

Year 4, 5 and 6 Science Learning Sequence

Year A Term 1 – Evolution and Inheritance (Biology)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-6-evolution/>

By the end of this unit I will know....

Children will recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Lesson 6)

Children will recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.(Lesson 5)

Children will identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Lesson 1, 2)

Children will know about Mary Anning, Charles Darwin and Alfred Wallace and the impact they had on the world today. (Lesson 4, 6)

By the end of this unit I will be able to...

Children will be able to **compare** adaptations.

Children will be able to **analyse** advantages and disadvantages.

Identify scientific evidence that has been used to support or refute ideas or arguments.

Children will be able to use **scientific language and illustrations to communicate** and justify their scientific ideas.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
N/A	How do plants adapt to suit their environment? adaptation	How do animals adapt to suit their environment?	What is natural selection? inheritance variation prediction	Who were Charles Darwin and Alfred Wallace?	How do genetics impact offspring? inheritance	How do fossils help us to understand evolution? evolution fossil	Quiz End of term knowledge web

Year A Term 2 – Properties and changes of materials (Chemistry)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-5-materials/>

By the end of this unit I will know....

Children will compare and group together materials based on their properties including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. (Lesson 1, 2)

Children will know some materials will dissolve in a liquid to form a solution. (Lesson 4)

Children will describe how to recover a substance from a solution. (Lesson 5)

Children will use knowledge of solids, liquids and gases to describe how mixtures can be separated, including through sieving, filtering and evaporating. (Lesson 5)

Children will be able to give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Lesson 1)

Children will be able to demonstrate that dissolving, mixing and changes of state are reversible changes. (Lesson 4, 5)

Children will be able to explain that some changes results in the formation of new material and that this kind of change is not usually reversible, including changes associated with burning, rusting and the action of acid on bicarbonate of soda. (Lesson 6)

By the end of this unit I will be able to...

Children will understand the **difference between a comparative and fair test**.

Children will understand the need to **change and control variables** where necessary.

Children will be able to **plan a scientific enquiry to answer their questions**, including recognising, controlling and changing **variable where necessary**. They should decide what observations to make and what measurements to use and how long to make them for.

Children will be able to make **predictions** based on results and **set up further comparative and fair tests**.

Children will understand the importance of taking **repeated readings**.

Children will understand what a **line graph** is.

Children will understand the **difference between a line graph and a bar graph**.

Children will be able to **take repeat readings** and **decide how to record their data**.

Children will understand what a **data logger** is and be able to use it to record the temperature (degrees Celcius).

<u>Prior knowledge</u> <u>to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Children will compare and group materials together, according to whether they are solids, liquids and gases (solids hold their shape, liquids form a pool not a pile, gases escape from an unsealed container). Children can observe that some materials change state when they are heated or cooled, and measure or research the temperature at	How can we compare solids, liquids and gases?	How can we describe and compare properties?	How can we investigate insulation? thermal insulation prediction	What is dissolving? dissolving solution	How can we separate materials? filtering sieving data logger	What are irreversible changes? reversible irreversible	Quiz End of term knowledge web

which this happens in degrees Celsius. Children can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.							
---	--	--	--	--	--	--	--

Year A Term 3 and 4 – Electricity (Physics)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-6-electricity/>

By the end of this unit I will know...

Children will associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. (Lesson 2)

Children will 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. (Lesson 3, 4)

Children will use recognised symbols when representing a simple circuit in a diagram. (Lesson 1)

Children will know the difference between renewable and non-renewable energy (Lesson 5)

By the end of this unit I will be able to...

Children will understand the **difference between a comparative and fair test.**

Children will understand the need to **change and control variables** where necessary.

Children will **plan a scientific enquiry to answer their questions**, including recognising, controlling and changing **variable where necessary**. They should decide what observations to make.

Children will be able to report and present findings from enquires, including **conclusions and explanations of degree of trust in results**.

Children will understand how to **systematically identify the effect** of changing one component.

Children will show their findings through **scientific diagrams**.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Children will be able to identify common appliances that run on electricity. Children will be able to construct a simple series electrical circuit, identifying and naming its basic parts including: • Cells • Wires • Bulbs • Switches • Buzzers Children can identify whether	How can I draw a scientific diagram of a circuit? diagram function volume circuit	How does voltage in a circuit affect the brightness of a bulb? voltage power current component	How can I plan a fair test to investigate variations in how components function?	How do I write a conclusion for my investigation?	What is renewable and non-renewable electricity?	Review	Quiz End of term knowledge web

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. Children can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Children can recognise some common conductors and insulators, and associate metals with being good conductors. Children will know about Thomas Edison and Lewis Howard Latimer							
--	--	--	--	--	--	--	--

and the impact they have had on the world today.							
--	--	--	--	--	--	--	--

Year A Term 5 and 6 – Sound (Physics)

By the end of this unit I will know....

Children will identify how sounds are made, associating some of them with something vibrating (including musical instruments from around the world). (Lesson 1, 2)

Children will recognise that vibrations from sounds travel through a medium to the ear. (Lesson 2, 3)

Children will be able to find patterns between the pitch of a sound and features of the object that produced it. (Lesson 5)

Children will find patterns between the volume of a sound and the strength of the vibrations that produced it. (Lesson 2)

Children will recognise that a sound gets fainter as the distance from the sound source increases. (Lesson 4)

By the end of this unit I will be able to...

Children will be able to **find patterns**.

Children will understand what a **comparative test** is.

Children will be able to set up a **comparative test**.

Children will be able to record their data in a **table**.

Children will be able to **ask relevant questions about patterns**.

Children will understand what a **data logger** is and take accurate measurements using standard units (Decibels).

Children will understand what a **bar graph** is and be able to **record their data in a bar graph**.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u> How are sounds made?	<u>Lesson 2</u> What are sound vibrations? vibration	<u>Lesson 3</u> What is inside your ear?	<u>Lesson 4</u> How does sound change? volume	<u>Lesson 5</u> What is pitch? pitch	<u>Lesson 6</u> Which material is best at muffling sounds?	<u>Assessment</u> Quiz End of term knowledge web
------------------------------------	---	--	---	---	--	---	--

Year B Term 1 – Animals Including Humans – Digestive Systems and Teeth (Biology)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-4-animals-including-humans/>

By the end of this unit I will know...

Children will describe the simple functions of the basic parts of the digestive system in humans (mouth, tongue, teeth, oesophagus, stomach, and small and large intestine). (Lesson 1/2)

Children will identify the different types of teeth in humans and their simple functions. (Lesson 3)

Children will understand what damages teeth and how to look after them. (Lesson 4)

Children will construct and interpret a variety of food chains, identifying producers, predators and prey. (Lesson 5-6)

By the end of this unit I will be able to...

Children will understand how to and be able to **identify and classify**.

Children will be able to **compare and contrast** different animals based on behavioural traits.

Children will be able to **report on their findings** from an enquiry in **written form**.

Children will be able to use **straightforward scientific evidence** to answer questions or to support their findings.

Children will understand what a **comparative test** is.

Children will be able to **ask questions** and **set up a comparative test** to find out the answer.

Children will be able to use their results to **draw simple conclusions** and **make predictions for new values**.

Children will be able to **compare and contrast**, suggesting **reasons for differences**.

Children will be able to **draw diagrams with labels**

<u>Prior knowledge to recap:</u>	<u>Lesson 1 :</u>	<u>Lesson 2:</u>	<u>Lesson 3:</u>	<u>Lesson 4:</u>	<u>Lesson 5:</u>	<u>Lesson 6:</u>	<u>Assessment</u>
Children can 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.	What is the digestive system? digestive system	How can we represent the digestive system? oesophagus small intestine large intestine	Why are teeth different shapes? molar pre-molar incisor canine	What drink causes the most tooth decay?	What is a food chain? producer predator prey	How can I construct a food chain?	Quiz End of term knowledge web

Year B Term 2 – Animals Including Humans (Biology)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-5-animals-including-humans/>

By the end of this unit I will know...

Children will describe the changes as humans develop to old age, including puberty.

By the end of this unit I will be able to...

Children will be able to **answer scientific questions** by **exploring the work of scientists and scientific research**. Children will show an awareness of the degree of trust in results.

Children will be able to draw **diagrams with labels**.

<u>Prior knowledge</u> <u>to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Children will 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. Children will identify that humans and some other animals have skeletons and muscles for support, protection and movement.	How do humans change throughout their lives? puberty adolescent	How do we develop in the womb? gestation embryo foetus	How do we change through puberty?	How do we change in old age?	Review	Review	Quiz End of term knowledge web

Children can 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.

Children can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

By the end of this unit I will be able to...

Children will be able to **classify**.

Children will understand what a **thermometer** is used for and know that temperature is measured in degrees Celsius.

Children will be able to use a **thermometer** to measure temperature.

Children will understand what a **fair test** is.

Children will be able to set up a **fair test** to answer a question they have posed.

Children will be able to **suggest improvements** to a fair test.

Children will understand what a **bar graph** is and be able to **record their data in a bar graph**.

Children will be able to record results in a **table**.

Children will be able to **draw conclusions**, make **predictions** based on results and **raise further questions**.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Children will distinguish between an object and the material from which it is made. Children will be able to identify	What are solids, liquids and gases? gas liquid solid	How can we investigate liquids?	How can we measure temperature? thermometer	How do materials change shape?	What is the water cycle? condensation evaporation precipitation water cycle	How can we investigate evaporation?	Quiz End of term knowledge web

and name a variety of everyday materials including wood, plastic, glass, metal, water and rock.

Children will be able to describe the simple physical properties of a variety of everyday materials (hard/soft, stretchy/stiff, shiny/dull, rough/smooth, bendy/not bendy, waterproof/not waterproof, absorbent/not absorbent, opaque/transpar ent).

Children will compare and group together a variety of everyday

--	--	--	--	--	--	--	--

materials on the basis of their simple physical properties. Children can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Children will understand that some materials can be used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors and telegraph poles).							
--	--	--	--	--	--	--	--

Children can find out how the shapes of solid objects made from some materials can be changed by: • Squashing • Bending • Twisting • Stretching Children will learn about people who have developed useful new materials (Anke Domaske and Walton Lincoln Hawkins).							
--	--	--	--	--	--	--	--

Year B Term 5 and 6– Earth and space (Physics)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-5-planets/>

By the end of this unit I will know....

Children will describe the movement of the Earth and other planets, relevant to the Sun in the solar system. (Lesson 3)

Children will describe the movement of the moon relative to the Earth. (Lesson 4)

Children will describe the Sun, Earth and Moon as approximately spherical bodies. (Lesson 2, 6)

Children will use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. (Lesson 5)

Children will know about Katherine Johnson and Neil Armstrong the impact they had on the world today. (Lesson 1)

Children should understand that it is not safe to look directly at the sun, even when wearing dark glasses.

By the end of this unit I will be able to...

Children will be able to create **simple models**.

Children will **identify scientific evidence** that has been used to support or refute ideas or arguments.

Children will be able to **report and present findings** from enquiries into **causal relationships**.

Children will be able to talk about how **scientific ideas have developed over time**.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Moon landing – Neil Armstrong (KS1 History)	What are the planets? atmosphere asteroid galaxy meteorite comet	How do we know that the Earth is a sphere? axis gravity	How long does it take the Earth and other planets to orbit the sun?	How does the moon move? orbit universe	Why is there day and night?	Does the moon change shape? eclipse crescent asteroid	Quiz End of term knowledge web

Year C Term 1 and 2 – Living Things and their Habitats (Biology) – classification

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-4-living-things-and-their-habitats/>

By the end of this unit I will know...

Children can recognise that living things can be grouped in different ways. (Vertebrate animals: fish, amphibians, reptiles, birds and mammals, Invertebrate animals: snails, slugs, worms, spiders and insects, Plants: flowering plants (including grasses) and non-flowering plants (ferns and mosses).

Children will be able to use classification keys to help group, identify and name a variety of living things in their local and wider environment.

Children will be able to recognise that environments can change both positively (nature reserves, ecologically planned parks, or garden ponds) and negatively (population, development, litter or deforestation) and this can sometimes pose dangers to living things.

By the end of this unit I will be able to...

Children will understand what **classification** is and the function of a **classification key** is.

Children will be able to **use and make simple classification keys**.

Children will be able to **raise relevant questions**.

Children will be able to **classify animals and plants**.

Children will be able to **report on their findings** from an enquiry in **oral form**.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Children will explore and compare things that are living, dead and things that were never alive. Children will identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of	What are the seven life processes? movement reproduction sensitivity nutrition excretion respiration growth	How can we sort and group animals? grouped identify classify amphibian reptile consumer	What are Vertebrate animals? vertebrate invertebrate	What living things can be found in our local habitat?	What is a classification key? classify	How are environments changing?	Quiz End of term knowledge web

different kinds of animals and plants, and how they depend on each other. Children will be able to identify a variety of plants and animals in their habitats, including micro-habitats.							
---	--	--	--	--	--	--	--

Year C Term 3 and 4 – Light (Physics)

Resources to support planning: <https://grammarsaurus.co.uk/portal/tag/year-6-light/>

By the end of this unit I will know....

Children will recognise that light appears to travel in straight lines. (Lesson 1)

Children will 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. (Lesson 3)

Children will 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. (Lesson 3, 5)

Children will use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.(Lesson 4)

.

By the end of this unit I will be able to...

Children will understand the **difference between a comparative and fair test.**

Children will understand the need to **change and control variables** where necessary.

Children will **plan a scientific enquiry** to **answer their questions**, including recognising, controlling and changing variables when necessary. They should decide what observations to make and what measurements to use and how long to make them for.

Children will be able to **take repeat readings** and **decide how to record their data**.

Children will be able to **choose the most appropriate equipment** to take measurements and explain how to use it accurately.

Children will be able to **use their results to make further predictions and set up further tests**.

Children will be able to **create models** of light.

Children will understand what a **data logger** is and be able to use it to record the amount of light (lux).

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
Children will recognise that they need light in order to see things and that dark is the absence of light. Children will notice that light is reflected from surfaces. Children will recognise that light from the	How does light travel? relationship	Which materials make the best reflectors? reflection	How does the eye work?	How do shadows change?	Why do objects look different in water? incidence refraction spectrum	How do mirrors work?	Quiz End of term knowledge web

sun can be dangerous and that there are ways to protect their eyes. Children will recognise that shadows are formed when the light from a light source is blocked by an opaque object. Children will understand how the size of shadows change.							
--	--	--	--	--	--	--	--

Year C Term 5 and 6 – Movement, Forces and Magnets (Physics)

By the end of this unit I will know....

Children will compare how things move on different surfaces.

Children will notice that some forces need contact between two objects (opening a door, pushing a swing) but magnetic forces can act at a distance.

Children will explore the behaviour and everyday uses of different magnets (bar, ring, button and horseshoe).

Children will observe how magnets attract or repel each other and attract some materials and not others.

Children will 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.

Children will describe magnets as having two poles.

Children will predict whether two magnets will attract or repel each other, depending on which poles are facing.

By the end of this unit I will be able to...

Children will be able to **classify**.

Children will understand what a **comparative test** is.

Children will be able to **ask relevant questions** and set up a **comparative test** to answer them.

Children will understand what a **bar graph** is and be able to **record their data in a bar graph**.

Children will record their results in a **table**.

Children will be able to **observe and look for patterns and what might affect this**.

Children will be able to **record** their results using simple **scientific language and drawings**.

Children will be able to **use their results to draw simple conclusions and make predictions for new values**.

Children will be able to **suggest improvements and raise further questions**.

<u>Prior knowledge to recap...</u>	<u>Lesson 1</u>	<u>Lesson 2</u>	<u>Lesson 3</u>	<u>Lesson 4</u>	<u>Lesson 5</u>	<u>Lesson 6</u>	<u>Assessment</u>
What are magnets? What does a magnet look like?	What is a force? force	Do objects move the same on different surfaces? friction	How do magnetic forces work? pole magnet magnetism	Which materials are magnetic?	Do magnets attract each other? attract repel	Are all magnets the same strength?	Quiz End of term knowledge web

--	--	--	--	--	--	--	--