

Science - Year 3

The NC AIMS are that all children should:

Working scientifically

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

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

Plants

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plant life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Animals, including humans

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement

Rocks

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter

Light

- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change

Forces and Magnets

- compare how things move on different surfaces
- notice that some forces need contact between 2 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 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

The EASTCOURT ATTAINMENT TARGETS can be tabulated as follows:

Enquiry skills	Questioning	Biology: Plants	Biology: Animals Including humans	Chemistry : Rocks And soils	Physics : Forces And magnets	Physics : Sun and shadows
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Enquiry skills

This section applies to both Year 3 and Year 4 and will not be repeated

Questioning

- raise relevant questions about the immediate world
- experience different types of science enquiries to answer questions
- start to make decisions about the most appropriate type of scientific enquiry for different questions
- recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations

Observing

- make systematic and careful observations

- with help, decide what observations to make, how long to make them for, and the type of simple equipment that might be used
- begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them
- with help, look for changes, patterns, similarities and differences in data in order to draw simple conclusions and answer questions

Sorting and classifying

- talk about criteria for grouping, sorting and classifying; use simple keys

Testing

- set up simple practical enquiries, comparative and fair tests
- recognise when a simple fair test is necessary and help to decide how to set it up

Measuring and recording

- take accurate measurements using standard units
- learn how to use (new) equipment, *e.g.* data loggers or thermometers, appropriately

Analysing

- collect and record data from observations and measurements in different ways (*e.g.* notes, bar charts and tables, standard units, drawings, labelled diagrams, keys) and with help make decisions about how to analyse this data
- use relevant simple scientific language to discuss ideas and communicate findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions
- with support, identify new questions arising from the data, making predictions for new values within and beyond the collected data and finding ways of improving what has already been done

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- with support, identify new questions arising from the data, making predictions for new values within and beyond the collected data and finding ways of improving what has already been done

Biology: Plants

Growth of Plants

Useful plants

- understand that it is important to be able to grow plants well because they provide food for us
- learn how nearly all food chains start with a green plant

Photosynthesis

- understand the importance of leaves in plant growth.
- learn about the role of the leaf in producing new material for growth

Root functions

- understand that roots carry water and nutrients to the rest of the plant
- learn that the root anchors the plant, and that water and minerals are taken in through the root and transported through the stem to other parts of the plant

Stem functions

- understand the functions of stems

Flowers

- understand the role of flowers in producing new plants.
- learn about the parts of the flower and their role in the life cycle of flowering plants

Investigation findings

- understand that we can try to make conclusions by looking at measurement results
- understand the effect of light, air, water and temperature on plant growth and how it varies from one plant to another

Biology: Animals including humans

Food Groups

- understand and learn the vocabulary of food groups.
- learn about the need for food for activity and growth, and about the importance of an adequate and varied diet for health

Animal diets

- understand that animals have different diets.
- construct and interpret a variety of food chains identifying producers, predators and prey.

Digestion

- understand that a varied diet is needed to keep healthy
- learn that the life processes common to humans and other animals include nutrition, movement, growth and reproduction

Teeth

- understand that humans have different types of teeth and they help us in different ways when we eat
- learn about the function and care for teeth
- understand why it is important to keep our teeth healthy

Chemistry: Rocks and Soils

Rock detectives

- understand that rocks are used for different purposes
- compare everyday materials on the basis of their material properties, including hardness, strength, flexibility and magnetic behaviour
- describe and group rocks and soils on the basis of their characteristics

Under our feet!

- understand that rock is everywhere under our feet

Rock investigations

- learn to describe and group rocks and soils on the basis of their characteristics, including appearance, texture and permeability

Explore rocks further

- learn how to separate solid particles of different sizes by sieving (for example those in soil)

Properties of soil/soil investigation

- understand how soil is formed and why it is so important to look after it

Fossils

- understand and describe how fossils were formed
- understand the part that Mary Anning played in creating the science of palaeontology

Physics: Forces and magnets

Forces

- understand that we can talk about and record the direction of a force
- know how to measure forces and identify the direction in which they act
- compare how things move on different surfaces

Magnetic and non-magnetic

- notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
- that magnets create pulls and pushes
- learn about the forces of attraction and repulsion between magnets, and about the forces of attraction between magnets and magnetic materials

Attract and repel

- 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 2 poles.
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Introduction of springs

- understand that when you compress or stretch springs you can feel pushes and pulls
- learn that when objects (for example, a spring, a table) are pushed or pulled, an opposing push or pull can be felt

Physics: Sun and Shadows

Shadow investigation

- recognise that we need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that shadows are formed when the light from a source is blocked by an opaque object
- find patterns in the way the size of shadows change
- understand that shadows change in length and position through the day

Sun effects

- know about Sun safety
- recognise that light from the sun can be dangerous and there are ways to protect their eyes

Transparency

- understand that some materials let some light through

Science - Year 4

The NC AIMS are that all children should:

Living things and their habitats

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things

Animals, including humans

- 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
- construct and interpret a variety of food chains, identifying producers, predators and prey

States of matter

- 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 ($^{\circ}\text{C}$)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Sound

- 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

Electricity

- 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

The EASTCOURT ATTAINMENT TARGETS can be tabulated as follows:

Biology: on the move

Biology: Life in habitats

Chemistry: separating solids and liquids

Physics: Circuits and conductors

Biology: On the Move

Functions of skeletons

- understand that humans and other animals have skeletons which have many functions
- understand that humans and some other animals have muscles to support and protect their bodies and to help them move
- understand that life processes common to humans and other animals include nutrition, movement, growth and reproduction
- describe the changes as humans develop to old age

Investigating bones

- identify bones in the human skeleton using scientific names and observe them closely
- understand that there are similarities and differences between the skeletons of humans and other creatures

Muscles

- understand that the human skeleton is jointed to allow muscles to create movement
- study the effects of muscle use through exercise
- understand the need for food for activity and growth
- know the heart acts as a pump to circulate blood through the blood vessels including the lungs
- understand that exercise and rest have an effect on pulse rate
- understand the importance of exercise for good health

Biology: Life in Habitats

Life and where it lives!

- know the characteristics of a living organism
- be able to sort living or once living organisms from those objects which have never lived
- understand the term habitat
- know that life processes common to humans, other animals and plants include: nutrition, movement, growth and reproduction
- make links between the life processes in familiar animals and plants and the environments in which they are found

Who lives in a place like this?

- know why organisms live in particular habitats
- know that habitats can change, and that affects the organisms that live there
- know that humans can create habitats
- learn about ways in which living things and the environment need protection
- study the different plants and animals found in different habitats

A Field Trip

- know that different organisms live in different habitats
- understand that organisms live in habitats that meet their needs
- collect information about organisms living within a specific habitat
- understand how animals and plants in two different habitats are suited to their environment

What is it?

- use images of invertebrates to identify and classify them
- follow an identification key
- construct an identification database
- understand that there are life processes common to humans and other animals
- make links between life processes in familiar plants and animals and the environments in which they are found
- understand that locally occurring animals and plants can be identified and assigned to groups

Which habitat is right for me?

- understand that the variety of plants and animals makes it important to identify them and assign them to groups
- explore the best habitat for a minibeast
- conduct an investigation into minibeast habitats and draw conclusions about them

Dinner Time

- know that a food chain shows the process from producer to consumer
- understand the different nutritional needs of organisms
- read and construct food chains for organisms in a local habitat
- use food chains to show feeding relationships in a habitat
- know that nearly all food chains start with a green plant

Chemistry: Separating Solids and liquids

Sorting materials

- know the properties of solids and liquids
- explore different materials and categorize them
- recognise the difference between solids and liquids

Properties of solids and liquids

- use a measuring cylinder to measure the volume of liquids accurately
- know that the volume of a liquid remains constant when poured into different shaped containers
- recognise that liquids flow and maintain their volume

Solid or liquid?

- explore how solids and liquids can melt and solidify
- know that when objects melt a rise in their temperature is needed and when they solidify the converse is true
- know that the particle size of a solid or liquid can affect the way they move
- compare everyday materials and objects on the basis of their material properties
- describe changes that occur when materials are heated or cooled
- find out about reversible changes, including melting and freezing

Mixtures of solids

- know that solids can be separated in a variety of ways
- develop the idea that solids can be separated using a graded sieve
- know how to separate solid particles of different sizes by sieving

Adding solids to liquids

- develop the idea that solids can be separated from liquids by sieving
- investigate absorbed materials
- know how to separate insoluble solids from liquids by filtering

Filtering

- understand the term solution

- describe changes that occur when materials are mixed
- know about reversible changes, including dissolving
- understand that some liquids dissolve in water to give solutions but some do not

Physics: Circuits and conductors

What is a circuit?

- make a simple series circuit and recognise when/why a circuit will not work
- know that a circuit needs a source of power and a device uses that power to make it work
- know that symbols can be used to represent the components of an electrical circuit in drawings
- construct a circuit, incorporating a battery or power supply
- know how to represent series circuits by drawings and conventional symbols, and how to construct series circuits on the basis of drawings and diagrams using conventional symbols

Mains electricity vs. batteries!

- identify common appliances that run on electricity
- know that batteries and the mains are the most widely used sources of electricity
- know that electricity can be dangerous and that care needs to be taken using electrical appliances

Electrical conductors

- understand that some materials are good electrical conductors and some are good electrical insulators
- name materials that are good at electrical conduction and insulation
- know that some materials are better electrical conductors than others

Cables and plugs

- name materials that are electrical insulators and electrical conductors and relate this property to how they are used
- be aware of the phenomena of static electricity
- know the contribution Franklin, Faraday and/or Edison have made to our understanding of electricity

Switches

- know that switches are used to break an electrical circuit
- know that switches are used to stop and start an electrical appliance or to change how it works

Brighter bulbs

- know that changing the number of components in a series circuit can make a bulb brighter or dimmer
- find out how changing the number of components in a series circuit can make bulbs brighter or dimmer

Science - Year 5

The NC AIMS are that all children should:

Working scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

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

Living things and their habitats

- 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

Animals, including humans

- describe the changes as humans develop to old age

Properties and changes of materials

- compare and group together everyday materials on the basis of the properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- 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

Earth and Space

- 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

Forces

- 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

The Eastcourt ATTAINMENT TARGETS can be tabulated as follows:

Enquiry skills	Biology: flowering plants	Biology : circulation	Physics : Space	Physics : sound
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Enquiry skills

This section applies to both Year 5 and Year 6 and will not be repeated

Questioning

- use scientific experiences to explore ideas and raise different kinds of questions
- talk about how scientific ideas have developed over time
- select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
- recognise which secondary sources will be most useful to research ideas and begin to separate opinion from fact

Observing

- make decisions about what observations to make, what measurements to use and how long to make them for
- look for different causal relationships in data and identify evidence that refutes or supports subsequent ideas

Sorting and classifying

- use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment

Testing

- recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why

Measuring and recording

- choose the most appropriate equipment to take measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate

- decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Analysing

- identify scientific evidence that has been used to support or refute ideas or arguments
- use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results
- use results to make predictions and identify when further observations, comparative and fair tests might be needed

Biology: Flowering Plants

Plant revision

- revise the parts of plants, their function and the conditions affecting plant growth
- revise the effect of light, air, water and temperature on plant growth
- understand the role of the leaf in producing new material for growth
- understand that the root anchors the plant and that water and minerals are taken in through the root and transported through the stem to other parts of the plant

Plant life cycle

- understand that plants share the characteristics of living things, including reproduction
- understand that life processes common to humans and plants include nutrition, movement, growth and reproduction
- 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
- find out about the parts of a flower and their role in the life cycle of plants, including pollination, seed formation, seed dispersal and germination

Seed dispersal

- understand that plants disperse seeds in different ways and that some may grow to become adult plants
- know different ways to propagate plants
- understand the process of asexual reproduction in plants
- understand the advantages and disadvantages of sexual and asexual reproduction in plants

Biology Circulation

The Heart

- find out how the heart works to pump blood around the body
- understand that the life processes common to humans and other animals include circulation
- understand that the heart acts as a pump to circulate the blood through vessels around the body, including through the lungs

The Lungs

- understand how the gas exchange takes place in the lungs
- understand that the life processes common to humans and other animals include respiration

Blood

- find out about blood composition, types, vessels and functions

Exercise

- find out about the effect of exercise and rest on pulse rate
- understand about the importance of exercise for good health

Physics: Space

Earth, Moon and Sun

- assess the children's current knowledge and understanding
- understand the relative sizes of the Earth, Moon and the Sun
- understand that the Sun, Earth and Moon are approximately spherical

Day and Night

- understand that the Earth rotates to create night and day
- understand how the position of the Sun appears to change during the day, and how shadows change as this happens
- understand how day and night are related to the spin of the Earth on its own axis

Eclipses and seasons

- understand that the Earth orbits the sun once a year creating the four seasons

Moon phases

- understand that the Moon orbits the Earth and rotates on its axis, the Moon has phases and appears to change shape

- understand that the Moon takes approximately 28 days to orbit the Earth

Star Constellations

- understand that the Sun is a star and that stars can be grouped into patterns called constellations

Planets

- know the order and size of the planets in the solar system
- know which planets make up our Solar System and use research to find out more about them
- identify clues on the Earth's surface that reveal its past

- **Famous space scientists**

learn about Tim Peak (contemporary British astronaut), his life and contribution

Physics: Sound

Introduction to sound

- establish children's current understanding of sound

Vibrations

- understand that sounds are made when objects vibrate but that vibrations are not always directly visible
- understand that vibrations from sound sources require a medium (solid, liquid or gas) through which to travel

Hearing sounds

- understand that we hear sounds because vibrations in the air caused by vibrations of objects travel into our ears
- understand the challenges for and contributions made by deaf people

Investigate soundproofing

- know that sound needs a medium to travel through
- investigate materials used to soundproof a room or as ear muffs
- understand what an echo is and what is echolocation

Pitch and loudness

- investigate how the pitch and loudness of sounds can be changed
- know how to change the pitch and loudness of sounds produced by some vibrating objects
- know how sound is measured
- know that a vibration column of air produces a musical sound

- understand when ears need protecting and how that can be done

Musical Instruments

- compare how sounds are produced by musical instruments

Science - Year 6

The NC AIMS are that all children should:

Living things and their habitats

- 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

Animals, including humans

- 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

Evolution and inheritance

- 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

Light

- 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
- 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
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Electricity

- 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

The EASTCOURT ATTAINMENT TARGETS can be tabulated as follows:

Biology : Drugs and Bugs

Biology: Chains & Webs

Physics: further circuits

Physics : Balanced forces

Chemistry: Reversible and Irreversible changes

Chemistry: Reversible and Irreversible changes

Biology: Drugs and Bugs

Micro-organisms

- look at range of micro-organisms
- understand that micro-organisms are living organisms that are often too small to be seen, and that they may be beneficial or harmful

Green micro-organisms

- understand that micro-organisms found in compost heaps are beneficial
- know that the life processes common to humans and other living organisms include nutrition, movement, growth and reproduction.

Food and micro-organisms

- understand that micro-organisms associated with food can be beneficial or harmful

Useful micro-organisms

- look at more beneficial micro-organisms

Diseases and antibiotics

- look at the role of micro-organisms in disease and how antibiotics can be used to cure infections caused by bacteria
- know about the functions and care of the teeth (building on work of Year 3)

Other drugs

- look in more detail at drugs that are medicines
- know that the effects on the human body of tobacco, alcohol and other drugs, and how these relate to their personal health

Biology: Chains and Webs

Revision

- revise the conditions needed for plant growth and understand that plants share the seven characteristics of living things
- understand that life processes common to plants, humans and other animals include growth, nutrition and reproduction
- understand the effect of light, air, water and temperature on plant growth
- understand the role of the leaf, root and stem

Photosynthesis

- understand that plants use light, water and carbon dioxide to make their own food through photosynthesis
- understand the role of the leaf in producing new material for growth
- find out about different plants found in different habitats

Leaf key

- use the similarities and differences in leaves to classify them
- make and use keys
- understand how locally occurring plants and animals can be identified and assigned to groups
- understand that the variety of plants and animals makes it important to identify and assign them to groups

Adaptation

- understand that plants and animals have adapted to suit their habitats
- think about ways in which living things and the environment need protection
- understand how animals and plants in two different habitats are suited to their environment

Food chains

- understand that plants and animals living in a habitat are interdependent
- use food chains to show feeding relationships in a habitat
- understand that nearly all food chains start with a green plant

Food Webs

- To model complex feeding relationships between living things through the use of practical activity

Physics: Further Circuits

Circuit Revision

- revise the children's current understanding of circuits and electrical concepts
- construct circuits, incorporating a battery and range of switches to make devices work
- find out the effect of changing components in circuits, making bulbs brighter and dimmer

Symbols

- identify the use of correct symbols for electrical components within circuit diagrams
- understand how to represent series circuits by drawings and conventional symbols, and construct series circuits on the basis of drawings and diagrams using conventional symbols

Circuit Repairs

- identify faults in electrical circuits and circuit diagrams before suggesting how to fix the problem

Series and Parallel

- understand the differences between series and parallel circuits

Circuit challenges

- to use and apply their understanding of electrical circuits in real life situations

Physics: Balanced Forces

Revise forces

- use the term Force correctly and use simple equipment to measure examples of forces
- revise forces of attraction between magnets, and the forces between magnets and magnetic materials
- understand that objects are pulled downwards because of gravitational attraction between them and the Earth
- find out about friction, including air resistance, as a force that slows moving objects
- understand that when objects are pushed or pulled an opposing push or pull can be felt
- understand how to measure forces and identify in which direction they act

Opposing forces

- understand that when forces are balanced no movement occurs and that gravity is an attraction between objects and the Earth

Floating and sinking

- understand that it is upthrust in liquids that causes some objects to float and others to sink

Elastic band investigation

- investigate what happens as an elastic band stretches under force

Spinner investigation

- understand that without air resistance all objects would fall at the same rate

Fantastic Forces!

- understand that forces are all around us and that when they are balanced objects do not move, speed up, slow down or change direction.
- investigate how to measure forces and identify the direction in which they act

EIS Chemistry: Reversible and Irreversible changes

Mixing materials

- describe what happens when a range of materials are mixed with water and how they can be separated again
- recognise differences between solids, liquids and gases
- describe the changes that occur when materials are mixed
- describe reversible changes, including dissolving, melting, boiling, condensing, freezing and evaporating
- Show knowledge of separating mixtures of materials

Reversible changes

- separate grit from a variety of materials

Irreversible changes

- look at plastic as an example of a useful material that can be made by mixing materials
- understand that non-reversible changes result in the formation of new materials that may be useful
- look at properties of plastic and relate these to their everyday use

Rusting nails

- investigate the rusting of nails

Heating and Cooling

- describe what happens when materials are heated or cooled
- describe changes that occur when materials are heated or cooled

Burning materials

- observe what happens when materials are burnt.
- understand that burning materials results in the formation of new materials and that this change is not usually reversible

Chemistry: Separating Materials

Separate solids

- show current level of understanding and separate materials simply using sieves and magnets
- understand how to separate solid particles of different sizes by sieving
- compare everyday materials and objects on the basis of their material properties including magnetic behaviour

Filtering

- identify solutions and mixtures before removing materials from mixtures using filtering
- understand that some solids dissolve in water to give solutions but some do not
- find out how to recover insoluble solids from liquids by filtering
- use knowledge of solids, liquids and gases to decide how materials might be separated

Solutions

- investigate which materials create solutions and investigate the factors that affect the dissolving of materials to create solutions.

Evaporation

- understand that evaporation of solutions leaves behind materials
- understand how to recover dissolved solids by evaporating the liquid from the solution.

Investigate dissolving

- investigate how much material can be dissolved in a liquid
- understand reversible changes including dissolving.

Chromatography case

- understand that complex mixtures can be separated and the parts used for identification