

UKS2 Cycle 2 Autumn 1 and 2

Builds on LKS2 Animals including Humans

- identify that humans and some other animals have skeletons and muscles for support, protection and movement.
- describe the simple functions of the basic parts of the digestive system in humans.

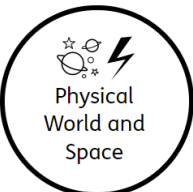
Types of Knowledge	Disciplinary Knowledge	Substantive Knowledge	Vocabulary	Experience
Will study...	Working scientifically – knowledge of how scientific knowledge is generated and grows.	The scientific knowledge and conceptual understanding – the concepts, laws, theories and models.		
A SCIENTIST studying Biology – Animals and Humans  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	will understand ... I can plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. I can recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. I can take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. I can make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. I can record data and results of increasing complexity using scientific diagrams and labels, classification	I know I know that some substances and life style choices can have a negative impact on health. I know the names of the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I know that blood picks up oxygen from the lungs and transports it to all of our organs. I know water and nutrients (substances in food which we use to help us grow and repair our bodies) are also transported around the body in the blood. I know three different types of blood vessels.	Oxygenated artery water • Deoxygenated vein oxygen • Valve pulmonary alcohol • Exercise alveoli drugs • Respiration capillary tobacco • Circulatory system digestive • Heart transport • Lungs gas exchange • Blood villi • Blood vessels nutrients	Taking their pulse and investigating its changes. Modelling the journey of blood. Drawing body maps. Planning a health roadshow. Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. How do diffusion and osmosis differ? (Skittles and Jelly Worms) How does exercise effect your heart rate? How does my heart rate change over the day?

	keys, tables, scatter graphs, bar and line graphs. I can use test results to make predictions to set up further comparative and fair tests. I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. I can use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. I can develop and use keys and other information to classify and describe objects in ways to help answer questions. I can justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. I can identify scientific evidence that has been used to support or refute ideas or arguments. I can predict outcomes and solve problems.			
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UKS2 Cycle 2 – Spring 1

Builds on LKS2

- Know how to compare how things move on different surfaces.
- Know how to notice that some forces need contact between two objects, but magnetic forces can act at a distance.
- 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.
- Know how to describe magnets as having two poles.
- Know how to predict whether two magnets will attract or repel each other, depending on which poles are facing.

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 Physics – Forces  Physical World and Space  Questions  Methods and Measurements  Data Analysis  Explanations	will understand ... Plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. Recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. Take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. Make my own decisions and select the most appropriate type of scientific	I know I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I know how drag forces resist movement. I know how to identify the effects of air resistance, water resistance and friction, that act between moving surfaces. I know that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	friction, decelerate, smooth, rough, surface, air resistance, surface area, air particles, drag, direction, water resistance, water particles, float, sink, hydrodynamic	Know when forces are balanced. Explore the relationship between surfaces and friction. The impact of air resistance on objects. What is gravity and a gravitational pull? Is gravity a push, pull or twist force? When does friction happen? How is mass different to weight? What is air/water resistance? What is the relationship with how smooth an object is and the amount of friction it exhibits? Is there a relationship between the size of a falling object and the air resistance shown? When mass increases, does gravity decrease? Do heavier objects fall more quickly? Does changing the angle of a ramp effect the speed of an object? Which material has the most friction?

	enquiry to use and recognise how to set up a comparative and fair test. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. Develop and use keys and other information to classify and describe objects in ways to help answer questions. Justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources.			Is a larger parachute going to be slower? What planet has the most mass? Explain some ways of reducing and increasing air/water resistance.
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	Identify scientific evidence that has been used to support or refute ideas or arguments. Predict outcomes and solve problems.			
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UKS2 Cycle 1 – Autumn 2				
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 Physics – Earth and Space  Physical World and Space  	will understand ... Plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. Recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. Take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate.	will know ... I know that the Sun, Earth and Moon as approximately spherical bodies. I know that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).	Sun, Moon, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Planets, Solar System, Orbit, Geocentric, Heliocentric, Anticlockwise, Clockwise.	To scale model of distances between planets Which are the inner/outer planets? How long does it take the moon to make one orbit? What is moonlight? Why is sunrise at different times in different locations? Why are the Sun, Moon and Earth not perfectly spherical bodies? Position of the sun and impact on shadow size/shape. What shapes to planets make as they orbit the Sun? How long does it take to complete the phases of the moon? Day and night shadow investigation.

 	Make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. Develop and use keys and other information to classify and describe objects in ways to help answer questions. Justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. Identify scientific evidence that has been used to support or refute ideas or arguments. Predict outcomes and solve problems.	I know that the earth orbits the sun once every year. I know the earth rotates on its own axis once every 24 hours. I know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. I know how to describe the movement of the Moon relative to the Earth; it orbits the earth and looks different at different times of the month. I know that seasons change as the earth position changes relative to the sun. I know that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).		Does the Sun move? Geocentric or heliocentric solar system? How was the Sun formed? Explain why night and day occurs and why they occur cyclically.
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UKS2 Cycle 2 – Summer 1 and 2

Builds on LKS2 Living Things and their Habitats

- Know how to recognise that living things can be grouped in a variety of ways.
- Know how to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- Know how to recognise that environments can change and that this can sometimes pose dangers and have an impact on living things.

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 – Living Things and their Habitats.  Living Organisms  Questions  Methods and Measurements  Data Analysis  Explanations	I know Plan different types of scientific enquiries to answer my own or others' questions, including recognising and controlling variables where necessary. Recognise things change over time and can ask pertinent questions and suggest reasons for similarities and differences over time. Take measurements, using a range of scientific equipment, including thermometers and data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. Make my own decisions and select the most appropriate type of scientific enquiry to use and recognise how to set up a comparative and fair test. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	I can I know a wider range of living things including micro-organisms can be identified. I know 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. I know how to give reasons for classifying plants and animals based on specific characteristics.	sexual, reproduction, mating, hatch, birth, offspring, asexual, regeneration, cutting, spores.	Making detailed observations of the life cycle of a plant over time Studying tadpoles and their growth Sketching their changes and understanding how the environment can affect them. Studying the school grounds and pond to see what wildlife lives there. Researching different species and be able to classify them. Creating a simple classification system. Planning an investigation to find out how mould grows. Identifying plants using a key. Comparing plants / animals of the same type. Investigating how light can be reflected. Making a periscope. Use a dichotomous classification key to identify 10 different arthropods Identify and classifying different micro-organisms Identify 18 organisms as vertebrates or invertebrates and place them in the correct sub-group (fish, birds, mammals, amphibians, reptiles, insects, arachnids, molluscs, worms). Similarities and differences between life cycles of animals and plants. What are the best living conditions for micro-organisms? (Yeast) How does mould grow over time? Who is Carl Linnaeus? (Taxonomy) What is Alexander Fleming famous for? (Penicillin)
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	Use results to draw more complex conclusions, make predictions for new values and suggest improvements and raise further questions, in oral and written forms such as displays and other presentations. Develop and use keys and other information to classify and describe objects in ways to help answer questions. Justify and evaluate my own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. Identify scientific evidence that has been used to support or refute ideas or arguments. Predict outcomes and solve problems.			
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