

LKS2 Cycle 1 – Autumn 1 and 2

Builds on Y1 and 2 Animals including Humans

- describe and compare observable features of animals from a range of groups.
- group animals according to what they eat .
- identify and name a variety of common animals including fish, amphibians, reptiles, mammals and birds.
- identify and name a variety of common animals that are carnivores, herbivores and omnivores.
- locate parts of the human body, including those related to the senses.
- name and locate parts of the human body, including those related to the senses and describe them.
- describe the basic needs of animals for survival and the main changes as offspring from young animals, including humans, grow into adults.
- use simple food chains to describe these relationships.
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

describe the basic needs of animals, including humans, for survival (water, food and air).

Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Biology – Animals including Humans.  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	I can Make systematic and careful observations over time, looking at similarities and differences. Ask questions surrounding patterns I have found in data. Gather, record, classify and present data in a variety of ways to help in answering questions. Set up simple practical enquiries, comparative and fair tests. Use secondary sources with adult support to help clarify results seen. Ask relevant questions and use different types of scientific enquiries to answer them using scientific language from the national curriculum. Develop a deeper understanding through talk, asking questions about scientific phenomena, analysing functions and interactions more systematically. Take measurements, using a range of scientific equipment, with increasing accuracy and precision.	I know I know 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. I know how to stay healthy. I know that that humans and some other animals have skeletons and muscles for support, protection and movement.	food chain, predator, prey, consumer, producer, environment, habitat, carnivore, herbivore, omnivore, saliva, intestine, molar , incisor, canines, pr molar, rectum ,digest oesophagus , stomach small intestine, large intestine, stools producer, predator, prey	Identifying and labelling digestive organs . Finding out about tooth decay and how to look after their teeth. Making models of human and animals teeth. Investigating decay using eggs and different liquids. Comparing toothpastes. Are bones flexible? What are the names and functions of some of our bones? Name some of the key muscles in our body. What happens to muscles when you exercise them? What are the different nutrient groups and the food types in each group? Which animals are carnivores, herbivores and omnivores? What is the purpose of a digestive system? Where does digestion start? What are the names for all the organs involved in the digestive system? How long is the intestine? What are teeth made of? What does brushing your teeth do? What is the purpose of each type of tooth? Do all animals have a skeleton?

	Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values and suggest improvements. Classify, group and present data in a series of ways to help in answering questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support my findings.			How do muscles contract and relax? Is all milk healthy? Do all animals have the same digestive system? Can bones be weakened? How much vitamin C does juice really contain? What impact do different drinks have on our teeth? What happens if you eat too many sugary foods? Do human babies have more bones than human adults? What effect does acid have on teeth? How does plaque build up on teeth and what is the effect? What are the different functions of bones and what do they contain? What is an x-ray? Which insect has the strongest legs? Which animals have similar muscles to humans? Are all weight loss diets healthy? Are all fats bad for you? What happens to you if you don't get enough of each nutrient group? Why do we chew our food? How do dentists fix broken teeth? Is tooth loss permanent in all animals?
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LKS2 Cycle 1 – Spring 1

I know

I know there are different materials and they are used to make different objects.
 I know the name and can identify a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
 I know the simple physical properties of a variety of everyday materials
 I know that the shape of solid objects made from some materials can be changed by squashing, bending, twisting and stretching and this is known as flexibility.
 I know how to compare and group together a variety of everyday materials on the basis of their simple physical properties
 I know how to distinguish between an object and the material from which it is made.
 I know that objects can be made from more than one material.
 I know that certain materials are suitable for different uses.
 I know how to compare the suitability of different materials to a particular use.
 I know that some materials are more absorbent than others.

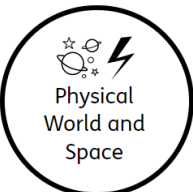
Types of Knowledge Will study...	Disciplinary Knowledge Working scientifically – knowledge of how scientific knowledge is generated and grows.	Substantive Knowledge The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.	Vocabulary	Experience
A SCIENTIST studying Chemistry – States of Matter  Materials and their properties  Questions  Methods and Measurements	I can I can make systematic and careful observations over time, looking at similarities and differences. I can ask questions surrounding patterns I have found in data. I can gather, record, classify and present data in a variety of ways to help in answering questions. I can set up simple practical enquiries, comparative and fair tests. I can use secondary sources with adult support to help clarify results seen. I can ask relevant questions and use different types of scientific enquiries to answer them using scientific language from the national curriculum.	I know I know that some materials change state when heated or cooling, heating causes melting and evaporation. I know that removing heat causes condensing and solidifying (freezing). I know that dissolving, mixing and changing state are reversible changes. I know how to compare and group materials together, according to whether they are solids, liquids or gases.	Solid, liquid, gas, state of matter, fluid, compressed, particle, evaporation, precipitation, condensation, vapour, boiling, melting, freezing.	Observing evaporation or condensation. Take part in fair test experiments. Create a water cycle. What is a state of matter? What is a particle? What does density mean? What is a solid, liquid and gas? Will different types of liquids melt at the same speed? Which state of matter's particles has the most energy? Do all liquids have the same viscosity? Will the water evaporate in different parts of your house/school? How can we change between different states of matter? Can I test the reaction rates of bicarbonate of soda and acids? How do particles in a solid, liquid, gas look?

 Data Analysis  Explanations	I can develop a deeper understanding through talk, asking questions about scientific phenomena, analysing functions and interactions more systematically. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values and suggest improvements. Classify, group and present data in a series of ways to help in answering questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support my findings.	I know how to 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 ($^{\circ}\text{C}$). I know how to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		How do you know a chemical reaction has occurred? How do you know a gas has been produced? What gases surround us and why do we need them?
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LKS2 Cycle 1 – Spring 2

Build on EYFS:

- Know that magnets are 'sticky' without being sticky.
- Know magnets attract to certain materials (metals).
- Know how to find an object which a magnet will attract to.

Types of Knowledge Will study...	Disciplinary Knowledge Working scientifically – knowledge of how scientific knowledge is generated and grows.	Substantive Knowledge The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.	Vocabulary	Experience / Resources
A SCIENTIST studying Physics – Forces and Magnets  Physical World and Space  	I can.. I can make systematic and careful observations over time, looking at similarities and differences. I can ask questions surrounding patterns I have found in data. I can gather, record, classify and present data in a variety of ways to help in answering questions. I canSet up simple practical enquiries, comparative and fair tests. I can use secondary sources with adult support to help clarify results seen. I can ask relevant questions and use different types of scientific enquiries to answer them using scientific language from the national curriculum.	I know.. I know that some forces need contact between two objects, but magnetic forces can act at a distance. I know when one object moves over another one there will be a force between them that opposes motion and this called friction. I know how to compare how things move on different surfaces. I know how to 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. I know that magnets exert, attract, repulse forces on each other.	magnet, magnetic field, magnetic field strength, attraction, repulsion, pole, non-metal, distance.	Which materials are/ are not attracted to magnets? What happens when like poles are facing each other? What materials/ surfaces create the most/least friction? How much friction do everyday items hold? Are all metals attracted to magnets? Does friction speed or slow down an object? What types of surface exhibits the most friction? Does distance impact the magnetic field strength? Can a magnetic field be strengthened? Does mass impact the level of friction? Does material impact the level of friction? How does gravity impact friction?

 	I can develop a deeper understanding through talk, asking questions about scientific phenomena, analysing functions and interactions more systematically. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values and suggest improvements. Classify, group and present data in a series of ways to help in answering questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support my findings.	I know that some forces need contact between two forces. I know that magnets have two poles.		Is gravity a magnetic force? Can some materials be turned into magnets? Where is friction a hinderance? Where is friction useful? Magnetic wands, horseshoe, bar, iron filings. Simple magnetic testing kit.
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LKS2 Cycle 1 – Summer 1

Builds on EYFS.

- Identify a shadow.
- Know that the sun is needed to make a shadow.

Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Physics – Light.  Physical World and Space    	I can I can make systematic and careful observations over time, looking at similarities and differences. I can ask questions surrounding patterns I have found in data. I can gather, record, classify and present data in a variety of ways to help in answering questions. I can set up simple practical enquiries, comparative and fair tests. I can use secondary sources with adult support to help clarify results seen.	I know I know how to recognise that he/she needs light in order to see things and that dark is the absence of light I know that some materials block the light and a shadow is formed. I know how to find patterns in the way that the size of shadows change. For example: I know that the size and shape of shadows change according to the size and shape of objects and distance from the light source.	light source, light reflector, translucent, transparent, opaque, shadow, silhouette, hazard.	Exploring shiny and reflective objects in darkness. Finding the best materials to make shadows. Creating and observing shadows. Making a shadow puppet. What are light sources and how do they work? What is darkness? How do we see? What is reflection? How do sounds start? What is frequency? What happens to light when it hits a mirror? What properties do good reflectors have?

	I can ask relevant questions and use different types of scientific enquiries to answer them using scientific language from the national curriculum. I can Develop a deeper understanding through talk, asking questions about scientific phenomena, analysing functions and interactions more systematically. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. I can use results to draw simple conclusions, make predictions for new values and suggest improvements. I can classify, group and present data in a series of ways to help in answering questions. I can identify differences, similarities or changes related to simple scientific ideas and processes.	I know that light is reflected from surfaces. I know that light from the sun can be dangerous and that there are ways to protect eyes. I know that it is not safe to look directly at the sun, even when wearing dark glasses		What happens when materials vibrate? What is the relationship between the angles of incidence and the angle of reflection? What happens when light passes through opaque, translucent or transparent objects? Does distance/length of a material effect the pitch of sound? Do planets reflect light? What happens to your sight if there is no light to enter your eyes? How can you protect your eyes from the sun's harmful rays? Do we hear a sound the moment it is made? Can sound travel through solids, liquids and gases? Torches, plastic mirrors, colour paddles
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	I can use straightforward scientific evidence to answer questions or to support my findings.			
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LKS2 Cycle 1 – Summer 2				
Builds on Y1 and 2 Plants • know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • know how to identify and describe the basic structure of a variety of common flowering plants, including trees. • know how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • know how to describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants. • know how to observe and describe how seeds and bulbs grow into mature plants. • know how to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.				
Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience / Resources
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		

A SCIENTIST studying Biology – Plants.  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	I can I can make systematic and careful observations over time, looking at similarities and differences. I can ask questions surrounding patterns I have found in data. I can gather, record, classify and present data in a variety of ways to help in answering questions. I can set up simple practical enquiries, comparative and fair tests. I can use secondary sources with adult support to help clarify results seen. I can ask relevant questions and use different types of scientific enquiries to answer them using scientific language from the national curriculum. I can Develop a deeper understanding through talk, asking questions about scientific phenomena, analysing functions and interactions more systematically. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision. I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	I know I know how to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I know plants make seeds to produce more plants (sexual reproduction) I know the parts flowers play in the life cycle of flowering plants, including pollination, seed formation and dispersal. I know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant and the impact of changing these and the main changes as seeds and bulbs grow into mature plants. I know that water is transported within plants. I know how to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. I know how leaves and plants can change throughout the year.	roots, leaves, stem, flowers, photosynthesis, absorption, nutrients, pollination, dispersal, life cycle, anchor.	Investigating roots , stems and leaves. Dissecting a flower. Modelling seed dispersal. What parts do plants have? What is the purpose of each part of the plant? What minerals do plants need to grow? Can we identify the parts of a real flower? Is there any similarities or differences between smaller and bigger plants? How do plants obtain water and nutrients? Do all plants need nutrients from soil to grow? Which sees has the fastest root growth? What conditions make a difference to root growth? Can plant food accelerate plant growth? Does having less room impact seed germination? What are roots and stems? Do they have a purpose? Do all stems and routes have the same purpose? What is a stomata and what is its purpose? What parts do plants have? What is photosynthesis? Child safe tweezers / scissors Digital microscopes
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	I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. I can use results to draw simple conclusions, make predictions for new values and suggest improvements. I can classify, group and present data in a series of ways to help in answering questions. I can identify differences, similarities or changes related to simple scientific ideas and processes. I can use straightforward scientific evidence to answer questions or to support my findings.			
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