Year 5
Science Curriculum

Whole-school definition of science

Science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments.

Year 5 Overview

Block 1	Physics: Forces
Block 2 **Block 3**	Chemistry: Properties and Changes of Materials
Block 4	Biology: Living Things and Their Habitats
Block 5	Biology: Animals including humans
Block 6	Earth Science and Physics: Earth and Space

Year 5 Working Scientifically

Revision
prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

Know that we can ask questions and answer them by setting up scientific enquiries
Know how to make relevant predictions that will be tested in a scientific enquiry
Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same
Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches
Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table
Know – with structured guidance - how to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion
Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry
Know that scientific enquiries can suggest relationships, but that they do not prove whether a prediction is true
Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry
Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)
Know that they can draw conclusions from the findings of other scientists
Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry

New learning and vocabulary
line graph, relationship, outlier

Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth)
Know how to identify conditions that were imperfectly controlled and can explain how these might affect results
Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device
Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement
Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion
Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary
Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)

Year 5 Working Scientifically

- Sc5/1.1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Sc5/1.2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision
- Sc5/1.3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs
- Sc5/1.4 using test results to make predictions to set up further comparative and fair tests
- Sc5/1.5 reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
- Sc5/1.6 identifying scientific evidence that has been used to support or refute ideas or arguments.

THE BIG IDEAS OF SCIENCE

Physics
P1: The universe follows unbreakable rules that are all about forces, matter and energy.
P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.
P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.

Chemistry
C1: All matter (stuff) in the universe is made up of tiny building blocks.
C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc).
C3: Matter can change if the arrangement of these building blocks changes.

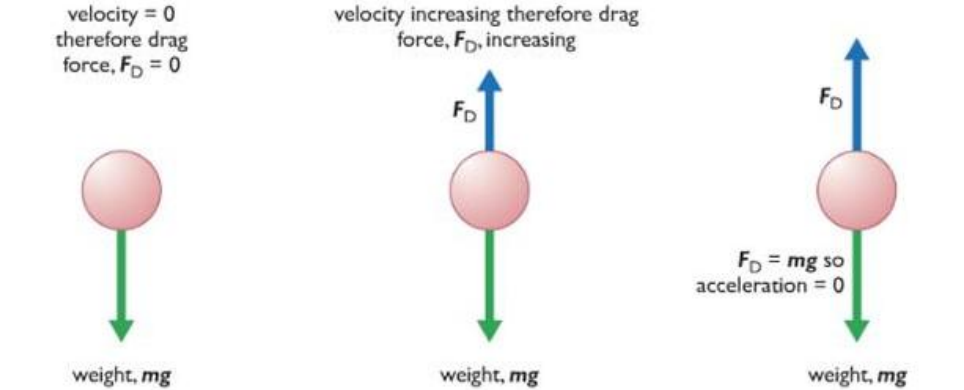
Biology
B1: Living things are special collections of matter that make copies of themselves, use energy and grow.
B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.
B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.

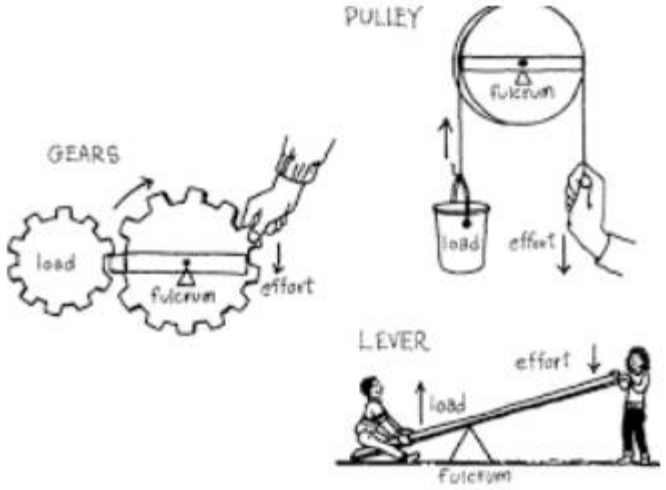
Earth science
E1: The Earth is one of eight planets that orbit the sun.
E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.
E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)

Block 1
Physics
Forces

Year 5 Block 1 Forces Big Idea(s): P1, P2	**Retrieval vocab:** energy, matter, particle, surface, friction, force, stretch, squash, rotation, rough, smooth, sliding friction, static friction **New vocab:** acceleration, air resistance, buoyancy, effort, force meter, fulcrum, gravity, load, mass, mesh, Newton, pivot, rigid, streamlined, terminal velocity, unsupported, water resistance, weight
	Composites: I can explain and demonstrate how forces work.
Week 1 (retrieval)	• **Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments** • **Know that a force can be thought of as a push or a pull** • **Know that as objects move across a surface there is friction when they rub against each other and that sometimes this friction is larger or smaller.** • **Know that applying forces to objects can change their shape.** • **Know that the roughness of a material is an example of a property** • **Know that there are three types of contact force: impact forces (when two surfaces collide), frictional forces (when two surfaces are already in contact) and strain forces (when an elastic material is stretched or squashed).** • **Know that objects move differently on rough and smooth surfaces; objects resist movement more on rough surfaces because there is higher friction as the object moves**
Week 2	• **Know that a force is measured in a unit called Newtons**, named after a British scientist called Sir Isaac Newton who discovered lots about gravity and how planets move • Know that Newton was undoubtedly one of the greatest scientists who ever lived, a genius who discovered a great deal about forces, including gravity, mathematics and light • Know that pull forces can be measured using a device called a force meter • **Know that the amount of matter (stuff) in an object is its mass**
Week 3	• **Know that gravity is a force that acts between all objects in the universe, but that it acts much more strongly between objects that have more mass and that are close together** • **Know that unsupported objects are pulled towards the Earth by the force of gravity** • Know that acceleration is a change in speed and that unbalanced forces acting on an object cause it to accelerate

Week 4	• **Know that air resistance is a force felt by an object as it moves through the air; it is caused by the object bumping into the gas particles that make up air; the quicker an object moves, the more gas particles it bumps into and the more air resistance it experiences** • Know that a falling object will accelerate until its air resistance matches the gravitational force pulling it down; at this point, the object will continue to move at this speed (called its terminal velocity) without getting any quicker or slowing down (see diagram below) • Know that a parachute's shape increases the air resistance that a falling object experiences, giving it a much lower terminal velocity • **Know that water resistance is a force felt by an object as it moves through water; it is caused by the object bumping into the water particles** • **Know that the shape of an object determines how much air resistance or water resistance it experiences**; shapes of object that experience little air resistance or water resistance are described as streamlined
Week 5	• Know how to draw a force diagram with arrows representing the different forces acting on an object (see diagram below)
Week 6	• **Know that a lever is a rigid length pivoting around a fulcrum** (see diagram below) • **Know that a pulley is a wheel with a fulcrum that supports a moving cable or belt** (see diagram below) • **Know that a gear is a rotating wheel with cut teeth that mesh with the teeth of another gear so that turning one gear turns an adjacent gear in the opposite direction** (see diagram below) • **Know that gears, levers and pulleys are simple machines that are used to allow a smaller force to have a greater effect**; they do this by moving a smaller force over a longer distance at one end of the machine, which the machine turns into a larger forcer over a small distance at the other end


velocity = 0
therefore drag
force, F_D = 0
weight, mg
a) At the point of release
velocity increasing therefore drag
force, F_D, increasing
F_D
weight, mg
b) Accelerating
F_D
F_D = mg so
acceleration = 0
weight, mg
c) At terminal velocity


GEARS
load
fulcrum
effort
PULLEY
fulcrum
load
effort
LEVER
effort
load
fulcrum

Block 2
Chemistry
Properties and Changes of Materials

Year 5 Block 2 Properties and Changes of Materials Big Idea(s): C2, C3	**Retrieval vocab:** absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, freezing, wood, plastic, glass, metal, water, rock, suitability, surface, waterproof, flexible, rigid, boiling point, melting point, solid, liquid, gas, sublimation, magnetic **New vocab:** irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation, crystallization, thermal, chemistry
	Composites: I can recall and talk about properties of materials, I can explain how materials can change.
Week 1 (retrieval)	• **Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments** • **Know that one can distinguish between materials made of wood, plastic, glass, metal, water, rock** • **Know that an object is made from/of a material** • **Know that materials can have useful properties for a given job (including being waterproof, strong, weak, hard, soft, flexible, rigid, solid, runny, light, heavy, smooth, rough, flexible or rigid)** • **Know that electrical conductivity (how well a material conducts electricity) is an example of a property** • **Know that metals are good electrical conductors** • **Know that many types of plastic are waterproof, that steel (a type of metal) is strong, that rock is hard, that cotton wool is soft, that rubber is flexible, that rock is rigid, that polystyrene (a type of plastic) is light and that iron (a type of metal) is heavy**
Week 2 **Week 3** **Week 4**	• **Know that things are composed of a matter commonly in one of three states of matter: solid, liquid or gas** • **Know that things are made of particles (tiny building blocks) and that these are organized differently in each state** • **Know that materials can change state when temperature changes** • **Know that there are bonds between the particles (building blocks) in a solid; as temperature increases, these bonds are somewhat overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature, the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas** • **Know that when solids turn into liquids, this is called melting and that the reverse process is called freezing** • **Know that when liquids turn into gases, this is called evaporation and that the reverse process is called condensation** • Know that when a solid turns into a gas without passing through the liquid state, this is called sublimation • **Know that the melting point of water is 0° C and that the boiling point of water is 100° C** • **Know that some materials are magnetic, meaning that they are attracted to a magnet, while other materials are non-magnetic** • **Compare and group together everyday materials based on their properties**

Week 5	• **Know that in some solid materials the bonds between particles break when surrounded by a liquid; this allows the liquid to absorb the solid; when this happens, the solid is called a solute, the liquid is called a solvent and the result is a solution; when a solid does dissolve in a liquid it is described as being soluble in that solvent (e.g. sugar in water); when it cannot it is insoluble (e.g. sand in water)**
Week 6	• **Know that some changes are irreversible inc. buring and acid and baking soda**

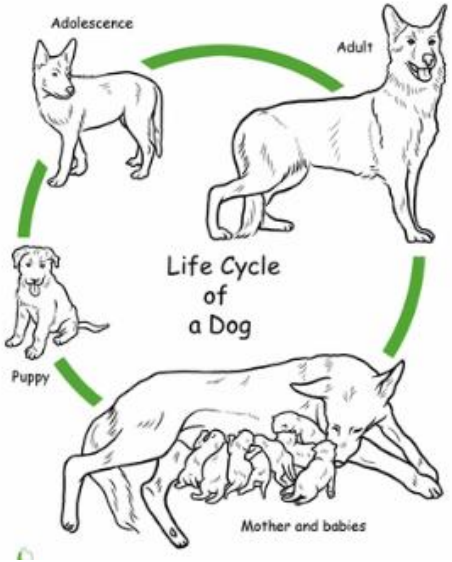
Block 3
Chemistry
Properties and Changes of Materials

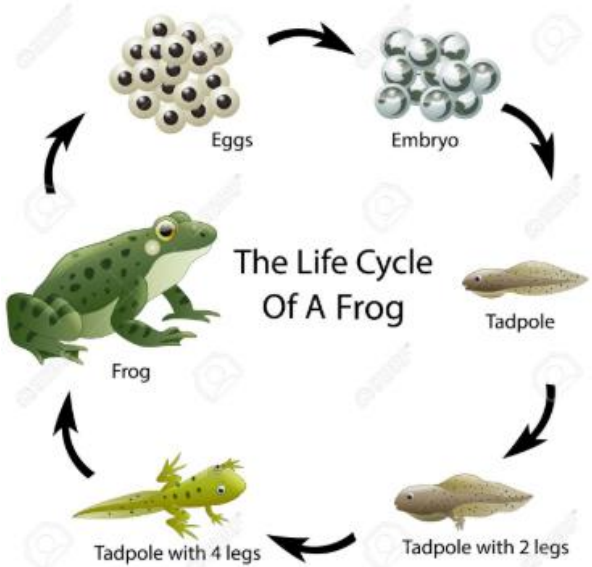
Year 5 Block 3 Properties and Changes of Materials Big Idea(s): C2, C3	**Retrieval vocab:** absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, freezing, wood, plastic, glass, metal, water, rock, suitability, surface, waterproof, flexible, rigid, boiling point, melting point, solid, liquid, gas, sublimation, magnetic **New vocab:** irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation, crystallization, thermal, chemistry **Option for the poor and vulnerable/ common good – water aid filtration system** **Composites: I can recall and talk about properties of materials, I can explain how materials can change.**
Week 1	• Know that a given amount of solvent can only absorb a certain amount of solid before no more will dissolve; when this happens the liquid is said to be saturated
Week 2	• **Know that when a solvent is evaporated from a solution, the original solute is left behind**; the remaining solid will often form crystals – the slower the solvent evaporates, the larger the crystals that will be formed
Week 3	• **Know how to dissolve a solute in a solvent and then how to evaporate the solvent to recover the solute**
Week 4	• **Know that a reversible change is one that can be reversed and that examples of this are mixing, dissolving and changes of state where no chemical reaction takes place**
Week 5	• **Know that an irreversible change is one that cannot be reversed and that examples of this often involve a chemical change where a new material is made, often a gas (e.g. burning, boiling an egg, the reaction of bicarbonate of soda and acid)**
Week 6	• **Know that filtering allows solids and liquids to be separated and that sieving allows solids made up of different sizes parts to be separated**

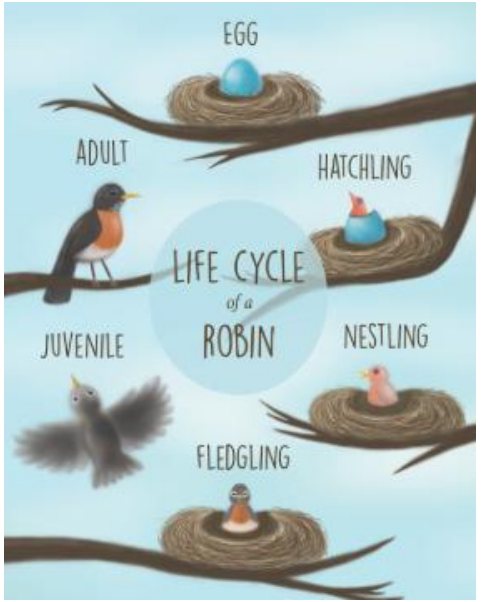
Block 4
Biology
Living Things and Their Habitats

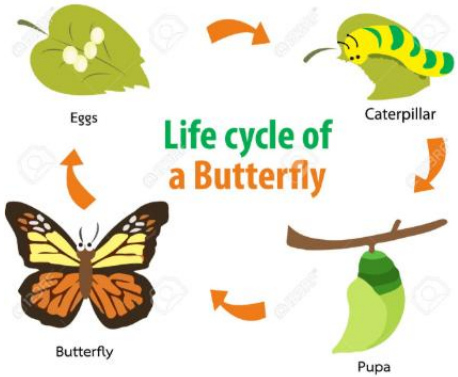
Year 5 Block 4 Plants and Animals Big Idea(s): B1	**Retrieval vocab:** decay, plant, structure, reproduction, nutrients, reproduction, fish, bird, amphibian, reptile, mammal, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, insect, vertebrates **New vocab:** life cycle, life span, embryo, womb, weaned, adolescence, metamorphosis, pupa, larva, chrysalis, caterpillar, tadpole, hatchling, fledgling, insect
	Composite: I can explain and understand reproduction, I know about the changes that Humans go through. I can explain how animals reproduce. **Human Dignity – We are a unique gift feorm God Stewardship – Stewards of Gods world**
Week 1 (retrieval)	• **Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments** • **Know that living things move, grow, consume nutrients and reproduce; that dead things use to do these things, but no longer do; and that things that never lived have never done these things** • Know that a trout is an example of fish, a frog is an example of an amphibian; a lizard is an example of a reptile; a robin is an example of a bird; a rabbit and a human are examples of a mammal • **Know that fish, amphibians, reptiles, birds and mammals are similar in that they have internal skeletons and organs; these are known as vertebrates, which means they are animals that have a backbone** • **Know that fish are different to other animals in having gills so that they can breathe underwater and have scaly skin** • **Know that amphibians are different to other animals in that they begin their lives with gills but then develop lungs and breathe on land** • **Know that reptiles are different to other animals in that they breath air and have scaly skin** • **Know that birds are different to other animals in that they have feathers and wings** • **Know that mammals are different to other animals in that they have fur/hair and they feed milk to their young** • **Know that different parts of plants have one or more functions (jobs)** • **Know that roots collect water and minerals from the soil, and hold the plant firmly in the ground** • **Know that the stem holds up the leaves so that they can gather light to make food and holds up the flowers so that they can receive pollen and disperse their fruits; the stem also transports water and minerals from the roots to the other parts of the plant** • **Know that the leaves make food by trapping light and using its energy to turn carbon dioxide and water into carbohydrates** • **Know that the function of a flower is reproduction**, where flowers of the same kind exchange pollen – made by an anther – in a process called fertilisation, and a structure in the flower's ovary called an ovule becomes a seed; the ovary then becomes a fruit which helps the seed leave the plant in a process called dispersal
Week 2	• **Know that the life cycle of a living thing is a series of stages of development starting with a fertilized egg in animals or a seed in many plants** • **Know that in most mammals (e.g. dogs) a fertilized egg develops in the womb into an embryo and is then born and fed on milk before it is weaned onto the food that is adapted to eat; it then develops to maturity in a period called adolescence after which it can reproduce and the cycle can begin again** (see diagram below)

Week 3	• Know that in amphibians (e.g. frogs) a fertilized egg develops into an embryo and then hatches into a tadpole; the tadpole develops adult characteristics, metamorphoses into the adult form after which it can reproduce and the cycle can begin again (see diagram below)
Week 4	• Know that in many insects (e.g. butterflies) a fertilized egg develops into wingless feeding form called a larva (caterpillar); the larva feeds then later becomes a pupa (chrysalis) with a protective cocoon; inside this cocoon, the pupa metamorphoses into the adult butterfly after which it can reproduce and the cycle can begin again (see the diagram below)
Week 5	• Know that in birds (e.g. robins) a fertilized egg hatches in a nest (a hatchling) and is fed by its parents until it is ready to fly (i.e. becomes a fledgling); it then leaves the nest and grows into an adult after which it can reproduce and the cycle can begin again (see diagram below)
Week 6	


Adolescence
Adult
Life Cycle
of
a Dog
Puppy
Mother and babies


Eggs
Embryo
The Life Cycle
Of A Frog
Tadpole
Frog
Tadpole with 4 legs
Tadpole with 2 legs


EGG
ADULT
HATCHLING
LIFE CYCLE
of a
ROBIN
JUVENILE
NESTLING
FLEDGLING


Eggs
Caterpillar
Life cycle of
a Butterfly
Butterfly
Pupa

Block 5
Biology
Animals including humans

<table>
<tr><td rowspan="2">Year 5 Block 5
Animals inc. humans
Big Idea(s): B2, B3</td><td>Retrieval vocab: decay, plant, structure, reproduction, nutrients, reproduction, fish, bird, amphibian, reptile, mammal, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, insect, vertebrates

New vocab: life cycle, life span, embryo, womb, weaned, adolescence, metamorphosis, pupa, larva, chrysalis, caterpillar, tadpole, hatchling, fledgling, insect</td></tr>
<tr><td>Composite: I can explain and understand reproduction, I know about the changes that Humans go through. I can explain how animals reproduce.
Human Dignity – We are a unique gift form God Stewardship – Stewards of Gods world</td></tr>
<tr><td>Week 1</td><td rowspan="2">Know that humans go through stages of development; they begin as fertilized eggs and then develop into embryos before developing into babies; once they are born, these newborn babies become infants (roughly 2 months to 2 years) then into young children (roughly 2-12 years old); children develop into adults during adolescence (roughly 12-16 years old) at which age they become physically capable of reproduction; as adults develop into old age (roughly 55+ years old) they experience changes in their body which require them to move more carefully and rest more frequently
NB: the changes of adolescence in humans is taught as part of mandatory sex and relationship education; it must be taught with due sensitivity to children's backgrounds and must reflect the PSHE curriculum</td></tr>
<tr><td>Week 2</td></tr>
<tr><td>Week 3</td><td rowspan="2"></td></tr>
<tr><td>Week 4</td></tr>
<tr><td>Week 5</td><td></td></tr>
<tr><td>Week 6</td><td></td></tr>
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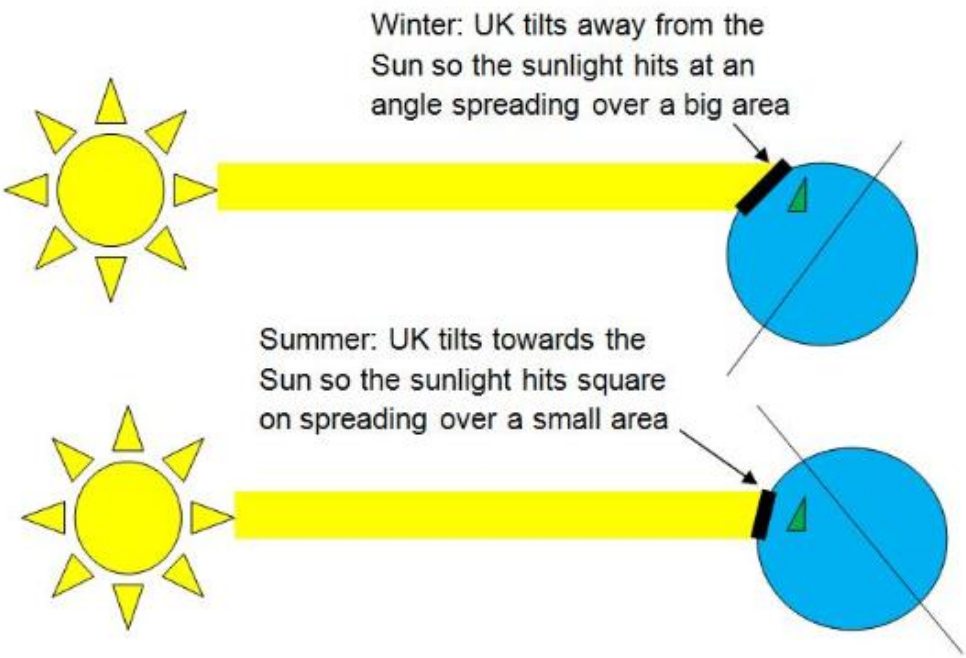
Block 6
Earth Science
Earth and Space

Year 5 Block 6 Earth and Space Big Idea(s): E1, E2	**Retrieval vocab:** absorption, energy, freezing, melting, orbit, reflection, wave, Sun, spring, summer, autumn, winter (NB: the Sun and the Earth are capitalized when being discussed in an astronomical context.) **New vocab:** planet, satellite, sphere, solar system, eclipse, star, universe, constellation, axis, celestial body, Moon, rotating, lunar, solar, telescope, rotation
	Composites: I can describe and explain the movement of the Earth and other planets relative to the Sun., I can describe the Earth, Sun and Moon. I can show understanding of the Moon. I can explain what Space contains. Stewardship and seeing God in creation
Week 1 (retrieval)	• **Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments** • **Know that days are longer in the summer and shorter in winter** • **Know that weather changes through the year, getting hotter in the summer and colder in the winter** • **Know that Earth orbits the Sun with one orbit constituting a year of 365/366 days** • **Know that light is a form of energy** • **Know that we need light to see things and that darkness is the absence of light** • **Know that light travels in straight lines** • **Know that everything that we can see is either a light source or something that is reflecting light from a light source into our eyes** • **Know that the Sun is a light source, but that the Moon is not and is merely reflecting light from the Sun** • **Know that many light sources give off light and heat** • Know that the Sun gives off light and heat when hydrogen turns into helium
Week 2	• **Know that the universe comprises all matter and space in existence** • **Know that a celestial body is a large object in the universe** • **Know that a star is an exceptionally hot ball of gas, originally made from hydrogen and helium** • **Know that the Sun is a star** • **Know that a planet (e.g Earth) is defined as a spherical celestial body that orbits a star** and that has cleared the neighbourhood of its orbit of other objects, some of which crash into the planet and others that become moons of that planet • Know it was once thought that everything orbited the Earth, but that scientists like Copernicus and Galileo used telescopes and measurement to show that the Earth orbited the Sun
Week 3	• **The Sun and the objects that orbit it are collectively known as our Solar System** • **Know that there are eight major planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune** • **Know that a satellite orbits a planet and that moons are natural satellites** • **Know that humans have sent man-made satellites into orbit that assist with telecommunication**

Week 4	• **Know that all the planets in the solar system orbit the Sun** and that the further away they are from the Sun, the longer their orbit • **Know that the Earth spins around an imaginary line through its centre called an axis and that this axis is tilted relative to the Earth's orbit** • **Know that night and day are the result of the Earth rotating on its axis**
Week 5	• **Know that the tilt of the Earth towards and away from the Sun's light as the Earth orbits the Sun leads to the seasons as during winter the light is spread over a wider area** (see diagram below) • **Know that the Moon orbits the Earth roughly every 28 days** • **Know that as the Moon orbits the Sun, different parts of it are lit up by the Sun, which is why we see a different shape lit up on the Moon as the lunar cycle progresses; these are called phases of the Moon** • Know that a solar eclipse occurs when the Moon is between the Sun and the Earth, casting a shadow on the Earth; a lunar eclipse occurs when the Earth is between the Sun and the Moon, casting a shadow on the Moon
Week 6	• Know that Katherine Johnson was a scientist and mathematician from America • She worked for NASA and her calculations and work were critical to the success of the first and subsequent manned space flights • She was one of the first black women to attend an integrated university in her state, West Virginia, having been handpicked due to her ability


Winter: UK tilts away from the Sun so the sunlight hits at an angle spreading over a big area
Summer: UK tilts towards the Sun so the sunlight hits square on spreading over a small area

Working Scientifically: Enquiries

Topic	Small Question	Enquiry	Big Idea(s)	Enquiry Type	Working Scientifically Skill
Earth and Space	What shape is the moon and does it change?	Chn keep a moon diary over the period of a month (focusing on moon shape) and a moon diary for one clear evening (focusing on position in the sky) and analyse their results.	**E1:** The Earth is one of eight planets that orbit the sun. It has one large natural satellite called the Moon that orbits the Earth.	Observing over different periods of time.	Sc5/1.1, Sc5/1.4, Sc5/1.5, Sc5/1.6
Forces	How do parachutes work?	Chn to create parachutes, changing a variable to try to isolate what is needed for an effective parachute (e.g. changing parachute material, size, shape, etc)	**P2:** Forces are different kinds of pushes and pulls that act on all the matter that is in the universe.	Fair testing	Sc5/1.1, Sc5/1.2, Sc5/1.3, Sc5/1.4, **Sc5/1.5 (enquiry write up)**
Properties and Changes of Materials	What happens to salt in water?	Chn to stir a small amount of salt, sugar, small stones and sand into water and to observe what happens with each and to determine which is soluble in water and which is insoluble in water	**C3:** Matter can change if the arrangement of these building blocks changes.	Grouping and classifying	Sc5/1.1, Sc5/1.3
Properties and Changes of Materials	Can I make a gas using a solid and a liquid?	Chn add vinegar (ethanoic acid) to bicarbonate of soda and observe the reaction, specifically the bubbles of carbon dioxide given off	**C3:** Matter can change if the arrangement of these building blocks changes.	Observing over different periods of time	Sc5/1.1, Sc5/1.3
Properties and Changes of Materials	Is it possible to separate even very small things like sand, salt and stones?	Chn use filtering and evaporation to separate a mixture of sand, salt and stones.	**C2:** Matter can change if the arrangement of these building blocks changes. (In this case, dissolving, breaks the bonds between building blocks.)	Noticing patterns	Sc5/1.1 **Sc5/1.5 (enquiry write up)**
Living Things and Their Habitats	If life has existed for billions of years, why are there still people alive today?	Chn use a variety given information and online resources to research and describe the life cycles of different animals, looking for the similarities between each.	**B1:** Living things are special collections of matter that make copies of themselves, use energy and grow.	Finding out using a wide variety of secondary sources	Sc5/1.5 Sc5/1.6