WORKING SCIENTIFICALLY SKILLS

	LOWER KS2 – YEAR 3 AND 4	UPPER KS2 – YEAR 5 AND 6
PLAN	• ask relevant questions and using different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests	• plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
DO	• make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	• take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
RECORD	• gather, record, classify and present data in a variety of ways to help in answering questions • record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	• record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
REVIEW	• report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identify differences, similarities or changes related to simple scientific ideas and processes • use straightforward scientific evidence to answer questions or to support their findings	• use test results to make predictions to set up further comparative and fair tests • report and present 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 • identify scientific evidence that has been used to support or refute ideas or arguments

	Comparative and Fair Testing	Identifying and Classifying	Observing over time	Researching using secondary sources	Pattern Seeking
YEAR 3	**Forces and Magnets** *Friction – Test how cars move on different surfaces **Rocks** *Investigate which rock would be best to make a statue out of? *Investigate soil permeability **Light** *Test different materials for reflectiveness **Plants** *Investigate what plants need to grow	**Forces and Magnets** *Sort everyday objects into magnetic and non-magnetic **Rocks** *Group rocks in own ways **Light** *Sort light sources into natural and man made *Sort materials into transparent, translucent and opaque **Animals including humans** *Sort foods into food groups *Sort animals by type of skeleton	**Light** *Sundial/shadows – observe how shadows change during day **Plants** *Observe water transportation in plants	**Forces and Magnets** *Research how magnets are used in everyday life **Rocks** *Understand there are different types of rocks and how they are formed **Animals including humans** *Research the role of each nutrient and which types of food contain which nutrients? **Plants** *Research the functions of roots, stem/trunk, leaves and flowers.	**Forces and Magnets** *Investigate if the size and shape of a magnet affect how strong it is? **Light** *Investigate what happens to a shadow if moves closer to light source? **Animals including humans** *Investigate if people with longer legs jump higher/further?

	Comparative and Fair Testing	Identifying and Classifying	Observing over time	Researching using secondary sources	Pattern Seeking
YEAR 4	**Animals including humans** *Tooth decay investigation *Make their own toothpaste and test who's is best in group **Electricity** *Test a range of materials in a circuit to see if they are conductors or insulators **Sound** *Investigate which material is best for Soundproofing *Investigate what happens to the sound waves as they travel over a distance **States of Matter** *Compare how much water has evaporated from a tea towel when left in different environments	**Electricity** *Sort materials into conductors and insulators **Living things and their habitats** *Group animals - vertebrates and invertebrates *Group animals – fish, amphibians, reptiles, birds and mammals * Sort plants into flowering and non-flowering plants * Use a classification key/flow diagram to identify an animal or plant *Create own flow diagram *Create own classification key **States of Matter** *Group everyday objects *Group objects into solids, liquids and gases	**Animals including humans** *Tooth decay investigation **Living things and their habitats** *Soil erosion investigation **States of Matter** *Investigate how the state of a material can be changed by heating or cooling	**Animals including humans** *Research other animals' teeth, compare to humans and explain why they are different *Research functions of the mouth, oesophagus, stomach, small intestine and large intestine. **Electricity** *Find out about Thomas Edison and his electric inventions **Living things and their habitats** *Research 7 characteristics of living things * Research plants and animals found in different environments **States of Matter** *Research the melting/freezing point and boiling point of different materials	**Living things and their habitats** *Investigate where we find the most woodlice (habitat) **Sound** *Investigate how we make sound louder or quieter *Make straw pan pipes and investigate pattern between pitch and length of straw

	Comparative and Fair Testing	Identifying and Classifying	Observing over time	Researching using secondary sources	Pattern Seeking
YEAR 5	**Forces** *Investigate air resistance *Investigate friction - rocket balloon on different types of string **Properties and changes in materials** *Investigate whether materials dissolve	**Forces** *Sort statements and pictures into pulleys, gears and levers **Living things and their habitats** Group animals based on prior knowledge **Properties and changes in materials** *Sort and compare materials based on their properties * Sort a range of changes into reversible and irreversible	**Earth and Space** *Observe phases of the moon *Observe how shadows show that the Earth is rotating *Make observations about how ideas about how planets move around Sun has changed over time **Properties and changes in materials** *Carry out and observe a simple reversible and irreversible change *Children observe which ice cube takes the longest to melt when wrapped in different materials – thermal conductors and insulators	**Earth and Space** *Examine previous ideas that the Earth was flat * Research planets *Research how ideas about how planets move around Sun has changed over time and evidence **Forces** *Research Isaac Newton **Living things and their habitats** *Research the characteristic for each group of animals *Research the lifecycle of animal * Research pollination **Properties and changes in materials** *Research a famous inventor	**Forces** *Investigate do all objects fall through water in the same way? **Living things and their habitats** *Compare the gestation period of different animals, number of offspring, and size of animal **Properties and changes in materials** *Investigate if magnetic materials always good conductors

	Comparative and Fair Testing	Identifying and Classifying	Observing over time	Researching using secondary sources	Pattern Seeking
YEAR 6	**Electricity** *Investigate what happens if you increase the number of batteries (voltage) in a circuit **Light** *Investigate the shape of shadows and the shape of their objects **Living things and their habitats** *Investigate mould growing on bread **Animals including humans** *Investigate heart rate before, during and after exercise and the effect exercise has on heart rate	**Electricity** *Analyse simple electric circuits from a set of circuit diagram cards **Living things and their habitats** * Group pictures of animals and give reasons for their groupings. *Classify invertebrates using classification key *Group pictures of plants and give reasons for groupings *Use identification keys to sort plants *Design their own classification key to sort plants	**Electricity** *Observe what happens when make changes to a circuit – adding/removing bulbs, wires etc **Animals including humans** *Observe how diffusion and osmosis work in the process of transporting water and nutrients *Observe heart rate before, during and after exercise and the effect exercise has on heart rate	**Electricity** *Research one of the people from the history of electricity **Light** *Identify and label parts of the eye *Research Isaac Newton's experiments with prisms **Animals including humans** *Research different components of blood and functions of blood cells *Research different types of drugs and their effects **Living things and their habitats** *Research Alexander Fleming and his discovery of penicillin **Evolution and inheritance** *Research different species and how they are suited to where they live	**Electricity** *Investigate what happens if you increase the number of batteries (voltage) in a circuit **Light** *Investigate the relationship between the angles when light is reflected **Evolution and inheritance** *Best beak investigation

Dr CORPI's Science Enquiry Types

Comparative / fair testing
Changing one variable to see its effect on another, whilst keeping all others the same.

Observation over time
Observing changes that occur over a period of time ranging from minutes to months.

Research
Using secondary sources of information to answer scientific questions.

Pattern-seeking
Identifying patterns and looking for relationships in enquiries where variables are difficult to control.

Identifying, grouping and classifying
Making observations to name, sort and organise items.