Junior Department
KS2 Progression

Subject: **SCIENCE**

Pupils engage with the curriculum through termly themes, narratives and memorable events. Subjects combine in our 3D curriculum which develops learning using horizontal, vertical and diagonal links.

Year A
2024/5 2026/27

	Lower KS2 (Years 3 and 4)			Upper KS2 (Years 5 and 6)		
	Knowledge	**Skills**	**Vocabulary**	**Knowledge**	**Skills**	**Vocabulary**
Theme	*World War Two*			*2000 Years of British History*		
Autumn Term	Know light is important and some ways we use it/dangers of the sun brightness. Know shadows form when light is blocked. Introduction to forces and air resistance through parachute design	Recognise that we need light in order to see things and that dark is the absence of light. Use opaque objects to create shadow. Investigate shadows and find patterns in how shadows change. Design, build, use and evaluate a parachute designed to slow the rate of falling. Explain how the parachute is slowing the rate of descent.	**Air resistance** **Attract** **Blocked** **Danger** **Light** **Opaque** **Parachute** **Poles** **Reflect** **Repel** **Sun**	Know about light and light sources. Light travels in straight lines. Laser to demonstrate. Sizes of shadows. Reflection from objects. Extend to periscopes, parabolic reflectors in torches. Extend into Inca fires. Extend into relative speeds sound and light. Review sound. Know about materials in daily use due to their properties. More to follow in spring term.	Explain how light moves in a light diagram and construct scientifically accurate representations of use of light. Explain shadows as the absence of light Record Lightbulb detail as an invention. Swann vs Edison. Consider rainbows, soap bubbles, shadow puppets and size. Inca fires practical Describe sound and how it travels. Air and water. Doppler effect. Identify parts of a bike and why the materials were chosen based on properties. Think through machines – bicycles design errors to identify. Link materials to their uses based on properties.	**Argon** **Cheap** **Filament** **Flexible** **Focus** **High-friction** **Inert** **Laser** **Lens** **Light** **Opaque** **Parabolic** **Rigid** **Shadow** **Soft** **Strong** **Translucent** **Transparent**
Theme	*Rainforests*			*Water around the World*		
Spring Term	Introduce and identify basic plant parts. Know about water transportation and the lifecycle of flowering plants. Know that solids, liquids and gases can be identified by different properties. Know that heating/cooling changes some materials. Introduction to the water cycle (basic)	Describe what a plant needs to survive. Investigate and understand how water is transported in plants. 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) Associate rate of evaporation with temperature.	**Air** **Condensation** **Evaporation** **Flowers** **Gas** **Leaves** **Light** **Liquid** **Nutrients** **Pollination** **Room/space** **Roots** **Seed dispersal** **Seed formation** **Solid** **Stem** **Trunk** **Water** **Water cycle**	Dissolving and recovering Know depth about solids, liquids and gases. Know about reversible and irreversible changes Extend with bacteria and hygiene linked to purifying water. In depth water cycle.	Compare/group materials by properties. Separate mixtures Create bread experiment – using clear bags and different handprint surfaces. (weeks needed) Design, build, test and evaluate apparatus to purify water. Detailed explanation of water cycle using science terms correctly.	**Conductor** **Evaporating** **Filtering** **Flexible** **Gases** **Hardness** **Insulator** **Irreversible** **Liquids** **Magnetic** **Precipitation** **Reversible** **Shiny** **Sieving** **Solids** **Soluble** **Solution** **Strong**

Theme	*The Wonders of the UK*			*In Living Memory*		
Summer Term	Know that sound is caused by vibration and gets fainter as the distance from source increase. Know that vibrations from sound travel through the air (water) to the ear. Electricity introduction: know common appliances that use electricity. Know a switch opens/closes a circuit.	Identify how sounds are made, associate with vibrating. 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. Construct basic series circuit Predict whether a circuit will work. Recognise common conductors/insulators. Associate metals with good conductors.	**Bulbs** **Buzzers** **Cells** **Conductor** **Energy** **Fading** **Fainter** **Insulator** **Pitch** **Switches** **Vibration** **Volume** **Wires**	Deepen understanding of reproduction in some plants and animals. **Changes in Humans (Y6) forms part of RSE yearly** Classification: Know about key creatures/evidence that may be found on our beach walk. Know food chains can link into food webs Electricity in depth: know about circuit construction and link number of cells to brightness/loudness.	Describe reproduction in some plants/animals Dissect a flowering plant – identify the parts and their functions correctly. Classify living things based on observable features. Extend into Dichotomous identification keys. Prepare beach identification – pictures and notes. Draw and explain the flow of nutrients in food chains linking to form food webs. Build electrical circuits and use symbols in stylised circuit diagrams. Design and build a burglar alarm.	**Battery of cells** **Carpel** **Cells** **Circuit** **Edible crab** **Eggs** **Exoskeleton** **Fertilisation** **Flow** **Fulmer** **Grey seal** **Hermit crab** **Mollusc** **Negative** **Nutrients** **Ovary** **Oystercatcher** **Petals** **Pollination** **Positive** **Seed dispersal** **Seeds** **Series** **Shore crab** **Stigma** **Style** **Vertebrate** **Whelk eggs** (Parallel circuit extension if appropriate)
	Year B **2023/4 2025/26**					
Theme	*Peterborough Through Time*			*Ancient Technology*		
Autumn Term	Know the names and simple functions of types of teeth in humans. Forming a healthy meal – what balance do you need to stay healthy. Know magnetic force acts at a distance. Know magnets have 2 poles Know about different forces and how they act on objects.	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. Describing wise choices about food with a reference to balanced diet and health Compare materials based on magnetic properties. Predict whether magnets will attract or repel based on poles.	**Canines** **Carbohydrate** **Dairy** **Fats** **Fruit** **Health** **Incisors** **Minerals** **Molars** **Nutrition** **Protein** **Vegetable** **Vitamins**	Know about the Earth sun and moon, extend into seasons and equinox/solstice and polar winter. Extend forces knowledge: gravity, air resistance, friction, water resistance. Extend into up-thrust. Know about mechanical advantage. Levers and pullers. Gears on a bike. How did the Ancient Egyptians move pyramid blocks?	Be able to describe forces using correct terminology. Describe the shape and movement of the Earth, and other planets, relative to the Sun in the solar system. Day and night. Be able to name the planets in our solar system – Mnemonic Investigate up-thrust and sails through practical work. Investigate and describe ways that a smaller force can have a greater effect: levers, pulleys and gears.	**Axis** **Crescent** **Equinox** **Geocentric** **Gibbous** **Heliocentric** **Jupiter** **Mars** **Mercury** **Moon** **Orbit** **Pyramid** **Satellite** **Saturn** **Seasons** **Sledge** **Solstice** **Tides** **Tilt** **Toboggan** **Uranus** **Venus** **Waning** **Waxing**

Theme	*Natural Disasters*			*Prehistoric Peterborough*		
Spring Term	Basic introduction to fossil formation. Know that soils are made from rocks and organic matter. Introduction to Plate tectonics **School trip: Natural History Museum**	Compare and group different kinds of rocks using their appearance and simple physical properties. Build a model of the structure of the earth beneath our feet: crust, mantle, core, plates. Geography links.	**Core** **Crust** **Hard** **Mantle** **Plates** **Rough** **Smooth** **Soft**	How do we know something is living? Know about variations in offspring and how this leads to adaptation over time through inheritance and survival. Plant and animal adaptations. Skulls and teeth used for identification. Extend into evolution **School trip: Natural History and Science Museum**	Using and applying MRS NERG to classify living things. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago (In depth explanation of fossilisation linked to topic and geographical processes) Be able to explain Darwin and Wallace's ideas of evolution Describe appropriate adaptations, e.g. great white shark, camel, nettle. Make logical deductions about skulls/teeth. Dissection of owl pellets and mounting. Identification and delicate handling skills	**Adaptive camouflage** **Darwin** **Evolution** **Genetics** **Mouse** **Predator** **Prey** **Rodent** **Scapula** **Skull** **Vertebrae** **Vole** **Wallace**
Theme	*Invaders and Settlers*			*Sports and Healthy Living*		
Summer Term	Know about a range of habitats and groups animals by similar attributes. Know a skeletons basic functions and relate to yourself. What are Organs? Know the process of digestion and vocabulary. Is this the correct term? Know the simple functions of basic parts of the digestive system Know food chains follow the direction of nutrients.	Be able to group creatures and plants based on observable differences and similarities. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Create skeletons with key features included. Describe the function of key organs in the body. Relate practical experiment moving swallowed food to their own bodies. Draw and explain simple food chains.	**Bolus** **Chew** **Excrete** **Intestines** **Intestines** **Oesophagus** **Peristalsis** **Saliva** **Stomach** **Swallow**	Know about life cycle of human, frog, dragonfly and cuckoo. **Changes in humans (Y6) forms part of RSE yearly** Identify main parts of human circulatory system. Blood and functions. Impact of Diet, exercise and drugs. (crossover to PSHCE)	Describe life cycles and old age in humans. Describe how nutrients and water are transported within animals. Write an explanation text about the circulatory system. Explain how training improves performance in athletes	**Arteries** **Capillaries** **Cardiac muscle** **Cocoon** **Contraction** **Dual circulatory system** **Frog** **Froglet** **Heart** **Heartbeat** **Metamorphosis** **Tadpole** **Valves** **Veins**