Misterton Primary and Nursery School - Progression In Science

Key Areas	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically							
Questioning	Know that questions can be asked.	Know that simple questions can be asked to find answers.	Know that answers to observations can be found by asking questions.	Know that answers to observations can be found by asking relevant questions.	Know that straightforward scientific evidence can be used to answer questions and support own findings.	Know that other sources of information (secondary sources) will help answer questions that cannot be answered through practical investigations.	Know that the use of questioning can be used to support own evidence and help when talking about how scientific ideas have developed over time.

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Observation over time	Know that observation is a key skill of a scientist. Know that comparisons can be made through observation.	Know that observations can be made using simple equipment. Know that changes can be recorded through observation.	Know that equipment can be selected to observe change over time. Know that observations can be measured.	Know that observations need to be careful and systematic.	Know that choices can be made on what to observe and how to measure it. Know that standard units of time in minutes and seconds can be used when accurately observing.	*Know that observations can be made on a variety of scientific activities.* *Know that times of observation will vary according to the requirements each experiment.*	Know that observations require: identifying the measurements required, selecting the equipment needed and taking precise readings. Know that the interval and range can be taken from a set of observations.

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Comparative and fair testing	Know that we can investigate different areas of science practically. Know that objects, materials and living things can be explored scientifically. *Know that simple predictions can be made.*	Know that predictions can be made. Know that simple tests can be carried out with support.	Know that explanations can be made based on what has happened during an investigation. Know that simple tests can be carried out independently.	Know that an investigation includes simple, practical enquiries. Know that measurements can be taken using a range of equipment. Know that comparative tests can be carried out.	Know that there is more than one variable factor. Know that fair tests can be carried out.	Know that some variables need to be controlled. Know that results can lead to further prediction and the design of further comparative tests. Know that methods can be improved.	Know that there are explanations behind needing to control variables. Know that there are reasons for improving methods. Know that the correct units must be used when measuring accurately and precisely.
Identifying and classifying	Know that living and non-living things can be classified.	Know that living and non-living things can be classified and compared.	Know that living and non-living things can be classified and compared through methods of sorting and grouping.	Know that identified criteria will determine how living and non-living things are classified. Know that keys can be used when grouping, sorting and classifying.	Know that scientific ideas and processes determine how living and non-living things are classified and sorted.	Know that detailed classification models can be used to sort living and non-living things.	Know that own classification methods can be chosen and developed in order to sort living and non-living things.

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Gathering and recording	Know that patterns exist within scientific phenomena.	Know that patterns can be identified within scientific phenomena.	Know that relationships can be identified within scientific phenomena.	Know that patterns can be naturally occurring. Know that conclusions can be formed based on findings. Know that a range of bar charts, tables and pictograms are used to show measurements.	Know that patterns can be identified in results. Know that patterns can be identified through data collection.	Know that causal relationships can be identified. Know that data can be interpreted to find patterns. Know that data can be gathered, recorded, classified and presented in a variety of ways which include scientific diagrams, labels, keys, graphs and tables. Know that repeated and precise recordings must be taken.	Know that patterns can be found in the natural environment. Know that evidence can support / refute causal relationships.
Research using secondary sources	Know that questions can be asked to find answers.	Know that simple secondary sources can be used to find answers.	Know that questions can be researched to find answers.	Know that questions can be researched to find answers using secondary sources	Know that answers to questions using secondary sources can be reported in different ways.	Know that research can be presented in different formats.	Know that research can be presented using different formats, selecting the best format for the information being shared.
Biology							

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Plants	Know that plants grow and are usually green. Know that plants change as they grow. Know that we use plants for food.	Know that plants can grow in different places. Know the names of a variety of common wild and garden plants, including deciduous and evergreen trees. Know how plants change over time and grow, for example the leaves falling off trees and buds opening. Know that flowering plants and trees have a basic structure e.g. roots, stem, petals, flower/seed.	Know how plants grow from seeds and bulbs. Know that plants need water, light and suitable temperature to grow and stay healthy.	Know that the requirements for life vary from plant to plant e.g. desert plants, house plants etc. Know how water is transported within plants. Know that plants have a life cycle. Know that pollination, seed dispersal and seed formation play a role in the life cycle. Know that different parts of plants have different functions.	*Know the life cycle of a plant.* *Know how plants transport water accurately.* *Know how the functions of a plant works.*	*Know accurately the parts of a flowering plant.* *Know what the function of each part of the plant is.* *Know that plants can cross pollinate and create different varieties.*	*Know that knowledge of plants can be applied to work on life cycles.*

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Animals including humans **Evolution and inheritance**	Know that changes occur when animals grow.	Know that there are a variety of different common animals and there are differences between them. Know that there are differences between carnivores, herbivores and omnivores. Know the animal groups of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). Know which part of the body is associated with each sense. Know that there are basic parts of the human body.	Know that animals, including humans, have offspring which grow into adults. Know that eating the right amounts of different types of foods is important. Know that humans and animals have basic needs for survival. Know that exercise is important for humans. Know that hygiene is important for humans.	Know that humans and some other animals have skeletons and muscles for support, protection and movement. Know that animals, including humans, need the right types and amount of nutrition and cannot make their own food e.g. food groups and food pyramid.	Know that there are different types of teeth in humans and their different functions. Know that the basic parts of the human digestive system have specific functions. Know that there is a difference between producers, prey and predators which can be shown in a food chain.	Know that there are changes in humans as they get to old age.	Know that the main parts of the human circulatory system each have a specific function. Know that diet, exercise, drugs and lifestyle all have an impact on the way bodies function. Know that nutrients and water are transported within animals, including humans. Know that fossils provide information about living things that inhabited the earth millions of years ago. Know that adaptation may lead to evolution.

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Living things and their habitats	Know that living things have similarities and differences.	*Know a habitat is where living things would naturally live.* *Know some common habitats e.g. forest, river, artic.*	Know that something that is living, dead or never been alive has different characteristics. Know that most living things live in habitats to which they are suited. Know how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other. Know a variety of plants and animals in their habitats, including microhabitats.	*Know what living things need to survive.*	Know that living things can be grouped into a variety of ways. Know that classification keys can be used to identify living things. Know that environmental change can pose a danger to living things.	Know that life cycles are different between mammals, amphibians, insects and birds. Know that reproduction is a life process in plants and animals.	Know that living things can be classified into broad groups including microorganisms, plants and animals using characteristics. Know that living things produce offspring of the same kind but they are not identical to their parents. Know that animals and plants are adapted to suit their environment.
Seasonal changes	Know that the features of their own immediate environment might vary from one another.	Know that the weather and environment changes across the four seasons. Know that day length varies	*Know weather patterns across the four seasons.* *Know the difference between night and day.*	*Know that shadows lengthen and shorten depending on the position of the sun and time of day within each season*	*Know when in a calendar year the lengths of days and nights vary.*	*Know that changes in the natural world have an effect on seasonal changes.*	*Know how the seasonal changes affect other aspects of science e.g. life cycles and seed dispersal.*

		across the four seasons.	*Know that there are similarities and differences between the weather and environment across the four seasons.*				
Chemistry							
States of matter	*Know that water turns to ice when it is cold.* *Know that ice melts when it is hot.* *Know that ice can be slippery.*	*Know and use words related to temperature e.g. hot, cold, melt, freeze.*	*Know that materials can be changed.*	*Know the difference between melting and dissolving.*	Know that some materials change state when they are heated or cooled. Know that evaporation and condensation are part of the water cycle. Know that objects can be described by their states of matter - solids, liquids and gases. Know that temperature can be measured in Degrees Celsius.	Know that there are reversible changes. Know that there are irreversible changes. Know that, using knowledge of solids, liquids and gases, those mixtures might be separated by filtering, sieving or evaporating.	*Know that knowledge of states of matter can be applied when working in other scientific areas.*

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Use of everyday materials **Rocks**	Know that there are similarities and differences in relation to materials and objects.	Know that there is a difference between an object and the material from which it is made like wool and jumpers. Know that everyday materials have varied physical properties and can be grouped using these. Know that there are a variety of different everyday materials, including wood, plastic, glass, metal, water and rock.	Know that some materials including wood, metal, plastic, glass, brick, rock, paper and cardboard are more suitable for a specific task than others. Know that the shape of solid objects from some materials can be changed by squashing, bending, twisting and stretching. *Know that there are different rocks and be able to name some.* *Know that fossils are formed within rocks.* *Know that soils are made from rocks.*	Know that there are different kinds of rocks that can be grouped based on their appearance and physical properties. Know that fossils are formed when things that have lived are trapped within rock. Know that soils are made from rocks and organic matter.	*Know which rocks are formed when a volcano erupts.* *Know how soil composition is effected around the base of a volcano.* *Know which every day materials allow electricity to flow through them.*	Know that everyday materials can be grouped together based on their properties (hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. Know that there are particular uses of everyday materials including metals, woods and plastics.	*Know that knowledge of materials and their properties can be applied to other scientific areas e.g. when exploring how light travels and how the path of light can be altered.*
Physics							

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Light	*Know that a light can be turned on and off.* *Know that it is light in the day and dark at night.*	*Know some sources of light.*	*Know that there are similarities and differences between light and dark.*	Know that light is needed in order to see things. Know that dark is the absence of light. Know that objects can be described as opaque, translucent and transparent. Know that shadows are formed when light is blocked by an opaque object. Know that shadows can change in size and spot patterns related to this. Know that light from the sun can be dangerous and that eyes need protection.	*Know how light is created using an electrical appliance.* *Know which materials offer the most effective reflection.*	*Know that light can be bent using prisms.* *Know that light can damage eyes.* *Know how to protect eyes from bright light.*	Know that light appears to travel in straight lines. Know that objects are seen because they give out or reflect light. Know that shadows have a similar shape to the objects that cast them. Know that we see because light travels from light sources, to objects to our eyes.
	Know that sound can be made by using musical instruments.	*Know that sounds can be louder or quieter depending on*	*Know that sounds are quieter the further away you are and vice versa.*	*Know that sound can be made in a variety of different ways.*	Know that sounds are made by vibrations.	*Know that sound travels through different mediums.*	*Know that when creating pieces of music knowledge of sounds can be*

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Sound	*Know that we use our ears to hear sounds.* *Know that you need to listen carefully in order to hear certain sounds.*	*where they are coming from.* *Know that sound can be used to identify where someone or something is.*			Know that vibrations from sounds travel through a medium to the ear. Know that there are patterns between the pitch of a sound and features of the object that produced it. Know that there are patterns between the volume of a sound and strength of the vibrations of the object that produced it. Know that sounds get fainter as the distance from the sound source increases.		*used to create carrying effects.*

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Forces and magnets	Know that distance and speed can be related. Know that the speed of an object can be changed.	*Know that metal is magnetic.* *Know that the harder you push something the faster/ further it will go.*	*Know that distance and speed are related.* *Know that things are magnetic and not magnetic.*	Know that things move differently on different surfaces. Know that some forces need contact between two objects. Know that magnetic forces can act at a distance. Know that magnets attract and repel each other. Know that magnets attract some materials and not others. Know that magnets have two poles. Know that magnets will attract or repel each other.	*Know that the North and South Poles are polar opposites and this has an effect on Earth.*	Know that unsupported objects fall to Earth because of gravity. Know that air resistance, water resistance and friction will affect how objects move between surfaces. Know that mechanisms including levels, pulleys and gears allow a smaller force to have a larger effect.	*Know that knowledge of forces can be applied to other scientific areas.*

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Electricity	*Know that you need to be careful when using electrical equipment.* *Know that you need to listen to an adult and be safe when using electrical appointment.* *Know that some electrical equipment can be turned off and on.*	*Know that electricity is a type of power and can make things work.* *Know that electricity has to be made.*	*Know that electricity can be dangerous.* *Know the similarities and differences between electrical items.*	*Know that electricity is a source of power which can be made in different ways.*	Know that common appliances rely on electricity. Know that there are basic parts of a series circuit including cells, wires, bulbs, switches and buzzers. Know that there are reasons that a lamp will or will not light in a series circuit. Know that a switch opens and closes a circuit. Know that some materials are conductors or insulators.	*Know what to do in an electrical emergency.* *Know that electricity can be harmful to living things.*	Know that the brightness of a bulb or loudness of a buzzer is associated with the voltage in the circuit. Know that symbols are used when representing a simple circuit in a diagram. Know that there are variations in how components function.

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Earth and Space	Know that there is a sun and moon. Know that we live on earth.	*Know that there are other planets as well as earth and these are all different.*	*Know some facts about the sun and moon.* *Know some facts about Earth.*	*Know that the planet Earth has a core, mantle and crust.*	*Know how planet Earth is constructed/formed and how this affects volcanoes, mountains and earthquakes (including tectonic plates).*	Know that the movement of the moon is relative to the Earth. Know that the sun, moon and Earth are approximately spherical bodies. Know that the Earth's rotation creates day and night and the apparent movement of the sun across the sky. Know that the movements of the Earth and other planets are relative to the sun in the solar system.	*Know how shadows are formed and how they change throughout the day.*