mental skills and gations iestions and develop of enquiry based on ations of the real side prior knowledge of enquiry based on ations of the real side prior knowledge and standing plan and carry out ost appropriate of scientific ies to test tions, including fying independent, dent and control bles, where priate opropriate ques, apparatus, iaterials during ork and laboratory paying attention to and safety and record

[Begin to use	answer questions or to	
		straightforward	support their findings	
		scientific evidence to		
		answer questions or to		
		support their findings		
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measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements

apply sampling techniques. Analysis and evaluation

apply mathematical concepts and calculate results present observations and data using appropriate methods, including tables and graphs

interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions

present reasoned explanations, including explaining data in relation to predictions and hypotheses

evaluate data, showing awareness of potential sources of random and systematic error

understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature

use and derive simple equations and carry out appropriate calculations

undertake basic data analysis including simple statistical techniques.

Plants							
Make observations of plants Know some names of plants, trees and flowers May be able to name and describe different plants, trees and flowers Show some care for their world around them	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. Identify and name the roots, trunk, branches and leaves of trees	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and warmth to grow and stay healthy	Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers Explore the part flowers play in a flowering plants life cycle, including pollination, seed formation and seed dispersal Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants Know the way in which water is transported between plants				
			Animals Incl	udina Humans			
Be able to identify different parts of their body. Have some understanding of healthy food and the need for variety in their diets. Be able to show care and concern for living things. Know the effects exercise has on their bodies. Have some understanding of growth and change.	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. identify, name, draw and label the basic parts of the human body and say which part of the body is	Know that animals, including humans, have offspring which grow into adults Know the basic stages in a life cycle for animals, including humans. Find out and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise,	Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Know how nutrients, water and oxygen are transported within animals and humans.	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.	Describe the changes as humans develop to old age.	Identify and name the main parts of the hu circulatory system, a describe the function the heart, blood vess and blood. Recognise the impace diet, exercise, drugs lifestyle on the way bodies function. Describe the ways in which nutrients and are transported with animals, including humans.	

The role of leaf stomata in gas exchange in plants.Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphereThe adaptations of leaves for photosynthesis.Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.te the e human n, and tions of ugs and its in ind water is in ind water is in ind water within gs in gg		
Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphereThe adaptations of leaves for photosynthesis.Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.te the e human n, and m, and tions of usselspact of uags and ray theirgthin g		The role of leaf stomata in gas exchange in plants.
The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere The adaptations of leaves for photosynthesis. Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots. The hierarchical organisation of multicellular organisms: from cells to tissues to organisms. pact of usy and ray their s in and water within g		Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.
The adaptations of leaves for photosynthesis.Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.The hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.pact of ugs and vay theirThe tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)		The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere
Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.te the e human n, and tions of vesselsThe hierarchical organisation of from cells to tissues to organs to systems to organisms.pact of ugs and ray theirThe tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)		The adaptations of leaves for photosynthesis.
the the the array organisation of any and and ticellular organisms: from cells to tissues to organs to systems to organisms. The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)		Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.
Ine nierarchicale humanorganisation ofn, andmulticellular organisms:tions offrom cells to tissues toorgans to systems toorganisms.pact ofThe tissues and organs ofthe human digestivesystem, includingadaptations tofunction and how thedigestive system digestsfood (enzymes simply asbiologicalcatalysts)	a the	The bierershied
pact of igs and ay their is in ind water within g The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)	e human n, and tions of vessels	organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.
•	pact of ugs and ay their s in und water within g	The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)

Can talk about things	associated with each	eating the right amounts	Know about the			Calculations of energy
they have observed	561156	and hygiene.	nutritious, balanced			daily diet
including			diet.			The consequences of
uninuis			Identify that humans and			imbalances in the diet,
			some other animals have			including obesity,
			support, protection and			deficiency diseases
			movement			
						The structure and
						exchange system in
						humans, including
						adaptations to function
						The effects of recreational
						drugs (including substance
						health and life processes.
	1		Evolution an	d Inheritance		
					Know about evolution and	Heredity as the process by
					cuit explaint what it is.	is transmitted from one
					Know how fossils can be	generation to the next
					used to find out about the	The variation between
					pust.	individuals within a
					Recognise that living	species being continuous
					of the same kind, but	or discontinuous, to include measurement
					normally offspring vary	and graphical
					and are not identical to	representation of variation
					their purents	The variation between
					Identify how animals and	species and between
					plants are adapted to suit their environment in	individuals of the same
					different ways and that	some organisms compete
					adaptation may lead to	more successfully, which
					evolution- recognise that living things have	can arive natural selection Changes in the
					changed over time and	environment may leave
					that fossils provide	individuals within a
					things that inhabited the	species, and some entire species, less well adapted
						to compete successfully

			Earth millions of years
		Living Things and their Habitats	
about the place they live or the natural world. Shows care and concern for living things and the environment. Can talk about things they have observed such as plants and animals. Notices features of objects in their environment. Comments and asks questions about their familiar world.	 Applie and compare the difference 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. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food. 	 variety of food chains, identifying producers, predators and prey 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 micro habitats. 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 	Anow the aje cycle of a classify uving thing thing different living things, e.g. Mammal, amphibian, insect bird. A mow the process of reproduction in plants. Know the process of reproduction in animals. Give reasons for classifying plants ar animals based on sp characteristics.
		and that this can sometimes pose danger to living things.	
		Electricity	
May have some understanding that objects need electricity to work.		Identify common appliances that run on electricity.	Associate the bright of a lamp or the vo of a buzzer with the number and voltage cells used in the circ

ars	and reproduce, which in turn may lead to extinction The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.
s into ding pased nd pecific	The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the
	atmosphere The adaptations of leaves for photosynthesis. The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops The importance of plant reproduction through insect pollination in human food security How organisms affect, and are affected by, their environment, including the accumulation of toxic materials.
ness lume e of	Electric current, measured in amperes, in circuits, series and parallel circuits, currents
uit.	

May understand that a		Construct a simple series		
switch will turn something		electrical circuit,		Compare and give
on or off.		identifying and naming its		reasons for variations
		basic parts including		how components fund
		colle wires hulbs		including the brightne
		cells, wires, buibs,		
		switches and buzzers.		bulbs, the loudness of
				buzzers and the on/o
		Identify whether a lamp		position of switches.
		will light in a simple series		
		circuit based on whether		Use recognised sumb
		the lamp is part of a		when representing a
		and the lase with a		witert representing u
		complete loop with a		simple circuit in a
		battery.		diagram
		Recognise that a switch		
		opens and closes the		
		circuit		
		and associate this with		
		whether a lamp lights in a		
		simple series circuit		
		simple series circuit.		
		Deservice come commune		
		Recognise some common		
		conductors and insulators,		
		and associate metals with		
		being good conductors.		
		Know the difference		
		between a conductor and		
		an insulator giving		
		examples of each.		
		Safety when using		
		electricity.		
	Foi	rces		
	Compare how things		Explain that unsupported	
	move on different		objects fall towards the	
	surfaces.		Earth because of the force	
know about similarities	, ,		of aravity acting between	
and differences in relation	Know how a simple pullou		the Earth and the falling	
to places, objects,	worke and use making		abient and the impact of	
materials and living	works and use making		object and the impact of	
things.	lifting an object simpler		gravity on our lives.	
	Next and the first			
Talk about the features of	Notice that some forces		laentify the effects of air	
their own immediate	need contact between two		resistance, water	
anvironment and how	objects, but magnetic		resistance and friction,	
environmente micht verw	forces can act at a		which act between	
environments might vary	distance.		moving surfaces.	
from one another.				
	Observe how magnets		Recognise that some	
Make observations of	attract and renel each		mechanisms including	
animals and plants,	other and attract some		lovers pullous and soors	
explain why some things	materiale and and some		elleur e en elleur f	
occur, and talk about	materials and not others.		allow a smaller force to	
changes.			have a greater effect.	
	Compare and group			
	together a variety of			
	everyday materials based			

e ions in function, htness of ss of n/off es. mbols g a	add where branches meet and current as flow of charge Potential difference measured in volts, battery and bulb ratings, resistance measured in ohms, as the ratio of potential difference (p.d.) to current Differences in resistance between conducting and
	insulating components (quantitative). Separation of positive or
	negative charges when objects are rubbed together: transfer of electrons, forces between charged objects
	The idea of electric field, forces acting across the space between objects not in contact.
	Opposing forces and
	equilibrium: weight held by stretched spring or supported on a compressed surface
	Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only)
	Change depending on direction of force and its size

			on whether they are attracted to a magnet and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets with attract or repel each other, depending on which poles are facing.			
		1	Earth ar	nd Space		
					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 Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	
		1	Seasons and How t	hey Change (Energy)		
Developing an understanding of change. Observe and explain why certain things may occur (e.g. leaves falling off trees, weather changes). Look closely at similarities, differences, patterns and change.	Observed changes across the four seasons Observed and describe weather associated with the seasons and how day length varies.					

Gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and

between Earth and Sun (qualitative only)

Our Sun as a star, other stars in our galaxy, other galaxies

The seasons and the Earth's tilt, day length at different times of year, in different hemispheres the light year as a unit of astronomical distance

Comments and questions about the place they live or the natural world.											
	Light and Sight (Energy)										
			Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the sizes of shadows change.			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. Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.	the similarities and differences between light waves and waves in matter light waves travelling through a vacuum; speed of light the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface Science use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative), the human eye light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.				
			Sound (Energy)							
				Know how sound is made associating some of them with vibrating. Know what happens to a sound as it travels from its source to our ears. Know the correlation between the volume of a sound and the strength of			frequencies of sound waves measured in hertz (Hz), echoes, reflection and absorption of sound sound needs a medium to travel, the speed of sound in air, in water, in solids				

			Mat	the vibrations that produced it. Know how sound travels from a source to our ears. Know the correlation between pitch and the object producing a sound.		
Be able to ask questions about the place they live Talk about why things happen and how things work. Discuss the things they have observed such as natural and found object Manipulates materials to achieve a planned	Distinguish between and object and the material from which it is made. Identify and name a variety of everyday materials, including wood, metal, plastic, glass, water and rock, Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials based on their simple properties.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 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. Compare and group together everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Give reasons based on evidence from comparative and fair tests, for the uses of everyday materials, including wood, metals and plastic. Demonstrate that dissolving, mixing and changes of state are	

sound produced bu
vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal auditory range of humans and animals.
the concept of a pure substance mixtures, including dissolving
diffusion in terms of the particle model
simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography
the identification of pure substances

					Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda		
	•	•	Key Vo	cabulary	<u> </u>		
Head, toes, ear, hands, eye, fingers, mouth, nose, herbivore, face, carnivore, hair, omnivore, leg, human, knee, animal, arm, fish, elbow, birds, back, tree, petals, trunk, fruit, branch, roots, leaves, bulb, flowers, seed, stem, material, metal, wood, rock, plastic, hard, glass, soft, paper, fabric, material, smooth, shiny, rough, summer, day, spring, dark, autumn, light, winter, night, season, moon, sun, Earth, star, planet, space, loud, quiet, volume, sound	amphibians, fish, reptiles, mammals, birds (+ 1 example of each) herbivore, omnivore, carnivore head, nose, ear, neck, shoulder, arm, elbow, wrist, hand, back, chest, hip, leg, knee, ankle, foot wing, beak, tail, fin sight, smell, touch, taste, hearing, deciduous, evergreen, tree, leaf, flower (blossom), petals, fruit, bulb, seed, roots, stem, trunk, branches, wood, plastic, glass, paper, metal, rock, hard, soft, rough, smooth, shiny, dull, bendy, stiff, season, spring, summer, autumn, winter, month, year, day, night, sun, moon, light, dark, question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary sources record – diagram, chart.	survival, water, air, food reproduce, adult, baby, offspring, kitten, calf, puppy food chain, prey, predator, camouflage, protection exercise, hygiene, balanced diet, growth, germinate, light, temperature reproduce, lifecycle, brick, fabric, elastic, foil, property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce, living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond, question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary sources record – diagram, chart	skeleton, skull, bones, muscles, movement, support, protection, nutrition, air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination, soils, organic matter, fossil, crystal, sandstone, granite, marble, pumice absorbent, crumble sedimentary, layer, sediment igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure, light source, mirror, reflect, reflective, reflection shadow, blocked transparent, translucent, opaque, force, contact, surface, magnetic, attract, repel, poles, oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources, guides, keys, construct, interpret research – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, keys, bar charts, tables	mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, nutrients, absorb, canine, incisor, molar producer, consumer, apex predator, vertebrates, invertebrates (+ 1 example of each) environment, habitat, classification key, temperature, freezing, heating, solid, liquid, gas, evaporation, condensation, particle, vibration, wave, volume, pitch, tone, insulation, appliance, battery power, main power, circuit, series, cell, battery, wire, bulb, switch, break in circuit conductor, insulator, oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources, guides, keys, construct, interpret research – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, keys, bar charts, tables	womb, foetus, embryo, gestation, baby, toddler, teenager, elderly growth, development, puberty, life process, reproduction, offspring, hardness, transparency, conductivity (electrical, thermal) solubility, solution dissolve, filter, evaporate, sieve, reversible, irreversible, Earth, sun, moon, solar system, axis of rotation, day, night, phases of the moon, star, constellation, air resistance, water resistance, friction, gravity lever, gear, pulley, Newtons, plan, variables, measurements, accuracy, precision, repeat readings, predictions, further comparative and fair test, identify, classify and describe, patterns, systematic, quantitative measurements report data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs report and present – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation evidence – support, refute, ideas or arguments biology, physics, chemistry	function, circulatory system, heart, valve, blood vessel, vein, artery transport, oxygenated, deoxygenated lifestyle, drug, characteristic, classification, organism, micro-organism, adaptation, evolution, characteristic, reproduction, genetics, survival, refraction, reflection, spectrum, rainbow, circuit - series, parallel voltage, volts, amps, plan, variables, measurements, accuracy, precision, repeat readings, predictions, further comparative and fair test, identify, classify and describe, patterns, systematic, quantitative measurements report data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs report and present – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation evidence – support, refute, ideas or arguments biology, physics, chemistry	

tion, circulatory em, heart, valve, d vessel, vein, artery sport, oxygenated, cygenated lifestyle, g, characteristic, sification, organism, o-organism, otation, evolution, acteristic, oduction, genetics, ival, refraction, ction, spectrum, bow, circuit - series, illel voltage, volts, s, plan, variables, surements, accuracy, ision, repeat readings, lictions, further parative and fair test, tify, classify and ribe, patterns, ematic, quantitative surements report data tentific diagrams, ls, classification keys, es, scatter graphs, bar oh and line graphs rt and present – clusions, casual cionships, anations, degree of t, oral and written lay and presentation ence – support, te, ideas or arguments ogy, physics, nistry	