ART Progression Grid

Working scientifically | Animals including humans | Plants | Living things and their habitats | Evolution and inheritance | Seasonal changes | Forces and magnets | Light | Sound | Everyday materials | Electricity

EARLY YEARS	KEY STAGE 1		LOWER KEY STAGE 2		UPPER KEY STAGE 2	
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
FROG	Asking simple questions and recognising that they can be answered in different ways Performing simple tests, observing closely, using simple equipment Gathering and recording data to help in answering questions identifying and classifying Using their observations and ideas to suggest answers to questions		asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions · recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables … identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. using results to draw simple conclusions, make predictions for new values and suggest improvements and raise further questions		Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs identifying scientific evidence that has been used to support or refute ideas or arguments using test results to make predictions to set up further comparative and fair tests Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other	
Working Scientifically						
Through provision, focus groups and with adult support, can children… ● Perform a simple test? ● Describe/ explain what they have done?	I can perform a simple test? I can describe/ explain what I have done?	I can carry out a simple fair test I can explain why it might not be fair to compare two things? I can say whether things happened as they expected? I can suggest how to find things out? I can use prompts to find things out	I can use different ideas and suggest how to find something out? I can make and record a prediction before testing? I can plan a fair test and explain why it was fair? I can set up a simple fair test to make comparisons? I can explain why need to collect information to answer a question	I can plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated? I can suggest improvements and predictions I can ask their own questions I can decide which information needs to be collected and decide what the best way to collect it is	nd carry out a scientific answer questions, ecognising and controlling here necessary a prediction with reasons I can use test results to make predictions to set up comparative and fair tests	I can explore diverse ways to test an idea, choose the best way, and give reasons I can use information to make a prediction and give reasons for it I can use test results to make further predictions and set up further comparative tests
Through provision, focus groups and with adult support, can children… ● Discuss what they can see, touch, smell, hear or taste?	I can discuss what they can see, touch, smell, hear or taste? I can use simple equipment to help make observations	I can use - see, touch, smell, hear or taste to help them answer questions? I can use some scientific words to describe what they have seen and measured?	I can take accurate measurements using different equipment and units of measure?	I can take measurements using different equipment and units of measure and record what I have found in	I can take measurements using a range of scientific equipment with increasing accuracy and precision	I can identify the key factors when planning a fair test I can vary one factor whilst keeping the others the same in an experiment I can explain why they do this

● Use simple equipment to help them make observations		I can compare several things?	I can record their observations in diverse ways? - labelled diagrams, charts etc. I can describe what they have found using scientific language?	a range of ways I can use a range scientific equipment's to take accurate measurements or readings	I can take repeat readings when appropriate I can record more complex data and results using scientific diagrams, labels, classification keys, table, scatter graphs, bar and line graphs	I can explain, in simple terms, a scientific idea and what evidence supports it
Through provision, focus groups and with adult support, can children… ● Show their work using pictures, labels and captions? ● Record their findings using standard units? ● Record some information in a chart or table, or using ICT?	I can show their work using pictures, labels and captions? I can record my findings using standard units? I can record some information in a chart or table, or using ICT?	I can use text, diagrams, pictures, charts, tables to record their observations? I can measure using simple equipment?	I can explain what I have found out and use my measurements to say whether it helps to answer my question?	I can explain my findings in different ways (display, presentation, writing) I can record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs	I can use a graph to answer scientific questions I can present a report of their findings through writing, display, and presentation	I can explain why I have chosen specific equipment (including ICT based equipment) I can decide which units of measurement they need to use I can make precise measurements? I can explain why a measurement needs to be repeated
Through provision, focus groups and with adult support, can children… ● Identify and classify things they observe? ● Think of some questions to ask? ● Answer some scientific questions? ● Give a simple reason for their answer? ● Explain what they have found out?	I can identify and classify things i have observed? I can think of some questions to ask? I can answer some scientific questions? I can give a simple reason for my answer? I can explain what I have found out?	I can organise things into groups I can find simple patterns (or associations) I can identify animals and plants by a specific criteria, e.g. lay eggs or not; have feathers or not?		I can find any patterns in their evidence or measurements? I can evaluate and communicate my methods and findings? I can make a prediction based on something I have found out? I canask further questions based on their data and observations I can evaluate what I have found using scientific language, drawings, labelled diagrams, bar charts and tables I can identify differences, similarities or changes related to simple scientific ideas or processes		I can record their measurements in diverse ways (including bar charts, tables, and line graphs) I can read and record measurements systematically using a range of scientific equipment with increasing accuracy and precision
				I can use my findings to draw a simple conclusion		I can present a report of their findings through writing, display and presentation

FROG

Animals Including Humans

	identify and name a variety of common animals - including fish, amphibians, reptiles, birds and mammals describe and compare the structure of a variety of common animals identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	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	identify that humans and some other animals have skeletons and muscles for support, protection and movement. identify that animal, 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;	construct and interpret a variety of food chains, identifying producers predators and prey. 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;		
	an identify some of the ferences between different imals an identify living and non-ing things an identify and name a variety common animals an they describe how an imal is suited to its vironment an explain what i have found t an identify and name a variety common animals that are rnivores, herbivores, and nivores	I can explain why animals have offspring which grow into adults I can explain that animals grow and reproduce I can describe the life cycle of some living things (e.g. egg, chick, chicken	I can explain the importance of a nutritionally balanced diet I can describe how nutrients, water and oxygen are transported within animals and humans I can identify that animal, including humans, cannot make their own food: they get nutrition from what they eat.	I can identify, mouth, stomach small intestine and large intestine. I can describe the function of the mouth, stomach, small intestine, and large intestine	describe the changes as humans develop to old age	identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood;
	I can identify and classify things I have observed? I can give a simple reason for my answers? I can discuss what I can see, touch, smell, hear or taste?	I can describe what animals need to survive I can explain the basic needs of animals, including humans for survival (water, food, air)	I can describe and explain the skeletal system of a human I can describe and explain the muscular system of a human	I can identify the canines, incisors, premolars, and molars I can describe the canines are for biting, incisors are for tearing and molars are for grinding I know carnivores have large incisors and herbivores have many molars		recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function;
	I can name the parts of the human body and link them to my senses I can name the parts of an animal's body I can name a range of domestic animals I can compare the bodies of different animals	I can describe why exercise, balanced diet and hygiene are important for humans				Describe the ways in which nutrients and water are transported within animals, including humans.

FROG

	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees identify and describe the basic structure of a variety of common flowering plants, including trees	observe and describe how seeds and bulbs grow into mature plants find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	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	

Plants

	I can identify and name a range of common plants and trees?	Can they observe and describe how seeds and bulbs grow into mature plants?	I understand the relationship between structure and function: the idea that every part has a job to do in the flowering plant I can explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.	
	I can describe and name the petals, stem, leaf, bulb, flower, seed, stem, and root of a plant? I can name the trunk, branches, and root of a tree	I can describe what plants need to survive? I can investigate and describe the impact of removing light, soil or water from a growing or germinating plant.	I can explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow) I can observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers I understand that plants can make their own food I can investigate the way in which water is transported within plants	
			I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal I can compare the effect of varied factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the various stages of plant life cycles over a period; looking for patterns in the structure of fruits that relate to how the seeds are dispersed	

FROG

Living things and their habitats

	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 various 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 various sources of food	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 thing	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 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	
	I can explain that living things will grow, breathe, and reproduce I know all living things have certain characteristics that are essential for keeping them alive and healthy.	I can group plants into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses	I can grow new plants from various parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment	I can build on prior knowledge about grouping living things in year 4 by looking at the classification system in more detail I can classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds, and mammals). They should discuss reasons why living things are placed in one group and not another.
	I can describe how plants and animals are suited to their habitat I can recognise the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a small habitat, for example for woodlice under stones, logs, or leaf litter).	I can explore ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.	I will observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times)	I can research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.
	I can match certain living things to the habitats they are found in? I can compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.	I can explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter, or deforestation.	I will find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.	I can find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification
	I can raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things			

	depend on each other, for example, plants serving as a source of food and shelter for animals		
	I can construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.		

FROG			recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to
Evolution and Inheritance			I can build on prior knowledge about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time.
			nderstand that that haracteristics are passed from arents to their offspring, for nstance by considering different reeds of dogs, and what appens when, for example, abradors are crossed with oodles. I recognise that that variation in offspring over time can make animals able to survive environments, for example, by exploring how giraffes' necks got longer, or the development

		of insulating fur on the arctic fox.
		I find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.
		bserve and raise questions t local animals and how they are ted to their environment; paring how some living things are ted to survive in extreme itions, for example, cactuses, uins, and camels I can analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.

FROG	observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies	
	I can observe changes across the four seasons I can name the four seasons in order	
Seasonal	I can observe and describe weather associated with the seasons? I can observe and describe how day length varies?	

FROG		I 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 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	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. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object;	
		I can compare how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions	.	I can explore falling objects and raise questions about the effects of air resistance. I can explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.
Forces and magnets		I can observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). I can explore the strengths of different magnets and finding a fair way to compare them		I will learn that forces that make things begin to move, get faster or slow down. I will explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel.
		I can observe how some magnets attract or repel each other		I will explore the effects of levers, pulleys, and simple machines on movement.
		I can sort materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; I can identify how these properties make magnets useful in everyday items and suggesting creative uses for different magnets		I will find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation
		I can notice that some forces need contact between two objects, but magnetic forces can act at a distance?		I will explore falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair

		tests to determine which designs are the most effective. I will explore resistance in water by making and testing boats of different shapes.

FROG

Light

	•recognise that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by an opaque object; find patterns in the way that the	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.
	I can recognise that they need light to see things I can recognise that dark is the absence of light	I can build on prior knowledge on light in year 3, exploring the way that light behaves, including light sources, reflection, and shadows.
	I notice that light is reflected from surfaces	I can decide where to place rear-view mirrors on cars;
	I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes	I can design and make a periscope and using the idea that light appears to travel in straight lines to explain how it works.
	I can recognise that shadows are formed when the light from a light source is blocked by a solid object	I can investigate the relationship between light sources, objects, and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).
	I can find patterns in the way that the size of shadows change I can explain the difference between transparent translucent and opaque?	

FROG		identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it; recognise that sounds get fainter as the distance from the sound source increases.
		I can explore and identify the way sound is made through vibration in a range of different musical instruments from around the world
Sound		I can find out how the pitch and volume of sounds can be changed in a variety of ways. I can make and play my own instruments by using what i have found out about pitch and volume.
		I can find patterns in the sounds that are made by different objects such as saucepan lids of varied sizes or elastic bands of different thicknesses.
		I can make earmuffs from a variety of varied materials to investigate which provides the best insulation against sound.

FROG

Everyday materials

	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 the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Rocks 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	Compare and group materials together depending on whether they are solid liquid or gases Observe that some materials change state when they are heated or cooled and measure the temperature that this happens Identify the part play by evaporation and condensation in the water cycle
;	I can distinguish between an object and the material from which it is made? I can describe materials using their senses, using specific scientific words? I can explain what material objects are made from? I can explain why a material might be useful for a specific job? I can name some different everyday materials? e.g. wood, plastic, metal, water and rock	describe the simple physical erties of a variety of everyday rials? compare and group together a ty of materials based on their le physical properties?	I can explore various kinds of rocks and soils, including those in the local environment I can observe rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; I can use hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them
.	I can sort materials into groups by a given criteria? I can explain how solid shapes can be changed by squashing, bending, twisting and stretching	I can explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching)	I can describe and explain how different rocks can be useful to us
	I can explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent.	I can identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass).	I can research and discuss the various kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. I can describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed
		I will find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam	I can explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. I can raise and answer

		questions about the way soils are formed.

FROG

Electricity

	identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	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
	n construct simple series ircuits, trying different omponents, for example, ulbs, buzzers, and motors, nd including switches, and se their circuits to create imple devices	Building on my work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers, and motors.
	I can draw the circuit as a pictorial representation	**I will learn how to represent a simple circuit in a diagram using recognised symbols.**
	I can **observe patterns, for example, that bulbs get brighter if more cells are added.**	**I can systematically identify the effect of changing one component at a time in a circuit**
	I know that metals tend to be conductors of electricity, and that some materials can, and some cannot be used to connect across a gap in a circuit.	**I can** designing and making a set of traffic lights, a burglar alarm or some other useful circuit.