



Kingsholm C of E Primary School and Nursery
Science Breadth Map

	Autumn		Spring		Summer	
Nursery						
Communication and Language Understand ‘why’ questions, like: “Why do you think the caterpillar got so fat?”						
Personal, Social and Emotional Development Make healthy choices about food, drink, activity and toothbrushing.						
Understanding the World Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.						
Reception						
	Communication and Language Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts ELG- Listening, Attention and Understanding Make comments about what they have heard and ask questions to clarify their understanding		Personal, Social and Emotional Development Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - sensible amounts of ‘screen time’ - having a good sleep routine - being a safe pedestrian ELG- Managing Self Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.		Understanding the World Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. ELG-The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	
Year 1	Learning Intentions		Learning Intentions		Learning Intentions	
	Vocabulary		Vocabulary		Vocabulary	
New Learning	<u>Everyday Materials</u> - distinguish between an object and the material from which it is made - identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - describe the simple physical properties of a variety of everyday materials - compare and group together a variety of everyday materials on the basis of their simple physical properties. <u>Science – Seasonal Changes</u> <u>(Repeated Each Theme)</u> - observe changes across the 4 seasons <i>Observe and describe weather associated with the seasons and how day length varies</i>	Flexible bendy/not bendy waterproof Absorbant/not absorbent hard/ soft Transparent/opaque Stretchy/stiff shiny/dull Changes made 1.11.22 Autumn Winter Spring Summer season weather	<u>Animals</u> Pupils should be taught to: - identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals - identify and name a variety of common animals that are carnivores, herbivores and omnivores - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Chicks - experience <u>Science – Seasonal Changes</u> <u>(Repeated Each Theme)</u> - observe changes across the 4 seasons - Observe and describe weather associated with the seasons and how day length varies.	Common examples such as frog, toad, rabbit, fox, blackbird, robin, bluetit, snake, shark, trout. Dog, cat, goldfish, parrot etc carnivore omnivore herbivore fur, scales, skin, claws, teeth, legs, paws, gills, smell sight touch hearing taste head, neck, shoulders, arms, elbows, knees, face, ears, eyes, hair, mouth, teeth Teach the names of a mix of different vertebrates but don't teach classifying with formal names such as amphibian etc. The aim is that the children can NAME a wide variety of common animals and describe them but not <u>classify</u> according to characteristics Autumn Winter Spring Summer season weather	<u>Plants</u> - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees - identify and describe the basic structure of a variety of common flowering plants, including trees. . <u>Science – Seasonal Changes</u> <u>(Repeated Each Theme)</u> - observe changes across the 4 seasons - Observe and describe weather associated with the seasons and how day length varies.	Names of common plants and trees such as grass, daisy, dandelion, daffodil, rose, oak tree, willow tree, fir tree (choose appropriately for our grounds) deciduous conifer flower petals stem/stalk leaf roots trunk branch twig Just the structure not the functions Autumn Winter Spring Summer season weather

Rapid Recap	Can you name different materials? What are the four seasons?		Can you name different types of animals? What can you tell me about them? What weather would we see (observe) within the different seasons?		Can you identify and name different types of plants and trees? What happens to the trees in the different seasons? What happens to the days in the different seasons?	
Year 2	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary
New Learning	<u>Materials</u> - identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching Making puppets in DT –link to English text - LRATVHL	Build on vocabulary from Year 1 squash Bend - flexible/ not flexible twist Stretch/ stiff suitable Changes made 1.11.22 Remind children of materials encountered in year 1 and the vocab used to describe the properties. The focus in Year 2 is suitability for purpose and changing a material	<u>Animals, including humans</u> - notice that animals, including humans, have offspring which grow into adults - find out about and describe the basic needs of animals, including humans, for survival (water, food and air) - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Link to English Text- Meerkat Mail and Geography Africa <u>Plants</u> - observe and describe how seeds and bulbs grow into mature plants - find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (do not cover Controlling variables to inhibit plant growth.)	pairs of animals such as cow – calf sheep – lamb pig – piglet survival Hygiene bulb seed shoot root germination Not Year 3 content of plant reproduction. Limit to parts needed for growth.	<u>Living things and their habitats</u> - explore and compare the differences between things that are living, dead, and things that have never been alive - identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other - identify and name a variety of plants and animals in their habitats, including micro-habitats - describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. Link to English text- Greta and the giants, The Journey Home	alive dead never living extinct habitat suited/suitable food energy names of habitats such as garden, wood, forest, seashore, river, ocean, town microhabitats – soil, logs, pond Not the terms producer predator prey
Rapid Recap	What do animals and humans all need to survive? What are the babies of these animals called: dog, deer, cow, sheep, pig, shark, chicken?		Describe the properties of some common materials using the vocab flexible, waterproof, absorb, hard or transparent. Describe the structure of plants using the vocab stem/stalk, leaf, roots, trunk, branch and twig.		Can you name some things that are living, dead and never been alive? What is a habitat? Can you name some examples? Can you describe the food chain for a shark?	
Year 3	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary
New Learning	<u>Plants</u> - Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how	petals sepals stamen pollen stigma ovary pollination dispersal absorb Evaporation germination	<u>Animals, including humans</u> - 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 - Identify that humans and some other animals have	nutrition protein fat carbohydrate vitamins minerals fibre skeleton skull cranium jaw spine pelvis femur	<u>Forces and magnets</u> - Compare how things move on different surfaces - Notice that some forces need contact between two objects, but magnetic forces can act at a distance - Observe how magnets attract or repel each	pole attract repel

	they vary from plant to plant - Investigate the way in which water is transported within plants - Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal		skeletons and muscles for support, protection and movement. <u>Rocks</u> - Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties - Describe in simple terms how fossils are formed when things that have lived are trapped within rock - Recognise that soils are made from rocks and organic matter	humerus radius ulna tibia fibia phalanges ribs igneous metamorphic sedimentary magma cast mould fossil deposit mineral soil humus clay loam	other and attract some materials and not others - Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials - Describe magnets as having two poles - Predict whether two magnets will attract or repel each other, depending on which poles are facing <u>Light</u> - Recognise that they need light in order to see things and that dark is the absence of light - Notice that light is reflected from surfaces - Recognise that light from the sun can be dangerous and that there are ways to protect their eyes - Recognise that shadows are formed when the light from a light source is blocked by an opaque object - Find patterns in the way that the size of shadows change.	reflection opaque transparent translucent
Rapid Recap	What variables to plants need to grow? (light, water etc) How to bulbs grow? Link it back to the vocabulary: bulb seed shoot root germination		<u>Animals, including humans</u> What basic needs as humans must we have? Why is exercise important?			
Year 4	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary
New Learning	<u>Electricity</u> - Identify common appliances that run on electricity - Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers - Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery	frequency voltage current resistance switch lamp battery circuit conductor insulator	<u>States of matter</u> - 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)	evaporation condensation melting freezing state Celsius particles	<u>Animals, including humans</u> - Describe the simple functions of the basic parts of the digestive system in humans - Identify the different types of teeth in humans and their simple functions - Construct and interpret a variety of food chains, identifying producers, predators and prey.	incisor canine premolar molar tongue enzyme oesophagus stomach small intestine large intestine rectum anus producer predator Prey

	- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit - Recognise some common conductors and insulators, and associate metals with being good conductors Sound - Identify how sounds are made, associating some of them with something vibrating - Recognise that vibrations from sounds travel through a medium to the ear - 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 - Recognise that sounds get fainter as the distance from the sound source increases Think Tank trip	frequency pitch volume vibration amplitude wave longitudinal vacuum oscillation volume	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		<u>Living things and their habitats</u> - Recognise that living things can be grouped in a variety of ways - Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - Recognise that environments can change and that this can sometimes pose dangers to living things	grouped classification environment habitat
Rapid Recap			What is nutrition and why do humans need correct nutrition? What is the skeletal system and what does it do? Can you name any of the bones? Do muscles help us move?		<u>Living things and their habitats</u> What is a habitat? What is a microhabitat? What is a simple food chain and can you describe one?	
Year 5	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary
New Learning	<u>Materials</u> - 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 - Demonstrate that dissolving, mixing and changes of state are reversible changes - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating (Y4 content only covered in online home learning) - Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday	soluble insoluble dissolve conductivity reversible	<u>Earth and space</u> - 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. <u>Forces</u> - 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,	sun moon solar stellar lunar gibbous crescent satellite planet names of planets cycle dawn dusk perpendicular eclipse impact crater gravity gravity air resistance friction water resistance mechanism	<u>Animals, including humans</u> - Describe the changes as humans develop to old age <u>Living things and their habitats</u> - 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 in puberty Links to Wellbeing	breasts hormones period pubic hair fertile ovary pregnancy gestation embryo metamorphosis chrysalis

	materials, including metals, wood and plastic - 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 – cooking? <i>Difference between chemical and physical changes</i>		allow a smaller force to have a greater effect.			
Rapid Recap	What different material can you identify? How can we change some materials? Link it back to the following vocabulary: squash bend twist stretch				<u>Animals, including humans</u> What is the digestive system? Can you describe how it works? Describe a food chain. What is the difference between predator and prey? <u>Living things and their habitats</u> Using the following vocabulary: grouped classification environment habitat Describe what each word is? Why does an environment changing pose a threat to some living things?	
Year 6	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary	Learning Intentions	Vocabulary
New Learning	<u>Animals including humans</u> Pupils should be taught to: - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function - describe the ways in which nutrients and water are transported within animals, including humans <u>Electricity</u> Pupils should be taught to: - associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches	heart vein artery capillary aorta vena cava pulmonary artery pulmonary vein atrium ventricle lungs alveoli platelets white blood cells red blood cells Build on vocabulary taught in Year 4 voltage current Resistance Series circuits components	<u>Evolution and inheritance</u> Pupils should be taught to: - recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution <u>Light</u> - recognise that light appears to travel in straight lines - use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye - explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes	evidence extinction extinct adaptation suitability selective advantage fossil record evolution natural selection gene DNA chromosome egg sperm identical / fraternal Build on vocabulary taught in Year 3 cornea retina iris pupil	<u>Living things and their habitats</u> - describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals - give reasons for classifying plants and animals based on specific characteristics	kingdoms fungi protozoa / protocista monera (bacteria) aerobic anaerobic Linnaeus

	• use recognised symbols when representing a simple circuit in a diagram		• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them			
Rapid Recap	<u>Animals including humans</u> What is classification? How could we classify certain plants and animals?		<u>Light</u> Recap vocabulary: Translucent and opaque How are shadows formed?			