Science at Locks Heath Junior School

Progression of Substantive strands.

		Year 3	Year 4	Year 5	Year 6
Substantive Knowledge	**Plants (Biology)**	Can explain the function of the parts of a flowering plant. Can explain the life cycle of a flowering plant lifecycle including pollination, seed formation, seed dispersal and germination. Know different methods of seed dispersal. Know the requirements of plant growth and how water is transported through the plant. Know how the sun helps plants photosynthesis. Know terms: photosynthesis, pollen, pollination, absorb, nutrients, reproduce, germination, stamen and style.		Can explain the lifecycles and processes of a range of different plants and trees. Can use ID guides to identify plants. (Living things)	
	Animals including humans (Biology)		Can name the main bones in the skeletal system such as skull, ribs, humerus, vertebrae, pelvis, ulna, carpals, radius, femur, phalanges, patella, tibia, tarsals, fibula, metatarsals. Know the function of the skeletal system. Can describe how muscles and joints help to move. See similarities and differences in skeletons can classify into endoskeleton, exoskeleton and hydrostatic skeleton. Can name different nutrients found in food. Know the different food groups and why we need to eat a balanced diet. Can identify and label and draw main parts of the digestive system and explain the process. Know the different types of teeth in their mouth: molars, pre molars, canines and incisors and their function. Can identify animals and classify based on their teeth whether they are herbivore, omnivore and carnivore. Can order and draw a range of lifecycles and food chains. Can identify the producer, predators and prey.	Can explain the changes that take place in boys and girls during puberty. Can explain how a baby changes physically as it grows and what it is able to do at each stage. Understand that different animals have different gestation periods. Know the importance of physical and mental health. Can identify, label and draw parts of the circulatory system e.g. heart, blood vessels, capillaries, arteries, blood. Understand the function of the different parts. Understand how nutrients are transported around the body within animals and humans. Know the impact of a balanced diet, exercise and lifestyle on the way their body's function. Recognise the impact on all body systems learned so far.	

	Living things/ Evolution and inheritance (biology)	Identify and describe functions of different plants. (Plants) Identify and describe different animals and how they are adapted to live in different environments. Understand the term climate (Animals) Can explain how a fossil is formed (Rocks).	Can name living things in a range of habitats, giving key features that helped identify them. Can give examples of how an environment might change both naturally and due to human impact. Explain how changes in environment can be dangerous to animals and lead to extinction. Know that some animals hibernate.	Describe the lifecycles of mammals, amphibians and insects using diagrams. Can describe similarities and differences between them. Understand the term reproduction in plants and animals. Can give examples in the five vertebrate groups and some in the invertebrate group. Can give key characteristics of these groups. Can give examples of flowering and non-flowering plants. Can identify unknown plants using ID and classification charts. Can explain why animals belong to groups.	Can explain the process of evolution and give examples of how plants and animals are suited/adapted to their environment. Give examples of how animals have evolved over time. Understand that fossils give us evidence of the past and know the process of fossilisation.
	Seasonal Changes (biology) Earth and Space (Physics) Light/Sound (physics)		Light- Can describe how we see objects in light and describe dark as the absence of light. Know it is dangerous to look at the sun. Understand the term ultra violet. Know the terms transparent, translucent and opaque. Can describe how shadows are formed Predict which materials will be more/less visible. Know the term reflective and why reflective materials are useful. Sound- Can describe different types of objects producing different sounds. Know that sound is caused by vibrations. Can describe how sound travels through different mediums e.g air, water, metal. Can find patterns between pitch and volume and the features of the objects producing it. Know that sounds get fainter as the distance from the sound increases.	Earth and space- Know how the earth and moon move. Know different planets in the solar system. Can understand night and day by explaining the rotation of the earth on its axis. Understand why shadows change using scientific vocabulary and the position of the sun. Can explain how a sundial works. Can explain why we have time zones.	Light- Can describe using diagrams how light travels in straight lines, either from sources or reflected from other objects into our eyes. Can explain how we see things and can label basic parts of the eye and explain their function. Can describe with diagrams how light travels past translucent or opaque objects to form shadows of the same shape. Know how to change the size of shadows by moving objects closer/further from light source.
	Materials (Chemistry) **Rocks (Chemistry)**	Compare and group types of rock and give physical features of each. Explain how a fossil is formed. Explain that soils are made from rocks and also contain living/dead matter. Classify rocks in a variety of ways using scientific vocabulary. Test properties of rocks. Describe materials using transparent, translucent and opaque. Can name properties of solids, liquids and gasses. Can explain process of			Recognise that things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago. (Evolution and Inheritance) Can explain every day uses of materials. Can explain what dissolving is. Can name equipment for filtering and sieving. Know how to recover substances from solutions or mixtures by evaporation, filtering or sieving. Can describe

		melting and freezing. Know the terms evaporation and condensation. Can describe the water cycle. Know materials have different melting points. Can test a variety of materials to answer questions.			reversible and non-reversible changes to materials and give examples.
	Forces (Physics) **Electricity (Physics)**	Compare how things move on different surfaces.	Can give examples of forces in everyday life. Name a range of magnets. Know that magnets have a north and south pole. Can show how the poles attract and repel. Can draw diagrams to show the attraction and repulsion between poles of magnets. Can name magnetic and non-magnetic materials Electricity- can name the components in a circuit. Can make a simple circuit. Can control a circuit using a switch. Can name some conductors and insulators. Can use drawings to represent their circuits. Can describe how a circuits works. Can name some appliances that run on battery/mains. Know how to make a bulb brighter.	Can explain the effects of gravity acting on an unsupported object. Can give examples of friction, water resistance and air resistance. Can give examples of the benefits of high/low friction, water resistance and air resistance. Can demonstrate how pulleys, levers and gears work. Know that these systems can make lifting heavy objects easier. Understand different forces and can apply this knowledge across different subjects e.g. geography. Electricity- Understand voltage and amps. Know how to make bulbs brighter, buzzers louder. Can label and name components in a circuit. Can draw circuits using symbols. Make circuits to solve particular problems such as a quiet and a loud burglar alarm.	