

Science Non-Negotiable Key Skills, Knowledge and Vocabulary YEAR 3

National Curriculum:

Working Scientifically:

During years 3, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings

Plants:

- 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 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

Animals including humans:

- 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 skeletons and muscles for support, protection and movement.

Rocks:

- 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.

Light:

- 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.

Forces and magnets:

- 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 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.

Key Concepts:

Working Scientifically: Use practical scientific methods, processes and skills to understand how ideas and theories are investigated and how this improves scientific knowledge and skills

Plants: Plants are living organisms that require specific conditions to adapt and grow.

Animals including humans: All animals, including humans, share life processes, which allows them to adapt and grow.

Rocks: Rocks are formed through different physical processes, which determines their properties and characteristics (including how fossils are formed).

Light: Some objects are sources of light, which we need in order to see, however the absence of light is dark.

Forces and magnets: Forces affect the movement of objects.

Topic	Key Skills	Subject Knowledge	Key Vocabulary
Working scientifically	<ul style="list-style-type: none"> • Ask relevant questions. • Set up simple practical enquiries comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment, for example thermometers and data loggers. 	<p>To know:</p> <ul style="list-style-type: none"> • What an appropriate question is • What an enquiry is • What to observe and measure in a fair test • How to control variable to conduct a fair test • How to use a measuring cylinders and a data logger • How to record and present data in a table, diagram or bar chart 	<p>Predict prediction aim purpose method apparatus equipment measure accurate reliable repeatable analyse diagram fair test relationship trend conclusion</p>

	<ul style="list-style-type: none"> • Gather, record, classify and presenting data in a variety of ways to help in answering questions. • Report on findings from enquiries, including oral and written explanations displays or presentations of results and conclusions. • Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests • Identify differences, similarities or changes related to simple scientific ideas and processes. • Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. 	<ul style="list-style-type: none"> • How to predict • How to report finding in written and oral form • How to use scientific language to explain and describe • How to draw a conclusion based on aims • How to relate scientific knowledge to findings • How to begin to question results • How to form a hypothesis 	
Plants	<p>Identify and describe (functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers)</p> <p>Explore (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)</p> <p>Investigate (how water is transported within plants)</p> <p>Explore (flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal)</p>	<p>To know:</p> <ul style="list-style-type: none"> • Parts of a plant and their functions • Plants need light, water and space to grow • Plants have adaptations in order for them to survive in different environments • Plants take water in through their roots and this is transpired through their leaves • Plants reproduce through sexual reproduction involving flowers to produce seeds, which are dispersed using different methods (wind, insect, etc.) 	<p>Plant roots stem trunk leaf/leaves flower stalk veins surface edge tip food root hair nutrients anchor support seed germination seedling growth mature plant flowering pollination seed formation bud petal pollen nectar seed fruit</p>
Animals including humans	<p>Identify (animals, including humans, need the right types and amount of nutrition)</p>	<p>To know:</p> <ul style="list-style-type: none"> • All animals require nutrition from different sources to survive (omnivores, carnivores, herbivores) 	<p>Nutrition diet food protein carbohydrate minerals vitamins fats sugars salts balanced diet skeleton skull</p>

	<p>Investigate using secondary research (how animals, including humans, cannot make their own food; they get nutrition from what they eat)</p> <p>Identify (humans and some other animals have skeletons and muscles for support, protection and movement).</p>	<ul style="list-style-type: none"> • Different food groups • Importance of a balanced diet • Different types of skeletons (exo, endo, etc) • Functions of skeletons, including joints (protection, movement, support) • Functions of muscles (protection, movement, support) 	<p>spine vertebrate invertebrate calcium muscle contract relax pairs movement</p>
Rocks	<p>Compare and group together (different kinds of rocks on the basis of their appearance and simple physical properties)</p> <p>Describe in simple terms (fossils are formed when things that have lived are trapped within rock)</p> <p>Recognise (soils are made from rocks and organic matter)</p>	<p>To know:</p> <ul style="list-style-type: none"> • Rocks are sedimentary, igneous or metamorphic and are formed in different ways and have different characteristics and properties • Fossils are formed when things that have lived are trapped within rock • Soils are made from rocks and organic matter and have different characteristics and properties. 	<p>Waterproof strong hard opaque heavy sedimentary igneous metamorphic porous fossil layers erosion soil inner core outer core mantle crust earthquake volcano pebble boulder crystal weathering</p>
Light	<p>Recognise (light is needed in order to see things and that dark is the absence of light)</p> <p>Notice and investigate (how light is reflected from surfaces)</p> <p>Investigate and identify patterns (how shadows are formed)</p>	<p>To know:</p> <ul style="list-style-type: none"> • Light is reflected from surfaces • Dark is the absence of light • Shadows are formed when the light from a light source are blocked from a solid object • Shadows change according to the position of the light source • Light from the sun can be dangerous • How to protect from the sun. 	<p>Light dark absence reflection surface natural man-made light source shadow blocked bright dim mirror absorb plane mirror concave mirror convex mirror image</p>
Forces and magnets	<p>Compare (how things move on different surfaces)</p> <p>Notice (forces need contact between two objects, but magnetic forces can act at a distance)</p>	<ul style="list-style-type: none"> • Different surfaces create different amounts of friction. • Magnetic fields affect objects. • Magnetic forces work from a distance. • Magnets attract and repel. • Some materials are not magnetic. 	<p>Force surface magnet magnetic force attract repel magnetic material poles bar magnet horseshoe magnet materials contact non-contact north pole south pole magnetic field iron iron filings</p>

	<p>Observe (how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles)</p>		
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