

Reach Academy KS2 Science – Topic Overviews

This document shows the topics for science from Year 3 to Year 6 with links to the National Curriculum.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Practical skills	Raw and synthetic materials	Sound	Forces	Plants	Ecosystems
Year 4	Phases of Matter	Rock cycle	Light	Space	Adaptations	Human Anatomy
Year 5	Separating mixtures	Physical and Chemical Changes	Magnetism	Electrical Circuits	Humans and Animals Over Time	Reproductive Cycles
Year 6	Chemical Reactions	Sustainability	Heat	Energy	Cells	Diet and Lifestyle

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Year 3 Autumn 1 - Practical skills

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is a variable?	Define a dependent, independent and control variable Know how to plan a 'fair test' Identify the variables in a range of experiments	<ul style="list-style-type: none"> Recognise that soils are made from rocks and organic matter.
2	Why is a method important?	Know how to work as part of a team Can follow the instructions in a method Can write a method for an investigation	
3	How do you draw a scientific diagram?	Identify good scientific diagrams Draw a range of scientific diagrams Can use scientific diagrams to identify an organism or object	
4	What can we do with the data we collect?	Describe how to collect results Can draw a results table Know how to present results	
5	How can we communicate our results?	Know how to interpret results Can write a conclusion Know how to present a conclusion	
6	How can we record an entire investigation?	Can draft an investigation report Know how to edit an investigation report Can redraft an investigation report	

Year 3 Autumn 2 - Raw and synthetic materials

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is a raw material?	Explain what a raw material is Can sort raw materials based on where they come from Describe the uses of some raw materials	<ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency
2	What is a synthetic material?	explain what a synthetic material is describe the uses of some synthetic materials sort materials into synthetic and raw materials	
3	How are synthetic materials made from raw materials?	Explain that the raw materials change properties when made into synthetic material Describe how the glass is made from sand Describe how the properties of sand change to the properties of glass	
4	How is paper made?	Describe how paper is made from wood Describe a range of uses of paper Explain why it is a good thing to recycle paper	
5	What is recycling and why is it important?	Describe what the process of recycling involves Explain making synthetic materials takes energy Explain the negative impact of using raw materials	
6	What does it mean to live sustainably?	State what sustainably means Describe ways to live sustainably Explain some difficulties with living sustainably	

Year 3 Spring 1 – Sound

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is sound?	Describe what sounds waves are Describe how we hear sounds Explain how we can stop sound	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases.
2	How are different sounds produced?	Describe how sounds are produced Describe ways that different sounds can be made Make your own instrument to create a sound	
3	What are frequency and pitch?	Describe what the pitch of a sound is Describe ways to change the pitch of a sound Give example of objects that produce high and low pitch sounds	
4	What do we mean by amplitude of sound?	Describe what we mean by the amplitude of sound Describe how to change the amplitude of a sound Give examples of high amplitude and low amplitude sound	
5	How do scientists design objects that use sound?	Explain what the science of acoustics involves Describe how scientists dampen noise that is not wanted Describe how engineers build venues to improve sound quality	
6	What are some uses of sound?	Explain how a string telephone works Describe how loudspeakers and microphones work Explain how animals and submarines use echo-location	

Year 3 Spring 2 - Forces

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are forces?	Define a force Know the effect forces can have on an object Can name the forces acting on a range of objects	<ul style="list-style-type: none"> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
2	How can we measure the size of forces?	Describe what Newton discovered about forces Explain what a Newton meter and what it does Describe how to measure the size of a range of forces	
3	What are contact forces?	Define contact forces Explain what causes a range of contact forces Describe ways of changing the size of a frictional force	
4	What are non-contact forces?	Define non-contact forces Describe the cause and effect of gravitational forces Describe how a magnetic force may lead to attraction or repulsion	
5	What factors affect an object's ability to float?	Describe the forces acting on an object that floats in water Explain why forces may lead to it floating or sinking Describe features of an object that enable it to float	
6	What impact do gears, levers and pulleys have on forces?	Describe what gears, levers and pulleys are Explain why gears, levers and pulleys are helpful Describe applications of gears, levers and pulleys	

Year 3 Summer 1 - Plants

Week	Lesson Question	What will I learn?	National Curriculum links
1	What conditions could we change to investigate the growth of a plant?	Describe what a plant needs to survive State what the three main types of variables are Can plan an investigation into the factors that affect plant growth	<ul style="list-style-type: none"> 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.
2	What happens to a plant's growth if we change the conditions it is in?	Describe the main parts and functions of a plant Know how to draw a scientific diagram Know how to write a conclusion for an investigation	
3	What are the parts and functions of a flowering plant?	Name the main parts of a flower Describe the functions of each of the main parts of a flower Know how to identify the parts on a real flower	
4	Are the parts of a flowering plant's life cycle?	Describe the parts of a flowering plants lifecycle State the conditions required for germination Describe three ways in which seed dispersal takes place	
5	How does a plant transport water?	Describe what transpiration is Give the three main steps of water transport in plants Describe how to prove that water moves up a plants stem	
6	How do plants adapt to different conditions?	Describe what a plant adaptation is Describe how plants adapt to extreme hot and extreme cold Describe how plants adapt to attract animals or keep them away	

Year 3 Summer 2 - Ecosystems

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is an ecosystem?	To define a habitat To define an ecosystem To identify the components of a given ecosystem.	<ul style="list-style-type: none"> • 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 • Recognise that living things can be grouped in a variety of ways • Recognise that environments can change and that this can sometimes pose dangers to living things. • Construct and interpret a variety of food chains, identifying producers, predators and prey.
2	How do we classify the diets of animals?	To define a carnivore, omnivore and herbivore To name some animals that are carnivores, omnivores and herbivores To draw a Venn diagram to sort animals based on what they eat	
3	Why are producers so important?	To define a producer. To identify the producers in a given ecosystem. To explain how plants make their own food.	
4	How do we construct a food chain?	To explain that food chains show the transfer of energy between organisms. To label a food chain. To construct a food chain.	
5	How do we construct a food web?	To draw a scientific sketch. To show the energy transfer between organisms on a food web. To construct a food web.	
6	What can cause disruptions to food webs?	To construct a food web. To make predictions about removing organisms from food webs. To name causes of disruption to food webs.	

Year 4 Autumn 1 - Phases of Matter

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are the properties of solids, liquids and gases?	Define the property of a substance Name the properties of solids, liquids and gases Identify the state of matter based on its properties	<ul style="list-style-type: none"> • Compare and group materials together, according to whether they are solids, liquids or gases • 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 (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
2	How do particles behave in solids, liquids and gases?	Describe what a particle is Describe how particles are arranged in solids, liquids and gases Explain how we know particles in liquids and gases are moving	
3	What happens when you heat or cool each state of matter?	Describe what happens to particles when heated or cooled Predict what should happen to a solid, liquid or gas when it is heated or cooled Describe the evidence to show that each state expands when heated and contracts when cooled	
4	What are changes of state and why do they take place?	Describe what happens to the arrangement of particles when a substance changes state Name each of the changes of state Give an example of each change in state	
5	How can we measure melting points and boiling points?	Describe what is meant by melting point and boiling point Describe how it is possible to measure the melting point and boiling point of a substance Suggest which state of a matter a substance will be in given its temperature	
6	Which substances do not fit into one state of matter?	Give examples of substances that do not show typical properties of any state of matter Describe what a non-Newtonian fluid is Investigate non-Newtonian fluids	

Year 4 Autumn 2 - Rock cycle

Week	Lesson Question	What will I learn?	National Curriculum Links
1	How is igneous rock formed?	Describe how igneous rock is created Explain what intrusive and extrusive igneous rocks are Know how to classify different types of igneous rock	<ul style="list-style-type: none"> • 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. • Explore and use classification keys to help group, identify and name
2	How is sedimentary rock formed?	Describe how sedimentary rock is formed Describe how fossils are formed Explain how we can tell the age of a sedimentary rock	
3	How is metamorphic rock formed?	Describe what metamorphosis is Describe how metamorphic rock is formed Give the properties and uses of different metamorphic rocks	
4	How can we identify and classify different types of rocks?	Describe what a geologist is Give examples of famous geologists Describe how geologists classify rocks	
5	How do the rocks on our Earth's surface change?	Describe the effect that water can have on rocks Describe what chemical weathering is and what it does Explain how large earth movements can cause rocks to change	
6	What are the steps in the rock cycle?	Understand how the processes in the rock cycle fit together Know how to correctly order the processes in the rock cycle Make comparisons between the rock cycle and the water cycle	

Year 4 Spring 1 - Light

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is light and where does it come from?	Describe what light is and where it comes from Explain what light and dark are Describe how we can measure levels of light	<ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light
2	What is reflection and how can we use it?	Describe what reflection is Describe what happens to the direction of light when it reflects Give uses of reflection	<ul style="list-style-type: none"> 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
3	What is refraction and how can we use it?	Describe what refraction is Describe what happens to the direction of light when it refracts Give uses of refraction	<ul style="list-style-type: none"> 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.
4	How do we see light?	Describe how we see State the parts of the eye Describe ways in which people can be partially sighted	<ul style="list-style-type: none"> Recognise that light appears to travel in straight lines 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
5	Where do different colours come from?	Describe how white light can be used to make colours Describe how base colours of light can be made new colours Explain how rainbows are created	<ul style="list-style-type: none"> 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
6	What are some uses of light?	Describe how light is used in shadow puppetry Explain how a periscope works Describe how lenses can spread out and concentrate light	<ul style="list-style-type: none"> Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Year 4 Spring 2 - Space

Week	Lesson Question	What will I learn?	National Curriculum Links
1	What are solar and lunar eclipses?	Describe how the Moon, Earth and Sun move around each other Describe what happens during a lunar eclipse Describe what happens during a solar eclipse	<ul style="list-style-type: none"> • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system • Describe the movement of the Moon relative to the Earth • Describe the Sun, Earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
2	What is the solar system?	Explain what the solar system is Name the parts of the solar system Explain the difference between comets, meteors and meteorites	
3	How do the planets in the solar system differ?	Can name the planets of the solar system in order Describe the difference between the inner and outer planets Explain why Pluto is no longer considered a planet	
4	What are stars and star constellations?	Explain what stars are Describe some types of stars Explain what star constellations are	
5	What is the universe and what is it made from?	Describe what we mean by the universe Explain what a galaxy is Describe what the Milky Way is	
6	What do astronomers do?	Describe what the work of an astronomer is Name famous astronomers and what they discovered Describe what astronomers are currently trying to find out about the universe	

Year 4 Summer 1 - Adaptations

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is the difference between an ecosystem and an environment?	To define ecosystem and identify its components To define an environment To describe a range of environments	<ul style="list-style-type: none"> • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation • 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 • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
2	What is an adaptation?	Define an adaptation Understand that adaptations are not a 'choice' Learn a range of common adaptations e.g. camouflage	
3	How are organisms adapted to hot environments?	Describe the conditions of hot and dry environments Adaptations of desert animals Adaptations of desert plants	
4	How are organisms adapted to cold environments?	Describe the conditions of cold environments Common adaptations of animals to cold environments e.g., insulation Make comparisons between organisms from different cold environments	
5	What adaptations do nocturnal animals have?	Describe the conditions of night time environments Compare the eyes of nocturnal and diurnal animals How echolocation works	
6	How are organisms adapted to live underwater?	Describe the conditions of underwater environments Common adaptations of fish Common adaptations of marine mammals	

Year 4 Summer 2 - Human Anatomy

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are organs and why do we need them?	Can label major organs in human body Describe the functions of the major human organs Explain why organ donation is so important	<ul style="list-style-type: none"> • 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. • Describe the simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Describe the changes as humans develop to old age.
2	What are the major bones in the human body?	Can label the human skeleton Describe the functions of the skeleton Describe the difference between endoskeletons and exoskeletons	
3	How does human anatomy compare to other animals?	Describe variation within the animal kingdom Compare the human skeleton to other animals Compare human organs to other animals	
4	Are all teeth the same?	Compare the teeth of different animals Identify the types of human teeth Describe the function of different types of teeth	
5	How is oxygen transported around our bodies?	Explain why we need oxygen Give the components of the circulatory system Describe how the circulatory system works	
6	How do humans digest food?	Can label the major components of the digestive system Describe the function of the different parts of the digestive system Describe the journey food takes through our digestive system	

Year 5 Autumn 1 - Separating Mixtures

Week	Lesson Question	What will I learn?	National Curriculum links
1	What makes something pure?	Describe what a pure substance is Give examples of some pure substances Explain how we can tell if something is pure or not	<ul style="list-style-type: none"> • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
2	What makes something a mixture?	Know what a mixture is Give examples of mixtures of substances from the same state Describe examples of mixtures with substances in different states	
3	What is a formulation?	Describe what a formulation is Explain why formulations are useful Give examples of formulations	
4	How can we separate mixtures into pure substances?	Describe how to remove large solid particles from a mixture Describe how to remove insoluble substances from a mixture Describe how to remove soluble substances from a mixture	
5	What steps could we take to separate river water?	Describe the substances that are present in river water Suggest how pure substances can be removed from river water Write a method to separate the substances present in river water	
6	How well can you separate river water into separate substances?	Carry out separation of substances in river water Evaluate the method for separating substances in river water Suggest how an environmental scientist could check the water quality in a river	

Year 5 Autumn 2 - Physical and Chemical Changes

Week	Lesson Question	What will I learn?	National Curriculum links
1	What happens during a state change?	Describe how are particles arranged in solids, liquids and gases Explain what happens to particles in a change of state Identify phase changes present in a range of examples	<ul style="list-style-type: none"> • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
2	What is a physical change and how can we identify them?	Know what a physical change is Describe signs that a physical change has taken place Give examples of physical changes	
3	What is a chemical change and how can we identify them?	Know what a chemical change is Describe signs that a chemical change has taken place Give examples of chemical changes	
4	How do physical and chemical changes compare?	Describe the similarities and differences between physical and chemical changes Identify physical and chemical changes Suggest when a physical or chemical change may be useful	
5	What can we do to investigate chemical reactions?	Explain how to tell which reaction is larger Identify variables Give a method for investigating a reaction between acids and metals	
6	What happens when we place metals into acid?	Complete an investigation into acid and metal reactions Can use evidence to make a conclusion Know how to compare your results with other sets of results	

Year 5 Spring 1 - Magnetism

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are non-contact forces?	What are forces? What are contact and non-contact forces? Name contact and non-contact forces	<ul style="list-style-type: none"> • 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.
2	What are magnets?	Know what magnets are Describe when magnets attract and repel Describe how to test the strength of a magnet	
3	How does a compass work?	Explain what a compass is Describe what a compass does Describe how to make a compass	
4	How can we see a magnetic field?	Describe how field lines help us to understand the effect of an invisible force Describe how field lines around a magnet can be mapped out Use a diagram of field lines to see where the force will be strongest and where it will be weakest	
5	How can we tell if a material is magnetic or not?	Describe how to find out if a material is magnetic or not State differences between permanent and temporary magnets Name examples of magnetic and non-magnetic materials	
6	What are some uses of magnetic materials?	State what an electromagnetic is Describe how to make an electromagnet Give examples of uses of magnets and electromagnets	

Year 5 Spring 2 - Electrical Circuits

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is static electricity?	Describe what static charge is Describe how to create a build-up of static charge Explain how lightning occurs	<ul style="list-style-type: none"> • Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether 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 • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors. • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • 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 • Use recognised symbols when representing a simple circuit in a diagram.
2	What are the parts of an electrical circuit?	Describe the parts of an electrical circuit Explain how electricity in a circuit is different to static electricity State the conditions for electricity to flow in a circuit	
3	How can we build basic circuits	Explain what a circuit diagram is Identify the component from the circuit symbols provided Can build a basic circuit from the circuit diagram provided	
4	What are electrical insulators and conductors?	Describe what electrical insulators and conductors are Give examples of electrical insulators and conductors Test whether a material is an insulator or a conductor	
5	What happens in a circuit when we change the components?	Write a prediction for changing the components in a circuit Carry out an investigation to test your prediction Evaluate whether your prediction using your results	
6	How can we create a circuit to build a buzzer game?	Create a circuit with a buzzer and a switch Design a game that uses the buzzer Create the buzzer game that has been designed	

Year 5 Summer 1 - Humans and Animals over Time

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is the theory of evolution?	How random changes in characteristics lead to an advantage in an organism How the survival of these organisms leads to evolution how Charles Darwin came up with the theory of evolution	<ul style="list-style-type: none"> ● Describe in simple terms how fossils are formed when things that have lived are trapped within rock ● Describe 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 ● Give reasons for classifying plants and animals based on specific characteristics. ● Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago ● Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents ● Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
2	How do fossils provide evidence for evolution?	What a fossil is and how it is made What fossils show us about changes in species over time Why fossils do not give us a complete record of past organisms	
3	How have different animal kingdoms developed over time?	The name of each of the animal kingdoms The key traits of each animal kingdom How the evolutionary tree shows us how animal kingdoms are related	
4	Which types of organisms have lived over each era of time?	The names of the main periods of time Which groups of organisms existed in each period The reasons why some organisms became extinct	
5	What impact have homo sapiens had on the organisms over time?	Know the key stages in the development of homo sapiens Describe the impact of homo sapiens on plants Describe the impact of homo sapiens on animals	
6	What is the likely impact of humans on organisms in the future?	Describe the decline in numbers of species over the last 200 years Describe the impact of homo sapiens hunting animals and cutting down forest Know what the role of a conservationist is	

Year 5 Summer 2 - Reproductive Cycles

Week	Lesson Question	What will I learn?	National Curriculum links
1	Why do plants have flowers?	Can label parts of a flower Describe stages of the life cycle of a flower plant Describe different methods of pollination and seed dispersal	<ul style="list-style-type: none"> ●Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird ●Describe the life process of reproduction in some plants and animals. ●Describe 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 ●Give reasons for classifying plants and animals based on specific characteristics.
2	How do you clone a potato?	Know how new plants can be grown from cuttings and bulbs. Know how to take a cutting Compare sexual and asexual reproduction in plants and talk about the advantages and disadvantages of both.	
3	How does the lifecycle of an insect compare to an amphibian?	Explain metamorphosis. Describe the main stages of the life cycle of an insect and an amphibian. Compare the life cycles of amphibians and insects.	
4	Are the life cycles of all mammals the same?	Describe the process of sexual reproduction Describe the life cycles of different types of mammal Compare the life cycles of different types of mammal	
5	Why do birds lay eggs?	Identify the stages of a bird's life cycle Can label the parts of an egg Describe how some birds attract a mate	
6	How do lifecycles compare across the animal kingdom?	Describe the differences in the life cycles of different animals Explain the differences between the life cycles of animals Know how to report and present scientific findings	

Year 6 Autumn 1 – Particles in physical and chemical changes

Week	Lesson Question	What will I learn?	National Curriculum links
1	How do particles in solids, liquids and gasses behave?	Draw particle diagrams to represent states of matter Name the physical changes that convert substances between states of matter Describe the physical properties of solids, liquids and gases	<ul style="list-style-type: none"> know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
2	What do the particles in pure substances and mixtures look like?	Define pure, impure and mixture Draw particle diagrams to represent pure and impure materials Give examples of useful mixtures	
3	What happens to particles during dissolving?	Define solvent, solute and solution Draw particle diagrams to represent a solution Describe what happens to particles during dissolving	
4	How can mixtures be separated?	State three methods of separating mixtures Select an appropriate separation technique for a given mixture Plan an experiment to isolate components of a mixture	
5	How can we tell when a chemical reaction has taken place?	Define chemical reaction, physical process State the 5 indicators of a chemical reactions Identify examples of chemical reaction and physical changes	
6	What happens to particles during burning?	Define the word combustion, fuel, reactant and product Write a word equation for the combustion of common fuels Compare different fuels using experimental data	

Year 6 Autumn 2 - Sustainability

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are everyday materials made from?	Describe the properties of glass, ceramics and plastics Describe how glass ceramics and plastics are made Explain what happens to glass, ceramics and plastics at landfill.	<ul style="list-style-type: none"> • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Explain that some changes result in the formation of new materials
2	Why is recycling important?	Know the definition of recycling Describe how to identify plastics that can and can't be recycled Explain why recycling plastic is important for the environment	
3	What is a life cycle assessment?	Give the definition of a life cycle assessment Know how to use data to make a life cycle assessment Compare reusable and one use plastic bags over their lifetime	
4	What impact do gas emissions have on the earth?	Describe the gas emissions caused by human activity Describe the impact of each type of gas emission on the Earth Describe actions we can take to reduce gas emissions	
5	What is global warming?	Describe what global warming is Describe the evidence for global warming Describe what scientists think are the causes of global warming	
6	What is climate change?	Describe what climate change is Describe the effects of climate change Give case study examples of the effects of climate change	

Year 6 Spring 1 - Heat

Week	Lesson Question	What will I learn?	National Curriculum links
1	What happens when you heat particles?	Describe how particles behave in solids, liquids and gases Describe what happens to particles when they are heated Explain what happens to particles when they change state	
2	Why does heat cause expansion in a substance?	Describe what happens to a substance when it is heated Predict whether an object will expand or contract Suggest some engineering applications of this knowledge	
3	What is thermal equilibrium?	Define what we mean by a thermal equilibrium Describe how thermal equilibrium can be reached Suggest ways that thermal equilibrium is reached more quickly	
4	How is heat transferred between particles?	Describe how heat is transferred by particles through conduction Describe a method to demonstrate the speed of conduction through metal Explain why it is hard to conduct heat directly through a liquid or gas	
5	What are thermal conductors and insulators?	Describe what a thermal conductor is Describe what a thermal insulator is Sort materials based on whether they are insulators or conductors	
6	How can we prevent heat from getting to an ice cube?	Create a design to keep an ice frozen for as long as possible Explain why your design will help the ice cube to stay frozen Evaluate your design and suggest improvements	

Year 6 Spring 2 - Energy

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are energy stores?	Describe what an energy store Give the names of different energy stores Identify the energy stores present in a range of objects	
2	What is energy transformation?	Describe what initial and final energy stores are Identify the initial and final energy stores in a range of scenarios Describe the energy transformations that take place during a bungee jump	
3	What is efficiency and how can it be calculated?	Describe what useful, wasted and input energy stores are Describe what efficiency is Calculate efficiency of a given machine	
4	What is power and how does it apply to electrical appliances?	Define power Give the equation for power Compare the power ratings of a range of appliances	
5	How do we relate speed, distance and time?	Describe what we mean by speed Describe the method for calculating an object's speed Calculate the speed of a range of objects	
6	How can we calculate kinetic energy?	Describe where kinetic energy may be found Describe how the kinetic energy of an object can be changed Calculate the kinetic energy of a number of objects	

Year 6 Summer 1 - Cells

Week	Lesson Question	What will I learn?	National Curriculum links
1	What is the difference between animals and plants?	Describe the differences between plants and animals Describe the similarities between plants and animals Compare the living conditions required for plants and animals	<ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
2	What are the main organ systems of the body?	Describe what an organ system Give examples of organ systems in animals Give examples of organ systems in plants	
3	What are organ systems, organs, tissues and cells?	Describe how organ systems are made from organs Explain how organs are made from tissues which are made from cells Describe how cells build tissues and organs of the circulatory system	
4	What are animal cells?	Name the parts of an animal cell Label the parts of an animal cell on a diagram Describe what each part of an animal cell does	
5	What are plant cells?	Name the parts of a plant cell Label the parts of a plant cell on a diagram Describe what each part of a plant cell does	
6	What are specialised cells?	Describe what a specialised cell is Give examples of specialised cells are Explain how root cells and sperm cells are specially adapted	

Year 6 Summer 2 - Diet and Lifestyle

Week	Lesson Question	What will I learn?	National Curriculum links
1	What are the key parts of a healthy diet?	Describe the key parts of a healthy diet Describe the effect of each food group Give examples of nutritional deficiencies	<ul style="list-style-type: none"> • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans. • Describe the changes as humans develop to old age
2	Why do people with different lifestyles need different diets?	Describe what is meant by different lifestyles Explain why different people may need different diets Design a diet for two people with different lifestyles	
3	What effect does exercise have on the muscles?	Describe how muscles enable movement Describe what happens to muscles during exercise Explain how muscles may change over time due to exercise	
4	What happens to the circulatory system during exercise?	Describe the parts of the circulatory system Describe the changes that will occur during exercise Describe how an athlete's body will respond differently to exercise	
5	What are medicinal drugs?	Describe what is meant by medicinal drugs Give some examples of common medicinal drugs Describe how medicinal drugs may affect the body	
6	Which are nicotine and alcohol?	Describe what nicotine and alcohol are Explain how nicotine and alcohol came to be used by humans Describe some effects of using nicotine and alcohol to excess	

