Year 5 Progression in Science Grid					
Topic	**States of matter**	**Forces**	**Space**	**Animals including Humans**	**Living things and their habitats**
Prior knowledge	**From Y1** Distinguish between an object and the material from which it is made Describe the simple physical properties of a variety of everyday materials Organise objects or materials into groups **From Y2** Describe different uses of materials according to their properties.	**From Y3** Group materials according to their magnetic properties	**From Y1** I can explain the changes that occur across the seasons	**From Y1** Name the main parts of the body, including those related to the 5 senses Identify which animals are fish, amphibians, reptiles, birds and mammals **From Y2** Describe the basic needs of humans and other animals (water, food, air). Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans. **From Y3** Explain some functions of skeletons and muscles in animals Identify that animals need the right types and amount of nutrition **From Y4** Describe the simple functions of the basic parts of the digestive system in humans Describe the importance of and how to correctly brush their teeth	**From Y2** Describe how some plants and animals are suited to different habitats. Describe how animals obtain food by eating plants or other animals. **From Y4 :** Use classification key to identify plants or animals
Prior knowledge for working scientifically	I know... • How to suggest relevant questions • How to give reasons for my predictions • How to set up and perform fair tests • How to make systematic and careful observations • How to take measurements using standard units • How to create simple keys • How to choose appropriate ways to record and present information • How to identify similarities and differences How to draw a conclusion				
Key vocabulary	soft Hard Rough Smooth Stiff Shiny Dull Rough Waterproof Absorbent Opaque Transparent Translucent Texture Conduct Insulate Electrical Thermal Magnetic Solids	Force Contact non-contact gravity falling friction air resistance water resistance newton force metre, drag levers Pulleys Gears Move Surface Material Carpet Tiles Wood	Day Night Light Dark Dim Sunrise Sunset Dusk Earth Moon Reflect Sun Star Rotation Earth’s axis solar system Mercury Venus Mars Jupiter	human development baby toddler child teenager adult puberty gestation length mass grows grow growing hormones fertilisation prenatal infancy old age	Life cycles Mammals Amphibian Insect Bird Reproduction Plants Animals Scales Plants Seeds Stem root cutting tubers bulbs pollen Leaves flowers, blossom petals

	Liquids Gases Dissolve Solution Substance Separated Filtering Sieving Evaporating Reversible irreversible burning oxygen acid bicarbonate of soda carbon dioxide	Lino bubble wrap sandpaper fleece polythene towel	Saturn Uranus Neptune Pluto as a dwarf planet		fruit root bulb seed trunk branches, Sexual reproduction Asexual reproduction Invertebrates insect babies young grow adult egg caterpillar larva, chrysalis pupa head abdomen thorax wings fur feathers stem stigma style anther ovary ovule seed formation seed dispersal
Statutory requirements	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets 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	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.	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 Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	Describe the changes as humans develop to old age.	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.

	associated with burning and the action of acid on bicarbonate of soda.				
Key Performance Indicators	Explain how mixtures can be separated through filtering, sieving and evaporating Explain that some irreversible changes form new materials	Explain that gravity causes unsupported objects to fall towards the Earth Identify the effects of air resistance, water resistance and friction between moving surfaces	Describe the movement of the Earth, and other planets, relative to the sun Explain day and night on earth, and the apparent movement of the Sun	Name the phases of human growth and development Recognise that different mammals have different gestation periods Describe some of the changes during puberty	Describe the life process of reproduction in some plants and animals
Essential knowledge	I know … • Metals conduct electricity and heat • Some materials will dissolve in liquid to form a solution • How to recover a substance from a solution • How to separate mixtures through filtering, sieving and evaporating • That dissolving, mixing and changing states can be reversible changes • Some changes result in the formation of new materials which is not reversible	I know … • Gravity is an invisible force that pulls things to the centre of the earth. • Air resistance is a type of friction between air and another material • Water resistance is a type of friction between water and another material • The greater the velocity of the object the greater the resistance becomes • The bigger the surface area facing the direction, the more resistance impacts you	I know … • The solar system consists of the sun and everything that orbits the sun. • The earth and other planets orbit the sun • The moon orbits the Earth • The Earth, Sun and Moon are spherical • The rotation of the earth causes day and night	I know … • The gestation period of a human • Typical milestones of a foetus • Typical milestones of a baby • Typical milestones of a toddler • The changes experienced in puberty	I know … • The life cycle of a mammal, an amphibian, an insect and a bird • The differences between the above life cycles • The process of reproduction in some plants • The process of reproduction in animals
Investigations and Working Scientifically to be covered	How can we use properties to group materials? - identifying, classifying and grouping How can we separate mixtures? – looking for patterns Reversible and irreversible reactions - identifying, classifying and grouping How can we get drinking water from salty water? In what conditions does ice melt most quickly? – fair testing and observing over time	What happens to a length of spaghetti when different weights are suspended from it? Does the size of a parachute effect the speed at which it falls? Does the size of a parachute effect the speed at which it falls?	How has our understanding of the solar system developed over time? - research using secondary sources How does a sundial work? Researching a planet - research using secondary sources	What are the stages of the human life cycle? - research using secondary sources	How do plants reproduce? – identifying, classifying and grouping Another needed – asexual reproduction? –observing over time
KPIs for Working Scientifically	I know … • How to raise different types of scientific questions • How to recognise and control variables • How to give reasons for my predictions • How to plan and carry out comparative and fair tests • How to take measurements with increasing accuracy • How to record data and results • How to look for different causal relationships • How to suggest improvements in methodology				
Assessment questions	Which materials conduct heat or electricity? How do you form a solution? How can you recover a substance from a solution? How can you separate mixtures? What types of changes are reversible? What types of changes are irreversible?	What is gravity? What is air resistance? What is water resistance? What effect does velocity have on resistance? What effect does surface area have on resistance?	What is the solar system? Which planets orbit sun? Which planet does the moon orbit? What shape are the Earth, moon and sun? What causes day and night?	What is the gestation period of a human? What are some of the typical milestones of a foetus, a baby and a toddler?	Describe the life cycle of a mammal, an amphibian, an insect or a bird. What are some differences between the life cycle of a mammal, an amphibian, an insect or a bird? How do plants reproduce? How do animals reproduce?