St Mark's CEP school Curriculum progression grids

Subject: Science

		EYFS	Year 1/ 2	Year 3/ 4	Year 5/6
Working Scientifically	Asking Questions	• Encourage children to ask questions about what is around them and why things occur/ appear as they do • Use questioning to encourage the children to consider problems posed to them	• Encourage children to ask questions about what is around them and why things occur/ appear as they do • Use questioning to encourage the children to consider problems posed to them • Begin to use the vocabulary of '**prediction**'	• Children to gain confidence in using the term '**prediction**' • Children to be given opportunities to discuss the reasons behind predictions so that they can justify their own predictions with some • Children to attempt to apply scientific vocabulary from discussions/ word banks when forming predictions	• Children to be confident in using the term '**prediction**' • Children should support predictions with detailed prior understanding/ knowledge of the world or personal experiences • Children to use topic-specific scientific vocabulary when justifying their predictions
	Measuring and Recording	• Photographic evidence may be gathered to support children's comments/ discoveries • Use vocabulary such as 'more', 'less', 'different', 'taller', 'shorter' etc • Children may attempt to draw a picture of what they did with annotations from their Class Teacher/ Key Person.	• Photographic evidence may be gathered to support children's comments/ discoveries • Vocabulary such as 'more', 'less', 'different', 'taller', 'shorter' etc should be used confidently by the children and they may use • Observe closely, using simple equipment e.g. magnifying glasses, mini-beast hunts, leaf collecting, tree/ bark rubbings • Children should perform simple tests with increasing independence • Develop ways to gather and record data to help in answering questions in small groups or as a class • Class teachers may produce a class pictogram or bar chart for the benefit of discussing results later to begin exposing them to various recording methods	• Photographic evidence may be gathered to support children's activities for the children to annotate/ explain • Children should be encouraged to make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Children should increasingly make decisions about what they will record and when e.g. time intervals, who does what as part of a group etc • Children should be taught a range of methods for recording findings using simple scientific language, drawings, labelled diagrams, keys, pictograms, bar charts, and tables where appropriate. The class teacher might collate results from the class to use later • Children may find opportunities to gather, record, classify and present data in a variety of ways to help in answering questions	• Children to develop independence in selecting methods for recording – use of class camera/ iPads to take own photos • Through planning child-led investigations, children should decide what they will be recording based on their initial question • Children should be encouraged to make systematic and careful observations using scientific vocabulary to explain what is happening and linking their observation to what they predicted • Children should show an awareness of organising the gathering of data i.e. timings, allocating roles of group members etc • Where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and features of a data logger i.e. ^{o}C, dB and Lux • Where a standard measure is not suitable, children should take ownership of forming their own scale for which there is a clear key or explanation for • Children should be taught a more extensive range of methods for recording findings such as line graphs (which may include two sets of data to compare), scatter graphs simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables where appropriate

	Analysing Data and Concluding	• Through 1:1, group and class discussions, children should be able to make attempts to articulate what they saw/ felt/ heard happening • Encourage children to use vocabulary such as 'because', 'so', 'when'	• Children may respond to graphs made by the teacher following an investigation • Discussion of patterns, observations, changes, physical evidence that has been gathered • Children should attempt to explain why something happens with careful and structured questioning from the Class Teacher/ TP • Children might make links to their personal experiences • Teachers to begin modelling naming scientific processes so that children can apply this when making connections in later units of learning in the science curriculum	• Children should develop skills in identifying differences, similarities or changes related to simple scientific ideas and processes • Language use should become more technical and precise in referring to knowledge and understanding previously learnt • Have opportunities to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions in small groups and to the class • Children are expected to use straightforward scientific evidence to answer questions or to support their findings referring to result tables, graphs, photographic evidence collected • Relationships between one process and another may be explored giving reasons where possible	• Skills of identifying scientific evidence that has been used to support or refute ideas or arguments should be more prominent and natural following an investigatory task • Clarity should be seen when children report and present 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 • Children should show independence when selecting suitable vocabulary and structure in explaining their data, referring to results tables and graphs where appropriate • Group/ paired discussions should be encouraged so that children openly and confidently explain what has been observed and attempts to draw on prior learning/ knowledge should be evident • Children may question one another or another group about their findings to *dig deeper* into what they found out
	Evaluating	• Simple questioning can be used to ascertain success of a task e.g. 'Do you think that went well?' 'Did you like doing that?' 'Was that fun?' • Encourage the notion of carrying out something more than once e.g. 'We'll have to try that again one day.'	• Further, more open-ended questioning can be used to ascertain success of a task e.g. 'What did you do well?' 'What did you think about that investigation?' 'Could we do something better/ different next time? ' 'What did we find out?' • Encourage the notion of carrying out something more than once e.g. 'What will happen if we do it again?' 'Can we make the investigation better?' • Children may suggest further questions which could be prompted by the class teacher using phrases such as 'I wonder…' and 'What if…?'	• Further encourage the notion of carrying out something more than once e.g. 'If we did this investigation again, what would you expect to happen?' 'Why didn't we all get the same results?' 'Why do scientists need to test things several times?' 'What do you think would happen if we did it again but changed….?' • Children may suggest further questions independently which should be discussed in groups/ as a class • Children should begin to consider how what they find out may impact something in the world around them to give their work value and purpose • Children should be able to make comments about what went well and what they would carry out differently if they were to do it again	• Children should be able to pose further questions that could be explored following on from what they have found out • In-depth predictions should be made linking all their prior and new learning if a new question was asked of them • Connections should be made between their findings and what they know of the world around them

Unit Specific Progression

	EYFS		
	Pupils should be taught to: Explore materials with different properties. Talk about the differences between materials and changes they notice. Explore natural materials, indoors and outside. Explore and respond to different natural materials. Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. Explore how things work. Explore and talk about different forces they can feel. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.		
	Year 1		
Seasonal Change	Pupils should be taught to: • observe changes across the four seasons (photos/ monthly journal entry) • observe and describe weather associated with the seasons and how day length varies (collect rainfall, use a thermometer) • understand how we can live comfortably during different seasons (clothing, changes we make in our homes etc)		
	Year 1	Year 2	Year 3

Plants	Pupils should be taught to: • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • explain the difference between evergreen and deciduous trees • identify and describe the basic structure of a variety of common flowering plants, including trees	Pupils should be taught to: • understand that different plants grow from seeds and bulbs • 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 through investigatory tasks • study changes that occur in a plant such as a fruit tree	Pupils should be taught to: • 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 (transpiration stream) • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal • recognise the importance of bees in the natural world
	Year 3		Year 6
Light	Pupils should be taught to: • identify a range of light sources • recognise that they need light in order to see things and that the dark is the absence of light • notice that light is reflected from certain surfaces • recognise that light rays from the sun can be dangerous and that there are ways to protect their eyes and skin • 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 size of shadows changes at different times of day		Pupils should be taught to: • sort a range of light sources • 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 • build on understanding of reflective surface and how they can benefit everyday lives (safety) • 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 • understand the parts and functions of a human eye • make a periscope to demonstrate travel of light, angle of incidence and angle of reflection
	Year 1		Year 2

Everyday Materials and their uses	Pupils should be taught to: • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties	Pupils should be taught to: • 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 • show an understanding of environmental aspects such as the reduce, reuse, recycle slogan • share what they understand about recycling and what they do at home or in the local community to help reduce environmental impact
	Year 4	Year 5
States of Matter/ Changes of materials	Pupils should be taught to: • understand the molecular structure of solids, liquids and gases • compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • understand that these changes of state can be either reversible or irreversible • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature • test the rate at which different solids melt/ different liquids freeze or evaporate • recognise that liquids can range in viscosity	Pupils should be taught to: • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda
	Year 3	
Rocks and Soils	Pupils should be taught to: • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • name and identify processes in the rock cycle • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise the properties of soils and that they are made from rocks and organic matter • identify other materials we can obtain from the rocks/ levels of rock on our Earth	
	Year 3	Year 5

<table>
<tr><td>Forces</td><td>Pupils should be taught to:
• compare how things move on different surfaces
• notice that some forces need contact between two 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 on whether they are attracted to a magnet, and identify some magnetic materials
• describe magnets as having two poles
• predict whether two magnets will attract or repel each other, depending on which poles are facing</td><td>Pupils should be taught to:
• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
• identify the effects of air resistance, water resistance and friction, that act between moving surfaces
• recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</td></tr>
<tr><td></td><td colspan="2">Year 4</td></tr>
<tr><td>Sound</td><td colspan="2">Pupils should be taught to:
• identify how sounds are made, associating some of them with something vibrations
• recognise that vibrations from sounds travel through a medium to the ear via sound waves
• understand the differences between pitch and volume (understand the terminology of frequency)
• find patterns between the pitch of a sound and features of the object that produced it
• find patterns between the volume of a sound and the strength of the vibrations that produced it
• recognise that sounds get fainter as the distance from the sound source increases
• identify, name and understand the functions of parts of the human ear</td></tr>
<tr><td></td><td colspan="2">Year 5</td></tr>
<tr><td>Earth and Space</td><td colspan="2">Pupils should be taught to:
• describe the movement of the Earth, and other planets, relative to the Sun
• describe the movement of the Moon relative to the Earth
• describe the Sun, Earth and Moon as approximately spherical bodies
• use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky
• name and order the planets of our solar system
• recognise the different conditions on the planets of our solar system and why these may occur in relation their distance from the sun
• understand that the moon has ‘phases’, when these may occur and how they appear to us</td></tr>
<tr><td></td><td>Year 2</td><td>Year 4</td><td>Year 5</td><td>Year 6</td></tr>
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Living things and their habitats	Pupils should be taught to: • explore 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 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	Pupils should be taught to: • 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 • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food • understand the difference between a food chain and a food web • recognise that environments can change and that this can sometimes pose dangers to living thing	Pupils should be taught to: • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (draw on their understanding from Year 4 classification of living things) • describe the life process of reproduction in some plants and animals	Pupils should be taught to: • 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 • understand the behaviour of micro-organisms and their positive and negative roles in biology • develop their understanding of how plants and animals are differ in terms of cell structure i.e. why plants need chlorophyll and a rigid cell wall • give reasons for classifying plants and animals based on specific characteristics • recognise the value of antibiotics, vaccines and medicines
	Year 4		Year 6	

Electricity	Pupils should be taught to: • 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 • recognise some common conductors and insulators, and associate metals with being good conductors • recognise the use of insulators to make sure electrical appliances are safe as well • understand how to work safely with electrical equipment			Pupils should be taught to: • 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 • put their knowledge and understanding into practise by taking on an electrical STEM challenge		
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Animals including humans	Pupils should be taught to: • 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 • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Pupils should be taught to: •notice that animals, including humans, have offspring which grow into adults •find out about and describe the basic needs of animals, including humans, for survival (water, food and air) •describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Pupils should be taught to: • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement • identify and name key skeletal structures/ parts in the human body	Pupils should be taught to: •understand that all living things function through the seven processes of MRS GREN (movement, respiration, sensitivity, growth, reproduction, excretion and nutrition) •identify, name and 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 processes involved in digestion including the names of common enzymes in the body	Pupils should be taught to: • describe the changes as humans develop to old age **LINKS TO THE SRE COVERAGE IN THIS YEAR'S LEARNING**	Pupils should be taught to: • identify and name the main parts of the human circulatory system • describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans
	Year 6					
Inheritance and Evolution	Pupils should be taught to: • 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 • understand how genetics plays a role in determining the DNA/ characteristics of offspring • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution • make connections between adaptations and extinction • have an awareness of genetic disorders					