Progression of Skills in SCIENCE KNOWLEDGE
Chapel Allerton Primary

The National Curriculum Programme of Study for Science describes a sequence of knowledge and concepts, processes and methods. This sequence of knowledge and concepts is arranged as progressive blocks of key ideas in Biology, Chemistry and Physics, alongside a progression in the skills of Working Scientifically. The conceptual ideas in Biology, Chemistry and Physics build on each other and children need to develop a strong understanding of each set of ideas in order for the next set to make sense and for them to make progress. The Programme of Study is set out year by year for Key stages 1 and 2 but each science topic is not covered in every year. It is therefore important that teachers and children know where each block of ideas fits into the overall sequence. The National Curriculum statements have been edited into key ideas statements. The source of each key idea is identified by the year group and the Programme of Study topic heading. Some additional statements have been added to make important links between ideas.

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BIOLOGY:	Y1	Y2	Y3	Y4	Y5	Y6
LIFE PROCESSES	Different animals need different types of food **Y1** Animals, including humans	Some things are living, some are dead and some have never been alive **(Y2** Living things and their Habitats) For living things to survive: Plants need water, light and warmth **(Y2** Plants) Animals need water, food and air **(Y2** Animals, including humans) To stay healthy animals need exercise, a balanced diet and hygiene **(Y2** Animals, including humans)	To stay healthy plants need light, water, nutrients and room to grow **(Y3** Plants) Animals cannot make their own food **(Y3** Animals, including humans)		Plants and animals need to reproduce **(Y5** Living things and their habitats) Some substances and lifestyle choices can have a negative impact on health **(Y6** Animals, including humans)	Some substances and lifestyle choices can have a negative impact on health **Y6** PSHCE

BIOLOGY:	Y1	Y2	Y3	Y4	Y5	Y6
PLANTS	Flowering plants have different parts – roots, stems, leaves,` flowers, fruit, seeds **Y1** Plants		Different parts of flowering plants have different functions Roots and stems – nutrition, transport of water and support Leaves – nutrition Flowers – reproduction **Y3** Plants			
ANIMALS including HUMANS	Animals, including humans, have different body parts ... and these have special functions to help them survive (including senses) **Y1** Animals, including humans	Many animals, including humans, have skeletons and muscles for support, protection and movement **Y3** Animals, including humans	Many animals, including humans, have skeletons and muscles for support, protection and movement **Y3** Animals, including humans	Animals and humans have teeth to help them eat **Y4** Animals, including humans Food is broken down further in the stomach and intestine and absorbed into the blood stream with water **Y4** Animals, including humans	Oxygen is taken into the blood in the lungs; the blood is pumped by the heart to take oxygen and nutrients to the muscles **Y6** Animals, including humans	
BIOLOGY:	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
CLASSIFICATION Identifying and classifying increasing range from the familiar to the unfamiliar Classifying into more specific groups by increasingly detailed characteristics There is an enormous range of living things (organisms) Organisms are classified into groups at different levels based on similarities in observable characteristics Differences between organisms are used to identify and name them as individual species	Plants are grouped into common wild and garden plants, deciduous and evergreen trees. Animals are grouped into fish, amphibians, reptiles, birds, mammals **Y1** Plants **Y1** Animals, including humans Plants and animals can be grouped using observable features **Y1** Plants **Y1** Animals, including humans	Animals and plants can be identified and grouped. This is linked to habitat.**Y2** Living things and their habitats		Plants and animals can be grouped using a wider range of characteristics **Y4** Living things and their habitats Keys are used for the identification of animals and plants **Y4** Living things and their habitats		The grouping of organisms becomes more detailed, depending on the purpose of the classification A wider range of living things including micro-organism can be identified **Y6** Living things and their habitats

LIFE CYCLES Plants and animals grow and change over the course of their lives		Plants: seeds and bulbs grow into plants **Y2** Plants Animals, including humans, reproduce offspring which grow into adults **Y2** Animals, including humans	Plants make seeds to produce more plants (sexual reproduction) **Y3** Plants		Plants can reproduce asexually **Y5** Living things and their habitats Life cycles differ for different species **Y5** Living things and their habitats Human development has different stages between birth and death **Y5** Animals, including humans	Living things produce offspring of the same kind, but not identical **Y6** Evolution and inheritance
INTERDEPENDENCE All living things are inter-dependent		Different plants and animals live in different places to which they are suited – by giving them food and shelter **Y2** Living things and their habitats Animals get their food from plants and other animals and in turn are consumed by other animals **Y2** Living things and their habitats		Nutrients made by plants move to primary consumers and then to secondary consumers through food chains **Y4** Animals, including humans		Adaptation may lead to evolution **Y6** Evolution and inheritance Living things have changed over time **Y6** Evolution and inheritance Plants and animals are adapted to suit their environment **Y6** Evolution and inheritance Environmental change and human impact affects different habitats differently **Y6** Living things and their habitats

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CHEMISTRY:	Y1	Y2	Y3	Y4	Y5	Y6
MATERIALS Describing and using materials	Different materials have different properties **Y1** Everyday materials There are different materials and they are used to make different objects **Y1** Everyday materials Materials can be sorted into groups according to their observable properties **Y1** Everyday materials	Different materials are suitable for different uses (properties that can be observed) **Y2** Uses of everyday materials	Different materials, including rocks, have different properties **Y3** Rocks	Materials can be solids, liquids or gases **Y4** States of Matter	Different properties make materials suitable for different uses (properties that can be measured) **Y5** Properties and changes of materials Materials can be sorted into groups according to properties including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets **Y5** Properties and changes of materials	

CHEMITRY:	Y1	Y2	Y3	Y4	Y5	Y6
CHANGING MATERIALS Materials can be changed Mixtures occur when materials are mixed together but don't react to each other		The shape of some solid materials can be changed by a contact force acting on them **Y2** Uses of everyday materials		Some materials change state when heated or cooled Heating causes melting and evaporation Removing heat causes condensing and solidifying (freezing) **Y4** States of Matter	Some materials will dissolve in a liquid **Y5** Properties and changes of materials Changes including baking, burning and the reaction of certain chemicals result in new materials **Y5** Properties and changes of materials Dissolving, mixing and changes of state are reversible changes **Y5** Properties and changes of materials Changes that result in new materials are not usually reversible **Y5** Properties and changes of materials	
CHEMISTRY:	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
MIXING AND SEPARATING MATERIALS Materials can be mixed together			Soils are a mixture of rocks and organic matter **Y3** Rocks Fossils are formed when trapped within rock **Y3** Rocks		Mixtures can be separated by filtering, sieving and evaporating **Y5** Properties and changes of materials	

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PHYSICS:	Y1	Y2	Y3	Y4	Y5	Y6
LIGHT	We see with our eyes **Y1** Animals, including humans		We need light to see things Darkness is the absence of light **Y3** Light There is a variety of sources of light, including the Sun Light travels from a light source in a straight line When light hits a material, some of it is reflected off the material **Y3** Light Some materials let light pass through them Some materials block the light and a shadow is formed **Y3** Light Sunlight can be dangerous **Y3** Light Some materials reflect light better than others The size of shadows change according to the size and shape of objects and distance from the light source **Y3** Light			Light travels in straight lines **Y6** Light We see light from a source reflected off an object into our eyes **Y6** Light Shadows and reflections are different Shadows have the same shape as the object that casts them **Y6** Light

PHYSICS:	Y1	Y2	Y3	Y4	Y5	Y6
SOUND	We hear with our ears **Y1** Animals, including humans			Sounds can be different Sounds are made when something vibrates Sound travels through a medium (solid, liquid or gas) Sound travels in all directions from a source Sounds get fainter the further they are from the source The nature of sounds depends on how the vibrations are produced The volume of a sound can be changed The pitch of a sound can be changed Some materials reflect sound; some absorb sound and act as sound insulators **Y4** Sound		
PHYSICS:	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
ELECTRICITY				Electrical appliances need a source of electricity to work Everyday appliances connected to mains electricity must be used safely. Some devices use batteries which can be handled carefully. A complete circuit is needed for an electric current to flow A circuit is made up of different components A switch opens and closes a circuit Some materials are better conductors than others **Y4** Electricity		When a battery or cell is connected in a circuit, it provides a push (voltage) that causes electrons (current) flow in a circuit There are recognised symbols for circuits and their components An increase in voltage will cause an increase in current For a fixed voltage an increase in resistance will cause a decrease in current. Some components can resist the current more than others. **Y6** Electricity

PHYSICS:	Y1	Y2	Y3	Y4	Y5	Y6
FORCES		Forces arise between two objects Pushing and /or pulling can make things start moving, stop, go faster or slower **Y2** Uses of everyday materials	Pushing and /or pulling can make things start moving, stop, go faster or slower or change their shape Some forces need contact between two objects (contact forces) Some forces act between objects although they are not in contact (non-contact forces) Magnets can act at a distance Magnets exert attractive and repulsive forces on each other Some materials are magnetic, some are not When one object moves over another one there will be a force between them that opposes motion. This is called friction. **Y3** Forces and magnets		Drag forces resist movement The force of gravity caused by the Earth pulls objects towards its centre Some mechanisms allow a smaller force to have a greater effect **Y5** Forces	

PHYSICS:	Y1	Y2	Y3	Y4	Y5	Y6
EARTH in SPACE	Temperature and day length changes over the year – this pattern is referred to as the seasons **Y1** Seasonal change				The Sun appears to move across the sky The Earth, Sun and Moon are approximately spherical The Earth is one of eight planets that orbit the Sun The Earth orbits the Sun once every year The Earth rotates on its own axis once every 24 hours The Earth rotates on its own axis once every 24 hours The Moon orbits the Earth and looks different at different times of the month The seasons change as the Earth's position changes relative to the Sun It is due to the rotation of the earth that we experience day and night **Y5** Earth and space	