

MANUKAU CHRISTIAN SCHOOL

**CAMBRIDGE INTERNATIONAL
PRIMARY PROGRAMME
YEARS 1 TO 6**

SCIENCE

Foreword

Primary Science Curriculum Framework

Science

YEAR 3: Scientific Enquiry

Ideas and Evidence in Science

Pupils should be able to:

- Collect evidence in a variety of contexts to answer a question or test an idea

Plan Experimental Work

Pupils should be able to:

- Suggest ideas, make predictions
- Think about collecting evidence and plan fair tests with help

Obtain and Present Evidence

Pupils should be able to:

- Observe and compare objects, living things and events
- Measure using simple equipment and record observations in a variety of ways

Consider Evidence and Evaluate

Pupils should be able to:

- Present results in drawings, bar charts and tables
- Draw conclusions from results and begin to use scientific knowledge to suggest explanations
- Make generalisations and begin to identify simple patterns in results

YEAR 3: BIOLOGY

LIFE PROCESSES

Pupils should know that:

- Life processes common to humans and other animals include nutrition, movement, growth and reproduction
- Life processes common to plants include growth, nutrition and reproduction

Pupils should be able to:

- Describe differences between living and non-living things using knowledge of life processes
- Sort things into groups, using simple features and describe basis for groupings

HUMANS

Pupils should know that:

- All animals, including humans, need water and food to stay alive
- Exercise and an adequate, varied diet is needed to keep healthy
- Some foods can be damaging to teeth

PLANTS

Pupils should know that:

- Plants have roots, leaves, stems and flowers
- Plants need water to grow and green plants need light
- Water is taken in through the roots and transported through the stem
- Plants need healthy roots, leaves and stems to grow well
- Plant growth is affected by temperature

YEAR 3: CHEMISTRY

MATERIALS

Pupils should know that:

- Every material has many properties (e.g. hard, soft, shiny)
- Some materials are magnetic but many are not
- Materials are chosen for specific purposes on the basis of their properties

Pupils should be able to:

- Sort materials according to properties

YEAR 3: CHEMISTRY

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YEAR3: PHYSICS

FORCES AND MOTION

Pupils should know that:

- Pushes and pulls are examples of forces
- Pushes or pulls can make objects start or stop moving
- Sometimes pushes and pulls can change the shape of objects
- Pushes or pulls can make objects move faster or slower or change direction

YEAR 4: Scientific Enquiry

IDEAS AND EVIDENCE IN SCIENCE

Pupils should be able to:

- Collect evidence in a variety of contexts
- Test an idea or prediction based on scientific knowledge and understanding

PLAN EXPERIMENTAL WORK

Pupils should be able to:

- Suggest questions that can be tested and make predictions
- Design a fair test or plan how to collect sufficient evidence
- Choose apparatus and decide what to measure

OBTAIN AND PRESENT EVIDENCE

Pupils should be able to:

- Make relevant observations and comparisons in a variety of context
- Measure temperature, time, force and length
- Begin to think about the need for repeated measurements
- Present results in bar charts and tables

CONSIDER EVIDENCE AND EVALUATE

Pupils should be able to:

- Identify simple trends and patterns in results and suggest explanations for some of these
- Explain what the evidence shows and whether it supports predictions
- Link evidence to scientific knowledge and understanding in some contexts

YEAR 4: BIOLOGY

HUMANS

Pupils should know that:

- Humans (and some other animals) have bony skeletons inside their bodies
- Skeletons grow as humans grow and support the body
- Animals with skeletons have muscles attached to bones
- A muscle has to contract (shorten) to make a bone move and muscles act in pairs

ECOSYSTEMS/ENVIRONMENT

Pupils should know that:

- Different animals are found in different habitats and are suited to the environment in which they are found
- Living things and the environment need protection

Pupils should be able to:

- Use simple identification keys

YEAR 4: CHEMISTRY

STATES OF MATTER

Pupils should know that:

- Matter can be solid, liquid or gas
- Materials change when they are heated and many materials change when they are cooled
- Melting is when the solid turns to a liquid and is the reverse of freezing
- Water turns to steam when it is heated but on cooling the steam turns back to water

YEAR 4: PHYSICS

SOUND

Pupils should know that:

- Sounds are made when objects, materials or air vibrate
- Sound travels through different materials to the ear
- Some materials are effective in preventing sound from travelling through them
- 'Pitch' describes how high or low a sound is and high and low sounds can be loud or soft
- Pitch can be changed in musical instruments in a range of ways

ELECTRICITY AND MAGNETISM

Pupils should be able to:

- Make a complete circuit using switch, battery, wire and bulbs

Pupils should know that:

- An electrical device will not work if there is a break in the circuit
- Electrical current flows
- There are forces between magnets and magnets can attract or repel each other
- Magnets attract some metals but not others

YEAR 5: SCIENTIFIC ENQUIRY

IDEAS AND EVIDENCE IN SCIENCE

Pupils should know that:

- Scientists have combined evidence with creative thinking to suggest new ideas and explanations for phenomena

PLAN EXPERIMENTAL WORK

Pupils should be able to:

- Make predictions of what will happen based on scientific knowledge and understanding, and suggest how to test these
- Use knowledge and understanding to plan how to carry out a fair test or how to collect sufficient evidence to test an idea
- Identify factors that need to be taken into account in different contexts

OBTAIN AND PRESENT EVIDENCE

Pupils should be able to:

- Make relevant observations
- Consolidate measurement of volume, temperature, time and length
- Think about the need for repeated observations and measurements
- Present results in bar charts and line graphs

CONSIDER EVIDENCE AND EVALUATE

Pupils should be able to:

- Decide whether results support predictions
- Begin to evaluate repeated results
- Recognise and make predictions from patterns in data and suggest explanations using scientific knowledge and understanding
- Interpret data and think about whether it is sufficient to draw conclusions
- Draw conclusions and indicate whether these match any predictions made

Year 5: BIOLOGY

PLANTS

Pupils should know that:

- Plants reproduce
- Seeds can be dispersed in a variety of ways
- Seeds need water and warmth for germination, but not light
- Insects pollinate some flowers
- Plants produce flowers which have male and female organs; seeds are formed when pollen from the male organ fertilizes the ovum (female)
- Flowering plants have a life cycle including pollination, fertilization, seed production, seed dispersal and germination

YEAR 5: CHEMISTRY

STATES OF MATTER

Pupils should know that:

- Evaporation is when a liquid turns to a gas
- Condensation is when a gas turns to a liquid and is the reverse of evaporation
- Air contains water vapour and when this hits a cold surface it may condense
- The boiling temperature of water is 100°C

YEAR 5: PHYSICS

LIGHT

Pupils should know that:

- Shadows are formed when light travelling from a source is blocked
- Size of a shadow is affected by the position of the object
- Shadows change in length and position throughout the day
- The sun does not move, its apparent movement is caused by the earth spinning its axis
- The earth spins on its axis once in every 24 hours
- The earth takes a year to orbit the sun, spinning as it goes
- Opaque objects/materials do not let light through and transparent objects/materials let lots of light through
- We see light sources because light from the source enters our eyes
- Beams/rays of light can be reflected by a mirror, the reflected light enters our eyes and we see the object
- When a beam of light is reflected from a surface it changes direction

YEAR 6: SCIENTIFIC ENQUIRY

IDEAS AND EVIDENCE IN SCIENCE

Pupils should be able to:

- Consider how scientists have combined evidence from observation and measurement with creative thinking to suggest new ideas and explanations for phenomena

PLAN EXPERIMENTAL WORK

Pupils should be able to:

- Decide how to turn ideas into a form that can be tested
- Make predictions using scientific knowledge and understanding
- Identify factors that are relevant to a particular situation
- Choose what evidence to collect to investigate a question, ensuring that the evidence is sufficient
- Choose what equipment to use

OBTAIN AND PRESENT EVIDENCE

Pupils should be able to:

- Make a variety of relevant observations and measurements using simple apparatus correctly
- Decide when observations and measurements need to be checked. By repeating, to give more reliable data
- Use tables, bar charts and line graphs to present results

CONSIDER EVIDENCE AND EVALUATE

Pupils should be able to:

- Make comparisons
- Evaluate repeated results
- Identify patterns in results and results that do not appear to fit the pattern
- Use results to draw conclusions and to make further predictions
- Suggest and evaluate explanations for predictions using scientific knowledge and understanding
- Say whether the evidence supports any predictions made

YEAR 6: BIOLOGY

HUMANS

Pupils should be able to:

- Use scientific names for some major organs of body systems
- Identify the positions of major organs in the body
- Describe the main functions of the major organs of the body
- Explain how the functions of the major organs are essential

ECOSYSTEMS/ENVIRONMENT

Pupils should know that:

- Food chains can be used to represent feeding relationships in a habitat
- Food chains begin with a plant (the producer)

Pupils should be able to:

- Understand the terms 'producer', 'consumer', 'predator' and 'prey'
- Construct food chains in a particular habitat

YEAR 6: CHEMISTRY

CHANGES

Pupils should be able to:

- Distinguish between reversible and irreversible changes

Pupils should know that:

- Solids can be mixed and it is often possible to get the original materials back
- Changes occur when some solids are added to water
- When solids do not dissolve or react with the water they can be separated by filtering which is similar to sieving
- Some solids dissolve in water to form solutions and although the solid cannot be seen the substance is still present
- When liquid evaporates from a solution the solid is left behind

YEAR 6: PHYSICS

ELECTRICITY AND MAGNETISM

Pupils should know that:

- Some materials are better conductors of electricity than others
- Metals are good conductors of electricity, most other materials are not
- Metals are used for cables and wires, plastics are used to cover wires and as covers for plugs and switches

Pupils should be able to:

- Predict effects of making changes to circuits including length and thickness of wire

FORCES AND MOTION

Pupils should be able to:

- Distinguish between mass and weight
- Recognise and use units of force, mass and weight
- Understand the notion of energy and movement

