

### **Working scientifically (Y3 and Y4)**

I can ask relevant scientific questions.

I can use observations and knowledge to answer scientific questions.

I can set up a simple enquiry to explore a scientific question.

I can set up a test to compare two things.

I can set up a fair test and explain why it is fair.

I can make careful and accurate observations, including the use of standard units.

I can use equipment, including thermometers and data loggers to make measurements.

I can gather, record, classify and present data in different ways to answer scientific questions.

I can use diagrams, keys, bar charts and tables; using scientific language.

I can use findings to report in different ways, including oral and written explanations, presentation.

I can draw conclusions and suggest improvements.

I can make a prediction with a reason.

I can identify differences, similarities and changes related to an enquiry.

### **Biology**

#### Plants

I can describe the function of different parts of flowering plants and trees.

I can explore and describe the needs of different plants for survival.

I can explore and describe how water is transported within plants.

I can describe the plant life cycle, especially the importance of flowers.

#### Animals, including humans

I can explain the importance of a nutritious, balanced diet.

I can explain how nutrients, water and oxygen are transported within animals and humans.

I can describe and explain the skeletal system of a human.

I can describe and explain the muscular system of a human.

I can describe the purpose of the skeleton in humans and animals.

### **Chemistry**

#### Rocks

I can compare and group rocks based on their appearance and physical properties, giving a reason.

I can describe how fossils are formed.

I can describe how soil is made.

I can describe and explain the difference between sedimentary and igneous rock.

## **Physics**

### Light

I can describe what dark is (the absence of light).

I can explain that light is needed in order to see.

I can explain that light is reflected from a surface.

I can explain and demonstrate how a shadow is formed.

I can explore shadow size and explain.

I can explain the danger of direct sunlight and describe how to keep protected.

### Forces and magnets

I can explore and describe how objects move on different surfaces.

I can explain how some forces require contact and some do not, giving examples.

I can explore and explain how objects attract and repel in relation to objects and other magnets.

I can predict whether objects will be magnetic and carry out an enquiry to test this out.

I can describe how magnets work.

I can predict whether magnets will attract or repel and give a reason.

### **Working Scientifically**

I can record and present what I have found using scientific language, drawings, labelled diagrams, bar charts and tables.

I can explain my findings in different ways (display, presentation, writing).

I can use my findings to draw a simple conclusion.

I can suggest improvements and predictions for further tests.

I can suggest how to improve my work if I were to do it again.

### **Biology**

I can explain how the muscular and skeletal systems work together to create movement.

I can classify living things and non-living things by a number of characteristics that I have thought of.

I can explain how people, weather and the environment can affect living things.

I can explain how certain living things depend on one another to survive.

I can classify a range of common plants according to many criteria (environment found, size, climate required, etc.).

I can explore the role of flowers in the life cycle of flowering plants (including pollination, seed formation and seed dispersal)

### **Chemistry**

I can explain different ways that I can sort the same group of materials.

I can sort materials by a number of different criteria and explain my reasons.

I can explain why certain materials are used for specific jobs.

I can classify igneous and sedimentary rocks.

I can begin to relate the properties of rocks with their uses.

### **Physics**

I can investigate the strengths of different magnets and find fair ways to compare them.

I can explain why an object will move faster if it is rolling down a hill or a slope.

I can explain why lights need to be bright or dimmer according to need.

I can make a bulb go on and off.

I can say what happens to the electricity when more batteries are added.

I can explain why my shadow changes when the light source is moved closer or further from me.

## SCIENCE TARGETS - A YEAR 4 SCIENTIST

### **Working scientifically**

#### **(Y3 and Y4)**

- I can ask relevant scientific questions.
- I can use observations and knowledge to answer scientific questions.
- I can set up a simple enquiry to explore a scientific question.
- I can set up a test to compare two things.
- I can set up a fair test and explain why it is fair.
- I can make careful and accurate observations, including the use of standard units.
- I can use equipment, including thermometers and data loggers to make measurements.
- I can gather, record, classify and present data in different ways to answer scientific questions.
- I can use diagrams, keys, bar charts and tables; using scientific language.
- I can use findings to report in different ways, including oral and written explanations, presentation.
- I can draw conclusions and suggest improvements.
- I can make a prediction with a reason.
- I can identify differences, similarities and changes related to an enquiry.

### **Biology**

#### Living things and their habitats

- I can group living things in different ways.
- I can use classification keys to group, identify and name living things.
- I can create classification keys to group, identify and name living things (for others to use).
- I can describe how changes to an environment could endanger living things.

#### Animals, including humans

- I can identify and name the parts of the human digestive system.
- I can describe the functions of the organs in the human digestive system.
- I can identify and describe the different types of teeth in humans.
- I can describe the functions of different human teeth.
- I can use food chains to identify producers, predators and prey.
- I can construct food chains to identify producers, predators and prey.

### **Chemistry**

#### States of matter

- I can group materials based on their state of matter (solid, liquid, gas).
- I can describe how some materials can change state.
- I can explore how materials change state.

I can measure the temperature at which materials change state.

I can describe the water cycle.

## **Physics**

### Sound

I can describe how sound is made.

I can explain how sound travels from a source to our ears.

I can explain the place of vibration in hearing.

I can explore the correlation between pitch and the object producing a sound.

I can explore the correlation between the volume of a sound and the strength of the vibrations that produced it.

I can describe what happens to a sound as it travels away from its source.

### Electricity

I can identify and name appliances that require electricity to function.

I can construct a series circuit.

I can identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers).

I can draw a circuit diagram.

I can predict and test whether a lamp will light within a circuit.

I can describe the function of a switch in a circuit.

I can describe the difference between a conductor and insulators; giving examples of each.

## **Year 4: Science at Greater Depth**

### **Working scientifically**

I can plan and carry out an investigation by controlling variables fairly and accurately.

I can use test results to make further predictions and set up further comparative tests.

I can record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models.

I can report findings from investigations through written explanations and conclusions.

I can use a graph or diagram to answer scientific questions .

### **Biology**

I can classify living things and non-living things by a number of characteristics I have thought of.

I can explain how people, weather and the environment can affect living things.

I can explain how certain living things depend upon one another to survive.

I can give reasons for how I have classified animals and plants, using their characteristics and how they are suited to their environment.

I can explore the work of pioneers in classification, e.g. Carl Linnaeus.

### **Chemistry**

I can group and classify a variety of materials according to the impact of temperature upon them.

I can explain what happens over time to materials such as puddles on the playground or washing hanging on a line.

I can relate temperature to the change of state of materials.

### **Physics**

I can explain why sound gets fainter or louder according to the distance.

I can explain how pitch and volume can be changed in a variety of ways.

I can work out which materials give the best insulation for sound.

I can explain how a light bulb might become brighter.

I can work out which metals can be used to connect across a gap in a circuit.

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## SCIENCE TARGETS - A YEAR 5 SCIENTIST

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### **Working scientifically**

#### **(Y5 and Y6)**

I can plan different types of scientific enquiry.

I can control variables in an enquiry.

I can measure accurately and precisely using a range of equipment.

I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

I can use the outcome of test results to make predictions and set up a further comparative fair test.

I can report findings from enquiries in a range of ways.

I can explain a conclusion from an enquiry.

I can explain causal relationships in an enquiry.

I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.

I can read, spell and pronounce scientific vocabulary accurately.

### **Biology**

#### Living things and their habitats

I can describe the life cycle of different living things, e.g. mammal, amphibian, insect bird.

I can describe the differences between different life cycles.

I can describe the process of reproduction in plants.

I can describe the process of reproduction in animals.

#### Animals, including humans

I can create a timeline to indicate stages of growth in humans.

### **Chemistry**

#### Properties and changes of materials

I can compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets).

I can describe how a material dissolves to form a solution; explaining the process of dissolving.

I can describe and show how to recover a substance from a solution.

I can describe how some materials can be separated.

I can demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating).

I know and can demonstrate that some changes are reversible and some are not.

I can explain how some changes result in the formation of a new material and that this is usually irreversible.

I can discuss reversible and irreversible changes.

I can give evidenced reasons why materials should be used for specific purposes.

## **Physics**

### Earth and space

I can describe and explain the movement of the Earth and other planets relative to the Sun.

I can describe and explain the movement of the Moon relative to the Earth.

I can explain and demonstrate how night and day are created.

I can describe the Sun, Earth and Moon (using the term spherical).

### Forces

I can explain what gravity is and its impact on our lives.

I can identify and explain the effect of air resistance.

I can identify and explain the effect of water resistance.

I can identify and explain the effect of friction.

I can explain how levers, pulleys and gears allow a smaller force to have a greater effect.



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## Year 5: Science at Greater Depth

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### **Working scientifically**

I can explore different ways to test an idea and choose the best way, and give reasons.

I can vary one factor whilst keeping the others the same in an experiment.

I can use information to help make a prediction.

I can explain (in simple terms) a scientific idea and what evidence supports it.

I can decide which units of measurement I need to use.

I can explain why a measurement needs to be repeated.

I can find a pattern from my data and explain what it shows.

I can link what I have found out to other science.

I can suggest how to improve my work and say why I think this.

### **Biology**

I can create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies.

I can observe my local environment and draw conclusions about life-cycles, for example, the vegetable garden or plants in a shrubbery.

I can compare the life cycles of plants and animals in my local environment with the life cycles of those around the world, e.g. rainforests.

### **Chemistry**

I can describe methods for separating mixtures (filtration, distillation).

I can work out which materials are most effective for keeping us warm or for keeping something cold.

### **Physics**

I can compare the time of day at different places on the earth.

I can create shadow clocks.

I can begin to understand how older civilizations used the sun to create astronomical clocks.

I can explore the work of some space pioneers (Galileo, Copernicus, Neil Armstrong).

I can work out how magnets are useful in an everyday context.

I can work out the link between magnets and the North and South poles.

I can describe and explain how motion is affected by forces (including gravitational attractions, magnetic attraction and friction).

I can design very effective parachutes.

I can work out how water can cause resistance to floating objects.

## SCIENCE TARGETS - A YEAR 6 SCIENTIST

### Working scientifically

#### (Y5 and Y6)

I can plan different types of scientific enquiry.

I can control variables in an enquiry.

I can measure accurately and precisely using a range of equipment.

I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

I can use the outcome of test results to make predictions and set up a further comparative fair test.

I can report findings from enquiries in a range of ways.

I can explain a conclusion from an enquiry.

I can explain causal relationships in an enquiry.

I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.

I can read, spell and pronounce scientific vocabulary accurately.

### Biology

#### Living things and their habitats

I can classify living things into broad groups according to observable characteristics and based on similarities & differences.

I can describe how living things have been classified.

I can give reasons for classifying plants and animals in a specific way.

#### Animals, including humans

I can identify and name the main parts of the human circulatory system.

I can describe the function of the heart, blood vessels and blood.

I can discuss the impact of diet, exercise, drugs and life style on health.

I can describe the ways in which nutrients and water are transported in animals, including humans.

#### Evolution and inheritance

I can describe how the earth and living things have changed over time.

I can explain how fossils can be used to find out about the past.

I can explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents).

I can explain how animals and plants are adapted to suit their environment.

I can link adaptation over time to evolution.

I can explain evolution.

## **Physics**

### Light

I can explain how light travels.

I can explain and demonstrate how we see objects.

I can explain why shadows have the same shape as the object that casts them.

I can explain how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.

### Electricity

I can explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer.

I can compare and give reasons for why components work and do not work in a circuit.

I can draw circuit diagrams using the correct symbols.

## **Year 6: Science at Greater Depth**

### **Working scientifically**

I can choose the best way to answer a question.

I can use information from different sources to answer a question and plan an investigation.

I can make a prediction which links with other scientific knowledge.

I can identify the key factors when planning a fair test.

I can explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough.

I can plan in advance which equipment I will need and use it well.

I can make precise measurements.

I can collect information in different ways.

I can record my measurements and observations systematically.

I can explain qualitative and quantitative data.

I can draw conclusions from my work.

I can link my conclusions to other scientific knowledge.

I can explain how I could improve my way of working.

### **Biology**

I can explain how some living things adapt to survive in extreme conditions.

I can analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet.

I can begin to understand what is meant by DNA.

I can explain why classification is important.

I can readily group animals into reptiles, fish, amphibians, birds and mammals.

I can explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learnt about our bodies.

I can compare the organ systems of humans to other animals.

I can make a diagram of the human body and explain how different parts work and depend upon one another.

### **Physics**

I can make my own traffic light system or something similar.

I can explain the danger of short circuits.

I can explain what a fuse is.

I can use the ray model to explain the size of shadows.