Science – Year 1 Learning Objectives – Autumn 1

Seasonal Changes

Lesson 1: Wonderful weather	Lesson 2: Seasonal activities	Lesson 3: How do trees change?	Lesson 4: Daylight hours	Lesson 5: Observing over time	Lesson 6: Weather reports
To identify how the weather changes across the four seasons.	To identify events and activities that take place in different seasons.	To know how trees change across the four seasons.	To recognise that daylight hours change across the four seasons. Working scientifically: To record data in a pictogram.	Working scientifically: To gather and record data about how seasons change over time.	To plan and carry out a weather report.

Intended outcome of the unit

Name the four seasons in order and describe the typical weather in each.

Name some activities and events in the four seasons.

Describe the appearance of a tree's leaves in each season.

Complete a pictogram and use it to answer simple questions.

Recall that summer has the most daylight hours and winter has the least daylight hours.

Recording data about the temperature across the four seasons.

Label a map of the UK with capital cities and seasonal weather symbols.

Key Vocab

conclusion	season
data	sunrise
deciduous tree	sunset
evergreen tree	symbol
pictogram	temperature
predict	thermometer
record	weather

Science – Year 1 Learning Objectives – Autumn 2

Everyday Materials

Lesson 1: Naming materials	Lesson 2: Material detectives	Lesson 3: Introduction to properties	Lesson 4: Is it absorbent?	Lesson 5: Is it waterproof?	Lesson 6: Is it tough?
To identify everyday materials. Working scientifically: To sort objects into groups based on the materials they are made from.	To recognise the difference between objects and materials.	To describe the properties of materials.	To group materials based on their properties (absorbency). Working scientifically: To make observations and record data.	To group materials based on their properties (waterproofness). Working scientifically: To plan a test and suggest what might happen.	To group materials based on their properties (toughness). Working scientifically: To answer questions based on results.

Intended outcome of the unit

Name objects and identify the materials they are made from.

Recognise that objects are made from materials that suit their purpose.

Recall that a property is how a material can be described.

Sort objects based on the materials they are made from.

Group objects based on their properties.

Suggest ways to test materials for their properties.

Make predictions and recognise whether they were accurate.

Use their observations to answer questions.

Begin to recognise if a test is fair.

Key Vocab

absorbent
data
fabric
glass
group
material
metal
object
opaque
plastic
property
rock
tough
transparent

Science – Year 1 Learning Objectives – Spring 1

Sensitive Bodies

Lesson 1: Body parts	Lesson 2: The senses	Lesson 3: Taste and touch	Lesson 4: Sight and smell	Lesson 5: Hearing	Lesson 6: Senses in action
Knowledge To name parts of the human body. Working scientifically To sort body parts into groups.	Knowledge To name the body parts used for each sense. Working scientifically To spot patterns in data.	Knowledge To identify the body parts used for the sense of taste and touch. Working scientifically To use the senses to make observations.	Knowledge To identify the body parts used for the sense of smell and sight. Science in action To recognise that scientists are always making new discoveries.	Knowledge To identify the body part used for the sense of hearing. Working scientifically To investigate how sound changes as you move further away.	Knowledge To recognise how the senses are used in everyday life. Science in action To recognise the importance of the senses in certain jobs.

Intended outcome of the unit

Draw and label human body parts.

Identify the body parts associated with each sense.

Compare and group body parts.

Begin to recognise patterns in data and use these to answer questions.

Record data in a table.

Measure using non-standard units.

Key Vocab

action	distance
bitter	feeling
blind	group
body	hearing
compare	investigation
data	loud
direction	obstacle

Science – Year 1 Learning Objectives – Spring 2

Comparing Animals

Lesson 1: Animal groups	Lesson 2: Describing animals	Lesson 3: Comparing animals	Lesson 4: Carnivore, herbivore or omnivore?Working scientifically	Lesson 5: PetsWorking scientifically	Lesson 6: Jane GoodallScience in action
To identify and group animals.	To describe a variety of animals.	To compare the features of animals.	To identify animals that are carnivores, herbivores and omnivores. To research using non-fiction texts.	To recognise animals that make suitable pets. To gather and record data to help in answering questions.	To describe and compare the structure of animals. To know about famous scientists throughout history.

Intended outcome of the unit

Name and describe the physical features of a range of animals.

Sort animals into groups based on their similarities and differences.

Identify characteristics specific to mammals, birds, reptiles, amphibians and fish.

Recall the diets of carnivores, herbivores and omnivores.

Use a non-fiction text to find out about specific animals' diets.

Recognise that there are different ways to gather data.

Record data in a block graph and use this to answer questions.

Recognise what the scientist Jane Goodall was known for.

Recall some of Jane Goodall's key findings.

Key Vocab

amphibian	diet
bird	differences
block chart	feature
body	fish
carnivore	group
compare	herbivore
data	hunt

Science – Year 1 Learning Objectives – Summer 1

Introduction to Plants

Science – Year 1 Learning Objectives – Summer 2

Investigating Science Through Stories

Science – Year 2 Learning Objectives – Autumn 1

Habitats

Lesson 1: Life processes	Lesson 2: It feels good to be alive	Lesson 3: Introduction to habitats	Lesson 4: Woodland habitats	Lesson 5: Rainforest and ocean habitats	Lesson 6: Food chains
To identify some of the characteristics of living things.	To recognise the difference between things that are alive, were once alive or have never been alive. Working scientifically: To classify objects into groups.	To identify plants and animals in different habitats.	To identify how a habitat provides animals and plants with what they need to survive. Working scientifically: To carry out research to find answers to questions.	To recognise how animals and plants depend on each other.	To recall how animals get their food from plants and other animals.

Intended outcome of the unit

Ask questions to further their knowledge.

Recall some life processes, giving examples of how they apply to plants and animals.

Classify objects into alive, never been alive and was once alive, giving reasons for their choices.

Match different plants and animals to their habitats.

Give examples of how animals use their habitat for food and shelter.

Recall that plants produce their own food for energy.

Name living things that are producers and place a producer at the beginning of a food chain.

Use arrows to show the order in a food chain.

Key Vocab

alive	depend
analyse	diet
camouflage	energy
carnivore	excretion
classify	food chain
coastal	growth
dead	habitat

Science – Year 2 Learning Objectives – Autumn 2

Micro Habitats

Intended outcome of the unit
Identify and name a variety of plants and animals.
Recall that minibeasts live in microhabitats.
Describe microhabitats and their conditions.
Describe how microhabitats provide for the basic needs of animals and plants.
Describe the job role of a botanist.
Group minibeasts and create simple classification keys.
Ask questions and recognise that they can be answered in different ways.
Gather and record data and use it to answer questions.
Plan what observations to make in an experiment.
Order the steps of a method.
Describe the appearance of flowering plants.
Use an identification chart to name flowering plants.

Lesson 1: Identifying and classifying minibeasts	Lesson 2: Introduction to scientific enquiry	Lesson 3: Minibeast hunt	Lesson 4: Planning an experiment	Lesson 5: Woodlice experiment	Lesson 6: What is a botanist?
Working scientifically: To classify a variety of minibeasts.	Working scientifically: To recognise how scientists answer questions.	To recognise that living things live in habitats to which they are suited. Working scientifically: To gather and record data to answer a question.	Working scientifically: To ask questions and plan how to carry out an experiment.	Working scientifically: To carry out an experiment and record data in a table.	To identify a variety of flowering plants. Science in action: To understand the role of a botanist.

Key Vocab	
botanist	criteria
camouflage	data
characteristics	food chain
classification key	identify
classify	invertebrate
comparative/fair test	method
conclusion	microhabitat

Science – Year 2 Learning Objectives – Spring 1

Uses of everyday materials

Lesson 1: Objects and materialsWorking scientifically	Lesson 2: Which material is suitable?	Lesson 3: Stretch it, twist it, bend it, squash it!	Lesson 4: Testing stretchiness	Lesson 5: Testing strengthWorking scientifically	Lesson 6: Eco-friendly materials
To recognise that objects are made from materials that suit their uses. To recognise that objects can be grouped.	Knowledge To recognise that objects are made from materials that suit their uses.	Knowledge To recognise that the shape of some solid objects can be changed. Working scientifically To record data in a table.	Knowledge To compare the suitability of materials for particular uses. Working scientifically To gather data and use it to answer a question.	To recognise that the strength of some materials can be changed. To record data in a block graph.	Knowledge To compare the suitability of materials for particular uses. Science in action To recognise that some materials are harmful to the environment.

Intended outcome of the unit

Name objects with the same use that are made from different materials.

Name materials that are used to make objects with different uses.

Recognise that stretching, twisting, bending and squashing can cause some solid objects to change shape.

Name properties that make materials suitable for their use.

Measure using non-standard units.

Recording results in a table.

Use data to answer a simple question.

Record results in a block graph.

Key Vocab

bend
block graph
elastic
fabric
flexible
glass
material
metal
object
plastic
property
pull
push
record

Science – Year 2 Learning Objectives – Spring 2

Life Cycles and Health

Lesson 1: The human life cycle	Lesson 2: Life cycles	Lesson 3: GrowthWorking scientifically	Lesson 4: SurvivalWorking scientifically	Lesson 5: Exercise and hygieneWorking scientifically	Lesson 6: Balanced dietWorking scientifically
To identify different stages of the human life cycle.	To know which offspring come from which parent animal.	To observe and measure growth in humans. To use simple measuring equipment.	To identify and list the basic needs for survival for humans and animals. To use secondary sources to research.	To recognise the importance of exercise and personal hygiene. To make observations over time.	To identify how to have a balanced diet. To interpret collected results.

Intended outcome of the unit

Identify stages in the life cycles of different animals, including humans.

Describe the basic survival needs of animals.

Explain how to take care of personal hygiene.

Describe some positive effects of exercise.

Identify foods in different food groups.

Measure using simple equipment.

Record results in a table.

Use data to answer a simple question.

Research using secondary sources.

Key Vocab

adult	caterpillar
air	dairy
baby	egg
basic needs	exercise
butterfly	fitness
child	food
carbohydrates	frog

Science – Year 2 Learning Objectives – Summer 1

Plant Growth

Science – Year 2 Learning Objectives – Summer 2

Plant-Based Materials

Science – Year 3 Learning Objectives – Autumn 1

Movement and Nutrition

Intended outcome of the unit
Recall the three key functions of the skeleton (movement, support and protection).
Describe a vertebrate, invertebrate, endoskeleton and exoskeleton and use this information to group animals.
Identify and name the skull, spine, ribs and pelvis on a diagram.
Recall that muscles cause movements in the body, some of which we can control consciously.
Describe that muscles can cause a movement by shortening and pulling on a bone.
Recall that animals, including humans, need to eat food to survive.
Describe some examples of how energy is used by the body and make comparisons about the energy demands between people.
List some of the seven nutrient groups.
Name foods that are good sources of nutrient groups and describe what they are needed for in the body.
Compare two different meals and explain which is more balanced by naming the nutrient groups and commenting on the relevant proportions.
Record measurements of different bones and use the data to sort them into size order.
Describe some ways scientific research has improved the field of bionics/prosthetics, such as the choice of materials or linking their movement to muscles in the arm.
Find relevant data on food packaging and make numerical comparisons.

Lesson 1: Skeletons	Lesson 2: The bones in our body	Lesson 3: Muscles and movement	Lesson 4: Eating for survival	Lesson 5: Nutrient groups	Lesson 6: Balanced diets
To explain the role of a skeleton. Working scientifically: To group animals based on their physical properties.	To recognise the main bones in the body. Working scientifically: To measure and sort data.	To explain how muscles are used for movement. Science in action: To explore scientific advances.	To explain how food is an essential energy source for animals. Working scientifically: To gather and compare data to answer questions.	To identify the main nutrient groups and their simple functions. Working scientifically: To record information using secondary sources.	To explain what makes a balanced diet. Science in action: To explore how knowledge has progressed over time and different jobs use this information.

Key Vocab	
balanced diet	invertebrate
bone	joint
carbohydrate	mineral
endoskeleton	movement
exoskeleton	muscle
fat	nutrient
fibre	protection

Science – Year 3 Learning Objectives – Autumn 2

Forces and Magnets

Intended outcome of the unit

Identify examples of pushes, pulls and twists.

Define a force including describing, naming and classifying contact and non-contact forces.

Describe the relationship between friction and the roughness of a surface.

Identify examples of friction being useful or not.

Predict attraction and repulsion between like and opposite poles.

Identify examples of magnetic and non-magnetic materials.

Name some examples of types of magnet and compare their strengths.

Describe some examples of the uses of magnets.

Use arrows and scientific vocabulary to show the direction of a contact force.

Use evidence to support conclusions.

Identify the variables to change, measure and control.

Write a method to explain how to use a magnet to sort and classify materials as magnetic or non-magnetic.

Label the axes of a bar chart.

Draw bars on a chart accurately.

Identify key information from a source.

Use more than one source to research a question.

Lesson 1: Pushes, pulls and twists	Lesson 2: Friction	Lesson 3: Investigating friction	Lesson 4: Magnets	Lesson 5: Investigating magnet strength	Lesson 6: Uses of magnets
To describe the effects of contact forces. Working scientifically: To label a diagram using arrows and scientific vocabulary.	To recognise the effects and uses of forces. Working scientifically: To write a scientific conclusion identifying cause and effect.	To interpret how and why things move differently on different surfaces. Working scientifically: To plan an investigation using variables.	To describe the effects of magnets. Working scientifically: To write a method.	To compare the properties of different types of magnets. Working scientifically: To display data using a bar chart.	To explain the uses of magnets. Working scientifically: To research the uses of magnets.

Key Vocab

force	south pole
contact force	magnetic material
non-contact force	non-magnetic material
friction	attract
magnetism	repel
magnet	electromagnet
north pole	

Science – Year 3 Learning Objectives – Spring 1

Rocks and Soils

Intended outcome of the unit

Define the term 'rock'.

Describe the appearance of different rocks; identifying both crystals and grains.

Group rocks by their absorbency, hardness and reaction to acid rain (vinegar).

List the different factors that break down rocks.

Describe fossil formation and identify fossils in rocks.

Describe the work of a palaeontologist.

Name, describe and compare some different categories of soil.

List some of the benefits of earthworms to the soil.

Identify and describe the comparative size and weight of the layers in a sedimentation jar.

Use a magnifying glass correctly to observe the appearance of a rock in detail.

Use results to choose the appropriate rock type for a specific use, suggest a better choice of rock for a specific use and to predict how a rock will be affected by the weather.

Research and present information on fossil formation using a single source.

Use a model of the fossil record to determine the relative age of a fossil, to suggest how a living thing has changed over time and to suggest what living things were around in a certain era.

Draw and label the bars on a bar chart.

Accurately draw and label the layers of sediment in a sedimentation jar.

Lesson 1: Rocks: Appearance	Lesson 2: Rocks: Physical properties	Lesson 3: Fossil formation	Lesson 4: Fossils and palaeontology	Lesson 5: Soil formation	Lesson 6: Soil layers and earthworms
Knowledge To group rocks using their appearance. Working scientifically To observe the appearance of rocks closely, using a magnifying glass.	Knowledge To group rocks using their physical properties. Working scientifically To make predictions, suggest improvements and explain observations over time.	Knowledge To describe the process of fossil formation. Working scientifically To present research on fossil formation.	Knowledge To identify fossils and group rocks accordingly. Working scientifically To use the fossil record to answer questions about the past.	Knowledge To compare soils and how they were formed. Working scientifically To record the drainage rate for different soils in a bar chart.	Knowledge To describe a soil sample using sedimentation. Working scientifically To draw and label a diagram.

Key Vocab

absorbency	era
acid rain	fossil
bone	fossil record
clay	grain
clay soil	hard
crystal	hardness
earthworm	impermeable

Science – Year 3 Learning Objectives – Spring 2

Light and Shadows

Intended outcome of the unit
Recall examples of light sources, objects that do not give out light and that darkness is the absence of light.
Describe ways to protect eyes from harm.
Describe what happens when light reflects, give examples of reflective surfaces or materials and describe factors that may affect the quality of a reflected image.
Describe how shadows form and identify patterns between groups of materials and the shadows produced.
Recall factors that affect the way a shadow appears, including what causes shadows to change throughout the day and factors that change the size of a shadow
Describe the pattern of changing shadows throughout the day.
Describe how the light source's distance affects the shadow's size.
Explain why a particular material is appropriate to make a shadow puppet and use knowledge of shadows to animate it.
Recall what information needs recording to decide the number of columns in a results table and suggest suitable headings for the results table.
Record information in the correct columns.
Identify if a question is testable, explain why and plan ways to answer a testable question.
Identify and explain why something is an advantage or disadvantage of a method and suggest an improvement to the experiment.
I can describe patterns in data and quote values as evidence of patterns in data.
I can identify odd results that do not fit the pattern.
I can use patterns to make predictions for missing data.

Lesson 1: Sources of light	Lesson 2: What is reflection?	Lesson 3: Where do shadows come from?	Lesson 4: Shadows throughout the day	Lesson 5: Investigating shadows	Lesson 6: Using light and shadows
Knowledge To explain the role of light sources. Working scientifically To plan and draw a results table.	To compare light reflecting on different surfaces.	Knowledge To recognise which materials cast a shadow. Working scientifically To ask testable questions and plan how to answer them.	Knowledge To summarise how shadows change throughout the day. Working scientifically To evaluate a method.	Knowledge To investigate how the distance of the light source affects the size of its shadow. Working scientifically To find patterns in data and form conclusions.	Knowledge To tell a story using shadow puppets. Science in action To recall how different people work with light and shadows.

Key Vocab	
cast a shadow	reflect
dangerous	reflection
light source	reflective (shiny)
luminous	shadow
non-luminous	shadow puppet
opaque	translucent
protect	transparent

Science – Year 3 Learning Objectives – Summer 1

Plant Reproduction

Science – Year 3 Learning Objectives – Summer 2

Does Hand Span affect Grip Strength?

Science – Year 4 Learning Objectives – Autumn 1

Digestion and Food

Intended outcome of the unit

Label key organs found in the digestive system and describe each of their functions.

Describe the functions of the four different types of adult, human teeth, using key vocabulary.

Know that good dental care involves brushing their teeth twice a day with toothpaste and a soft toothbrush.

Produce a food chain that begins with a plant and has arrows that move up the food chain.

Define a producer, predator and prey and identify examples in food chains.

Describe digestion, teeth and diets when talking about the observed poo clues.

Write a letter that uses a range of scientific vocabulary from the unit.

Evaluate a strength or weakness of the digestive system model.

Describe an example of evidence that can be used to study teeth.

Identify some of the variables that need to be kept the same, predict an outcome and identify limitations to the experiment.

Recall that scientific research needs repeated results before use in society.

Identify trends in a predator-prey graph.

Draw a results table that has space for observations about different poo samples.

Lesson 1: The human digestive system	Lesson 2: Human teeth	Lesson 3: Investigating dental hygiene	Lesson 4: Teeth of carnivores, herbivores and omnivores	Lesson 5: Producers, predators and prey in food chains	Lesson 6: Poo clues
To describe the function of the human digestive system. Working scientifically: To evaluate a model.	To recognise the different types of human teeth and their roles in eating. Science in action: To describe real observation methods and evidence collected.	To explain how to care for our teeth. Working scientifically: To plan an enquiry by considering which variables should be changed, measured and controlled. Science in action: To determine why scientists need to work collaboratively and evaluate experiments.	To recognise that differences in teeth relate to an animal's diet. Working scientifically: To classify animals based on their diet.	To recognise producers, predators and prey in food chains. Working scientifically: To analyse trends in line graphs and form conclusions using scientific knowledge.	To recognise that animal poo can give us clues about digestion, teeth and diet. Working scientifically: To construct a results table for recording observations.

Key Vocab

absorb	incisor
canine	large intestine
carnivore	molar
digest	mouth
faeces	oesophagus
food chain	omnivore
herbivore	predator

Science – Year 4 Learning Objectives – Autumn 2

Electricity and Circuits

Lesson 1: Using electricity	Lesson 2: Building circuits	Lesson 3: Switching on and off	Lesson 4: Investigating electrical conductors and insulators	Lesson 5: Investigating bulb brightness	Lesson 6: Electrical safety
To recognise how electrical appliances are powered. Working scientifically: To record and classify qualitative data.	To construct an electrical circuit. Working scientifically: To draw a scientific diagram.	To explain the use of switches in a circuit.	To explain the use of materials as electrical conductors or insulators. Working scientifically: To write a method.	To investigate what affects bulb brightness. Working scientifically: To pose questions and plan ways to test them.	To explain how to be safe around electricity. Science in action: To explore how scientific advances inform safety advice.

Intended outcome of the unit

Recall a range of electrical appliances and classify them as mains or battery-powered.

Explain why something is either mains or battery-powered.

Explain how to test if a circuit works and identify when simple electric circuits will work.

Identify symbols for open and closed switches.

Predict whether a circuit will work based on whether the switch is open or closed and explain that it works by breaking and completing a circuit.

Give examples of how switches are useful.

Describe that a material is a good electrical conductor when it is added to an electric circuit and the bulb lights.

Describe that a material is a good electrical insulator when it is added to an electric circuit and the bulb does not light.

Recall that metals, for example, are good electrical conductors and plastics, for example, are good electrical insulators.

Describe that the more bulbs added to a series circuit, the dimmer the bulbs will be.

Explain that the bulbs will be dimmer when more are added to a circuit, as less energy is transferred to each of them.

Describe precautions for working safely with electricity.

Explain some precautions using knowledge of circuit diagrams, electrical components, conductors or insulators.

Draw a results table and record a range of appliances under the correct headings 'Mains' or 'Batteries'.

Identify and draw simplified electric circuit symbols and use these to draw a simplified circuit diagram.

Write a method for the investigation that considers appropriate equipment, ordering clearly written steps and considering safety.

Pose questions relating to bulbs in an electrical circuit.

Explain why a selected question is testable.

Suggest that new inventions will change safety advice.

Key Vocab

ammeter	component
appliance	electrical conductor
battery	electrical insulator
bulb	electricity
buzzer	hazard
cell	mains
circuit	material

Science – Year 4 Learning Objectives – Spring 1

States of Matter

Intended outcome of the unit
Identify solids, liquids and gases using their properties.
Describe melting, freezing, condensing and evaporating.
Describe the different stages of the water cycle.
Describe how temperature affects the rate of evaporation and therefore the water cycle.
Ask relevant questions.
Use results to draw simple conclusions.
Use thermometers to take accurate measurements.
Make predictions for new values.
Record findings using labelled diagrams.
Research using more than one source.

Lesson 1: Solids	Lesson 2: Liquids and gases	Lesson 3: Melting and freezing	Lesson 4: Condensing and evaporating	Lesson 5: The water cycle	Lesson 6: Climate change and the water cycle
Knowledge To identify solids using their properties. Working scientifically To ask relevant questions about the properties of solids.	Knowledge To identify liquids and gases using their properties. Working scientifically To use results to draw simple conclusions about the properties of liquids.	Knowledge To describe melting and freezing. Working scientifically To use thermometers to take accurate measurements before and after melting.	Knowledge To describe condensing and evaporating. Working scientifically To make predictions for new values about evaporation rates.	Knowledge To describe the different stages of the water cycle. Working scientifically To record the stages of the water cycle using a labelled diagram.	Knowledge To describe how temperature affects evaporation rates and the water cycle. Working scientifically To research climate change and the water cycle.

Key Vocab	
boiling point	evaporating
climate change	evaporation rate
compress	flood
condensation	force
condensing	freezing
condensing point	freezing point
drought	gas

Science – Year 4 Learning Objectives – Spring 2

Sound and Vibrations

Intended outcome of the unit

Describe how sounds are made.

Describe how sounds are heard through different mediums.

Explain the relationship between vibration strength and volume.

Describe the relationship between volume and distance.

Describe pitch and how to change it.

Explain how insulating materials can be used to muffle sound.

To observe closely how different instruments create a sound.

Research how whales and dolphins communicate underwater.

Present results using a bar chart.

Suggest which variables to measure and for how long.

Design simple results tables.

Identify when results or observations do not match predictions.

Lesson 1: Vibrations	Lesson 2: Sound waves	Lesson 3: Volume	Lesson 4: Volume and distance	Lesson 5: Pitch	Lesson 6: Sound insulation
Knowledge: To describe how sounds are made. Working scientifically: To observe closely how different instruments create a sound.	Knowledge: To describe how sounds are heard through different mediums. Working scientifically: To research how whales and dolphins communicate underwater.	Knowledge: To describe the relationship between vibration strength and volume. Working scientifically: To present results using a bar chart.	Knowledge: To describe the relationship between volume and distance. Working scientifically: To suggest which variables to measure and for how long.	Knowledge: To describe pitch and how to change it. Working scientifically: To design simple results tables.	Knowledge: To explain how insulating materials can be used to muffle sound. Working scientifically: To identify when results or observations do not match predictions.

Key Vocab

air	hertz (Hz)
decibels (dB)	high pitch
decibel meter	insulator of sound
ear	liquid
eardrum	loud
ear protectors	low pitch
gas	matter

Science – Year 4 Learning Objectives – Summer 1

Classification and Changing Habitats

Science – Year 4 Learning Objectives – Summer 2

How does the flow of liquids compare?

Science - Year 5 Learning Objectives – Autumn 1

Mixtures and Separation

Intended outcome of the unit

Define the term 'mixture' and name some common examples.

Define the term 'sieving' and explain how sieving separates mixtures.

Define the term 'filtering' and explain how filtering separates mixtures.

Define the terms 'solution' and 'dissolve' and name some common examples of solutions.

Recall some factors that affect the time taken to dissolve.

Describe the effect of temperature on the time taken to dissolve.

Define the term 'evaporating' and explain how evaporating separates solutions.

Identify when sieving, filtering and evaporating should be used.

Research a mixture to find out what substances it is made from.

Draw and annotate a diagram to explain how sieving separates a solid-solid mixture.

Identify and justify which type of enquiry to use to answer my testable question.

Identify solutions by observing and describing their appearance.

Suggest which variables to change, measure and control when investigating how temperature affects the time taken to dissolve.

Lesson 1: Mixtures	Lesson 2: Sieving	Lesson 3: Filtering	Lesson 4: Solutions	Lesson 5: Dissolving	Lesson 6: Evaporating
To describe mixtures. Working scientifically: To research using a range of secondary resources.	To explain the process of sieving. Working scientifically: To draw and annotate a diagram to explain a concept.	To explain the process of filtering. Working scientifically: To identify testable questions and how to answer them.	To describe solutions and how they can be identified. Working scientifically: To make observations about solutions.	To identify which factors affect the time taken to dissolve. Working scientifically: To plan a fair test with consideration of variables and measurements.	To describe the process of evaporation.

Key Vocab

control variable	mixture
crystallising	particle
dissolve	sieve
evaporation	sieving
evaporation method	soluble
filtering	solution
insoluble	variable

Science - Year 5 Learning Objectives – Autumn 2

Properties and Changes

Intended outcome of the unit

Determine the hardness of different materials and link this to their uses.

Determine the transparency of different materials and link this to their uses.

Determine the thermal and electrical conductivity of different materials and link this to their uses.

Demonstrate, identify and describe reversible and irreversible changes.

Evaluate the hardness test to determine the degree of trust in the results.

Plan and draw a table of results.

Write a detailed, organised and easy to follow method.

Write a prediction using prior knowledge of the states of matter.

Analyse observations about rusting and use them to support a conclusion.

Measure accurately in centimetres.

Lesson 1: Hardness	Lesson 2: Transparency	Lesson 3: Conductivity	Lesson 4: Reversible changes	Lesson 5: Irreversible changes: Burning and rusting	Lesson 6: Irreversible changes: Mixing
To determine the hardness of materials and link this to their uses. Working scientifically: To evaluate the hardness test to determine the degree of trust in the results.	To determine the transparency of different materials and link this to their uses. Working scientifically: To plan and draw a table of results.	To determine the conductivity of different materials and link this to their uses. Working scientifically: To write a detailed, organised method which is easy to follow.	To demonstrate reversible changes. Working scientifically: To write a prediction using prior knowledge of the states of matter.	To demonstrate irreversible changes. Working scientifically: To analyse observations about rusting and use them to support a conclusion.	To demonstrate irreversible changes. Working scientifically: To measure the circumference of a balloon accurately.

Key Vocab

burning	evaporating
change of state	freezing
circumference	hard
dissolve	irreversible change
electrical conductivity	light intensity

Science - Year 5 Learning Objectives – Spring 1

Earth and Space

Intended outcome of the unit

Describe the geocentric and heliocentric models.

Name and describe the shape of celestial bodies.

Describe the orbits of celestial bodies in the Solar System and name the force that keeps them in their orbits.

Describe the orbit of the Moon around the Earth and its phases.

Explain how day and night occur.

Explain how the seasons occur.

Explain how a sundial works.

List some of the uses of satellites and explain why space junk poses a problem to them.

Pose and identify testable questions about the movement of the celestial bodies in our Solar System.

Use a model to represent the Solar System.

Design and draw a table to record data on moons.

Accurately draw day and night and seasons diagrams.

Calibrate a sundial using a compass and torch and use it to measure time.

Analyse patterns in temperature data for the Earth and use them to predict temperature values for the Earth in the future.

Lesson 1: Models of our Solar System	Lesson 2: Our Solar System	Lesson 3: The Moon	Lesson 4: Day and night	Lesson 5: Time	Lesson 6: Satellites and space junk
Knowledge To compare the contributions of Ptolemy, Alhazen and Copernicus to models of the Solar system. Working scientifically To pose testable questions about the solar system.	Knowledge To describe the movement and shapes of the celestial bodies in our Solar System. Working scientifically To develop a model to represent the Solar System.	Knowledge To describe the movement of the Moon relative to the Earth. Working scientifically To design and draw a table.	Knowledge To explain the causes of day and night and the seasons. Working scientifically To draw a diagram to explain day and night.	Knowledge To devise a sundial to tell the time. Working scientifically To calibrate and use a sundial to measure time.	Science in action To describe some uses of satellites and the problems posed by space junk. Working scientifically To use temperature data to make predictions about climate change.

Key Vocab

artificial satellite	data
axis	Earth
calibrate	elliptical
celestial bodies	face
climate change	first quarter moon
day	force
daytime (daylight)	full moon

Science - Year 5 Learning Objectives – Spring 2

Life Cycles and Reproduction

Intended outcome of the unit

Describe the life cycle of a plant, including the reproductive stage.

Describe the life cycle of a mammal.

Describe the life cycle of a bird and compare it with that of a mammal.

Describe the life cycle of an amphibian.

Describe the life cycle of an insect and compare it with that of an amphibian.

Describe asexual reproduction in plants.

Observe and compare equivalent parts in different flowers.

Research the life cycles of different mammals.

Pose questions to compare the life cycles of different birds.

Suggest how one temperature may affect egg hatching.

Use data to describe a relationship and make predictions.

Represent root growth over time on a line graph.

Lesson 1: Life cycles and reproduction in plants	Lesson 2: Life cycle of a mammal	Lesson 3: Life cycle of a bird	Lesson 4: Life cycle of an amphibian	Lesson 5: Life cycle of an insect	Lesson 6: Asexual reproduction in plants
Knowledge: To describe the life cycle of a plant, including the reproductive stage. Working scientifically: To observe and compare equivalent parts in different flowers.	Knowledge: To describe the life cycle of a mammal. Working scientifically: To research the life cycles of different mammals.	Knowledge: To describe the life cycle of a bird and compare it with that of a mammal. Working scientifically: To pose questions to compare the life cycles of different birds.	Knowledge: To describe the life cycle of an amphibian. Working scientifically: To suggest how temperature may affect egg hatching.	Knowledge: To describe the life cycle of an insect and compare it with that of an amphibian. Working scientifically: To use data to describe a relationship and make predictions.	Knowledge: To describe asexual reproduction in plants. Working scientifically: To represent root growth over time on a line graph.

Key Vocab

adolescence	carnivore
adult	characteristic
amphibian	chrysalis
asexual reproduction	cocoon
bird	cuttings
birth	egg
bulb	estimating

Science - Year 5 Learning Objectives – Summer 1

Imbalanced Forces

Science - Year 5 Learning Objectives – Summer 2

Human Timeline

Science – Year 6 Learning Objectives – Autumn 1

Classifying Big and Small

Intended outcome of the unit

Define the term 'organism' and name the seven life processes of all living things.

Describe the work of Carl Linnaeus.

Define the term 'vertebrate' and name the vertebrate groups.

Describe the characteristics of fish, amphibians, reptiles, birds and mammals.

Compare the characteristics of the vertebrate groups.

Define the term 'invertebrate'.

Describe the characteristics of worms, snails, spiders and insects.

Compare the characteristics of the invertebrate groups.

Name the plant groups.

Describe the characteristics of flowering plants, ferns, mosses and conifers.

Define the term 'micro-organism' and name some examples.

Use a classification key to group and identify organisms.

Make a simple classification key.

Lesson 1: Carl Linnaeus and classification	Lesson 2: Cold-blooded vertebrates	Lesson 3: Warm-blooded vertebrates	Lesson 4: Invertebrates	Lesson 5: Plants	Lesson 6: Micro-organisms
To explain how organisms are classified using the Linnaean system.	To classify the cold-blooded vertebrate groups using their common characteristics.	To classify the warm-blooded vertebrate groups using their common characteristics.	To classify invertebrates.	To describe how the plant kingdom is organised (based on shared characteristics). Working scientifically: To produce a working classification key.	To describe and classify micro-organisms.

Key Vocab

amphibian
binomial system
bird
characteristic
classify
classification key
cold-blooded
conifer
exoskeleton
fern
fish
flowering plant
insect
invertebrate

Science – Year 6 Learning Objectives – Autumn 2

Light and Reflection

Lesson 1: The pathway of light	Lesson 2: See the light	Lesson 3: Measuring shadows	Lesson 4: Reflecting light	Lesson 5: Making a periscope	Lesson 6: Using mirrors
To describe the pathway of light. Working scientifically: To use evidence to form conclusions.	To describe how we see. Working scientifically: To draw scientific diagrams.	To explain how shadows change. Working scientifically: To pose questions.	To investigate what affects the angle of the reflected ray. Working scientifically: To record results as a line graph.	To explain how a periscope works.	To explain how mirrors are helpful. Science in action: To explore different jobs or inventions that depend on reflection.

Intended outcome of the unit

Compare sources of light and explain how the eye is protected from light.

Describe how light travels and how we see luminous and non-luminous objects.

Recall factors that affect the size of a shadow and describe how the distance between an object and the surface its shadow is cast on affects the size of the shadow.

Use ray diagrams to explain why shadows change size and why the shape of a shadow matches the object that cast it.

Recall what happens to light when it reaches a smooth mirror surface.

Identify the incoming and reflected rays and describe the relationship between their angles.

Use mirrors to make a working periscope and explain how a periscope works using ray diagrams.

Recall a range of uses of mirrors and reflection and describe how a mirror reflects light in different situations.

Explain how light is reflected using knowledge of light and reflection.

Make observations about the properties of light.

Use my observations as evidence to support conclusions about light.

Draw ray diagrams.

Pose testable questions in response to observations.

Record my measurements as a line graph.

Use my line graph to extrapolate data and make predictions about missing values.

Recall various jobs or inventions that use mirrors and reflection.

Key Vocab

cast	opaque
incoming ray	periscope
light ray	pupil
light source	ray diagram
luminous	reflected ray
mirror	reflective
non-luminous	shadow

Science – Year 6 Learning Objectives – Spring 1

Evolution and Inheritance

Intended outcome of the unit

Define and identify variation in organisms and recall that it is caused by inherited and environmental factors.

Recall that living things produce offspring of the same kind but are not normally identical to their parents.

Describe patterns of inheritance from parent to offspring in a given example or family tree.

Describe what an adaptation is; it cannot be chosen and is usually inherited.

Describe key characteristics that would help an organism to survive and explain how an adaptation helps the organism to survive.

Explain how variation may affect survival within a population and recall what natural selection means.

Recall what evolution is, identify differences between a living thing and its ancestor and describe key steps in the evolution of a species.

Recall different types of evidence that can be used to explain evolution and describe methods that make scientists' results or conclusions more trustworthy.

Sort variation as environmental, inherited or a mixture of both.

Evaluate a method by recalling variables that were effectively kept the same and those that were harder to control.

Comment on the reliability of the results and the degree of trust.

Consider how evidence is used to form theories and the degree of trust the evidence offers.

Lesson 1: Variation	Lesson 2: Inheritance	Lesson 3: Adaptations	Lesson 4: Modelling natural selection	Lesson 5: Evolution	Lesson 6: Evidence for evolution
Knowledge To explain why there are differences within a species. Working scientifically To group factors.	Knowledge To recognise the inheritance of characteristics in plants and animals.	Knowledge To explain why adaptation is necessary.	Knowledge To model how natural selection affects population size. Working scientifically To evaluate the degree of trust and pose new questions for further enquiry.	Knowledge To describe the theory of evolution. Working scientifically To consider evidence used to inform theories.	Knowledge To recognise evidence that can be used for evolution. Working scientifically To consider the degree of trust in the evidence used.

Key Vocab

adaptation	extinct
ancestor	fossil
characteristic	gene
competition	habitat
environmental	inherit
evidence	natural selection
evolution	offspring

Science – Year 6 Learning Objectives – Spring 2

Circuits, Batteries and Switches

Intended outcome of the unit
Describe the function of key electrical components and explain how the models used in the lesson represent these.
Correctly predict if an electrical circuit will work or not, explaining why using their knowledge of complete loops, power sources and presence of components.
Describe the relationship between the number of bulbs in a circuit, the bulb brightness and the amount of resistance.
Explain that increasing the number of components increases the resistance, affecting the flow of current and energy transferred.
Identify that batteries are a voltage source; they come in different voltages, affecting bulb brightness.
Describe that voltage can be changed using different numbers of cells in a circuit and that more cells or a higher voltage causes brighter bulbs.
Use the relationship between voltage and bulbs to predict what will happen with buzzers and motors.
Build an electrical circuit with a switch to control its function, explain how the switch and the electrical circuit solve the problem and recall different examples of problems that can be solved using an electrical circuit.
Draw circuit diagrams with straight lines and using standard circuit symbols.
Design a results table with an appropriate number of columns and headings with units.
Identify the changed, measured and control variables in an enquiry to plan a method.

Lesson 1: Components and circuits	Lesson 2: Circuit diagrams	Lesson 3: Current and resistance	Lesson 4: Batteries and voltage	Lesson 5: Voltage and bulb brightness	Lesson 6: Practical circuits
Knowledge To use recognised symbols for electrical components.	Knowledge To predict and present results for electrical circuits. Working scientifically To use standardised symbols when drawing diagrams.	Knowledge To recognise a link between the number of components and resistance. Working scientifically To explain results using scientific knowledge.	Knowledge To identify ways to change voltage within an electrical circuit. Working scientifically To design a results table.	Knowledge To investigate how voltage affects bulb brightness. Working scientifically To plan an enquiry.	Knowledge To apply knowledge of circuits and components to a practical solution. Science in action To recognise that scientific knowledge can solve a problem.

Key Vocab	
ammeter	circuit diagram
appliance	component
battery	current
bulb	electricity
buzzer	motor
cell	power source
circuit	resistance

Science – Year 6 Learning Objectives – Summer 1

Circulation and Health

Science – Year 6 Learning Objectives – Summer 2

Are some sunglasses safer than others?