Year 5	Science	
	Autumn 1 topic: Properties of Materials	Autumn 2 topic: Changes of materials
National curriculum statements	• 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 • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	• 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.
Retrieval (to support new learning)	Materials year 1 Materials year 2	Materials year 1 Materials year 2
Knowledge statements	To know that materials have a variety of different properties. To know that materials can be grouped based on similar properties. To know that some materials dissolve and some can be recovered.	Explore reversible changes including dissolving, mixing, and changes of state. Explain how irreversible changes differ. Describe how changes can result in the formation of new materials (e.g. burning, acid on bicarbonate of soda, rusting of metals etc.)
Vocabulary	Properties, solubility, transparent, separation, filtering, evaporating	Reversible, irreversible, combustion, effervescence, corrosion
Cultural capital and local resources		

Year 5	Science		
	Spring topic 1: forces	Spring topic 2: Earth and space	
National curriculum statements	• 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	
Retrieval (to support new learning)			
Knowledge statements	Explain that gravity causes objects to fall towards the earth. Identify forces that act between moving surfaces (friction, water resistance, and air resistance.) Know that mechanisms can be used to allow smaller forces a greater effect (e.g. levers, pulleys, gears etc.)	Describe the movement of the planets in the solar system. Know the movement of the moon relative to the earth. Know that the earth, the sun, and the moon are approximately spherical bodies. Explain the sun appearing to move across the sky in the context of earth's rotation.	
Vocabulary	Gravity, friction, air resistance, water resistance, streamlined	Solar system, heliocentric, moon, orbit, axis	
Cultural capital and local resources			

Year 5	Science	
	Summer 1: Living things and their habitats	Summer 2: Animals including humans
National curriculum statements	• 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 the changes as humans develop to old age
Retrieval (to support new learning)		Year 2 animals including humans – reproduction Year 5 – Living things and their habitats – reproduction
Knowledge statements	Explore different lifecycles of mammals, amphibians, insects, and birds. Know the process of reproduction in plants and animals and the importance of documenting living things to highlight their decline in the world.	Identify key stages in a mammal's lifecycle. Know that gestation periods differ across mammals and explore foetal development. Describe changes that occur during puberty. Identify changes that may occur as humans age.
Vocabulary	Reproduction, fertilisation, sexual and asexual, metamorphosis	Gestation, foetus, pregnancy, puberty, hormones
Cultural capital and local resources		

Year 5	Science		
	Autumn topic: Changes of materials	Spring Topic: Forces	Summer topic: Animals including Humans
Upper Key Stage 2 National Curriculum Working Scientifically	During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • 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 • 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 a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments		
National curriculum statements	Pupils should be taught to: • 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 • 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	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	Pupils should be taught to: • describe the changes as humans develop to old age

	usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda		
Retrieval (to support new learning)		Y3 – forces and magnets	
Knowledge statements	1. To be able to explain whether a material is soluble or insoluble. 2. To know that heating a liquid makes material dissolve quicker. 3. To understand which changes are irreversible and reversible. 4. To be able to explain that some changes produce new materials. 5. To know which processes to use to separate mixtures.	1. To know that gravity is a pulling force. 2. To know that gravity acts on all objects on Earth. 3. To know the effect water resistance has on objects in water. 4. To know the effect air resistance has on objects moving through the air. 5. To understand that when forces are unbalanced, movement occurs.	1. To recognise the stages of growth and development in humans. 2. To know the main stages of the gestation period of humans and compare the gestation period with other animals. 3. To recognise the stages of development during childhood and understand the needs of children at those stages. 4. To understand the initial changes inside and outside of the body during puberty 5. To know the changes that occur during puberty and how they differ for boys and girls. 6. To understand how the body changes during adulthood and old age. 7. To identify, order and explain the 6 main stages of human life on a timeline.
Vocabulary	Solid, liquid, gas, solution, soluble, substance, filtering, sieving, evaporation, condensation, melting, freezing, dissolving, physical and chemical change, reversible and irreversible change	Force, gravity, Isaac Newton, forcemeter, newtonmeter, newtons, mass, weight, resistance – air, water, friction, pull, surface, mechanism, lever, pulley, gear	Lifecycle, timeline, development, foetus, baby, infant, child, toddler, teenager, adolescent, adult, old age, puberty, aging, growth, death, reproduction, gestation
Cultural capital and local resources		Link to DT – how to move a boat across the water Link water resistance to swimming lesson	Link to Ten:Ten Puberty lessons School nurse to visit and discuss puberty