Stage 6

Thinking and Working Scientifically

Models and representations

- **6TWSm.01** Describe how a model can help us understand and describe scientific phenomena and ideas.
- **6TWSm.02** Use models, including diagrams, to represent and describe scientific phenomena and ideas.

Scientific enquiry: purpose and planning

- **6TWSp.01** Ask scientific questions and select appropriate scientific enquiries to use.
- **6TWSp.02** Know the features of the five main types of scientific enquiry.
- **6TWSp.03** Make predictions, referring to relevant scientific knowledge and understanding within familiar and unfamiliar contexts.
- **6TWSp.04** Plan fair test investigations, identifying the independent, dependent and control variables.
- **6TWSp.05** Describe risks when planning practical work and consider how to minimise them.

Carrying out scientific enquiry

- **6TWSc.01** Sort, group and classify objects, materials and living things through testing, observation and using secondary information.
- **6TWSc.02** Complete a key based on easily observed differences.
- **6TWSc.03** Choose equipment to carry out an investigation and use it appropriately.
- **6TWSc.04** Decide when observations and measurements need to be repeated to give more reliable data.
- **6TWSc.05** Take appropriately accurate measurements.
- **6TWSc.06** Carry out practical work safely.
- **6TWSc.07** Use a range of secondary information sources to research and select relevant evidence to answer questions.
- **6TWSc.08** Collect and record observations and/or measurements in tables and diagrams appropriate to the type of scientific enquiry.

Scientific enquiry: analysis, evaluation and conclusions

- **6TWSa.01** Describe the accuracy of predictions, based on results.
- **6TWSa.02** Describe patterns in results, including identifying any anomalous results.
- **6TWSa.03** Make a conclusion from results informed by scientific understanding.
- **6TWSa.04** Suggest how an investigation could be improved and explain any proposed changes.
- **6TWSa.05** Present and interpret results using tables, bar charts, dot plots, line graphs and scatter graphs.

Biology

Structure and function

- **6Bs.01** Describe the human circulatory system in terms of the heart pumping blood through arteries, capillaries and veins, describe its function (limited to transporting oxygen, nutrients and waste) and know that many vertebrates have a similar circulatory system.
- **6Bs.02** Describe the human respiratory system in terms of oxygen from the air moving into the blood in the lungs and know that many vertebrates have a similar respiratory system.
- **6Bs.03** Name the parts of the human reproductive system.

Life processes

- **6Bp.01** Describe the physical changes that take place during puberty in humans.
- **6Bp.02** Know that some diseases can be caused by infection with viruses, bacteria, parasites or fungi that can be passed from one host to another.
- **6Bp.03** Describe how good hygiene can control the spread of diseases transmitted in water, food and body fluids, and describe ways to avoid being bitten by insect vectors.
- **6Bp.04** Know that humans have defence mechanisms against infectious diseases, including skin, stomach acid and mucus.

Ecosystems

- **6Be.01** Interpret food webs and identify food chains within them.
- **6Be.02** Know that some substances can be toxic and damage living things, and that these substances can move through a food chain/web.
- **6Be.03** Identify the energy source of a food chain/web and describe how energy is transferred through a food chain/web.

Chemistry

Properties of materials

- **6Cp.01** Know that the temperature at which a substance changes state is a property of the substance.
- **6Cp.02** Know that gases have properties, including mass.
- **6Cp.03** Understand that electrical conductivity and thermal conductivity are properties of a substance.

Changes to materials

- **6Cc.01** Identify and describe physical changes that are reversible.
- **6Cc.02** Describe how temperature affects solids dissolving in liquids and relate it to the particle model.
- **6Cc.03** Describe the difference between boiling and evaporation.
- **6Cc.04** Understand that chemical reactions involve substances, called reactants, interacting to form new substances, called products.
- **6Cc.05** Observe and describe the evidence that a chemical reaction has taken place (limited to a gas being produced, colour change and change in temperature).

Physics

Forces and energy

- **6Pf.01** Describe the difference between mass, measured in kilograms (kg), and weight, measured in newtons (N)
- **6Pf.02** Describe the effect of gravity and know that when gravity changes, the weight of an object changes but the mass does not.
- **6Pf.03** Use force diagrams to show the name, size and direction of forces acting on an object.
- **6Pf.04** Describe the effect of different forces on an object at rest and in motion.
- **6Pf.05** Recognise that the mass and shape of an object can affect if it floats or sinks.

Light and sound

- **6Ps.01** Describe how a ray of light changes direction when it is reflected from a plane mirror.
- **6Ps.02** Describe how a ray of light changes direction when it travels through different mediums and know that this is called refraction.

Electricity and magnetism

- **6Pe.01** Use diagrams and conventional symbols to represent, make and compare circuits that include cells, switches, lamps and buzzers.
- **6Pe.02** Make simple circuits and compare the brightness of lamps in series and parallel circuits.

Earth and Space

Planet Earth

- **6ESp.01** Know that rocks can be classified as metamorphic, igneous and sedimentary, and describe the identifying features of each type of rock.
- **6ESp.02** Describe the way fossils can form in sedimentary rocks.
- **6ESp.03** Know that there are different types of soils and they can be classified based on their clay, sand and organic content.
- **6ESp.04** Know that soil composition can change, which can support, or hinder, plant growth.

Cycles on Earth

- **6ESc.01** Describe the rock cycle and the formation of metamorphic, igneous and sedimentary rocks in terms of solidification, erosion, sedimentation, burial, metamorphism and melting.

Earth in space

- **6ESs.01** Describe the relative position and movement of the planets, the Moon and the Sun in the Solar System.
- **6ESs.02** Observe and describe the changes in the appearance of the Moon over its monthly cycle.

Science in Context

- **6SIC.01** Describe how scientific knowledge and understanding changes over time through the use of evidence gained by enquiry.
- **6SIC.02** Describe how science is used in their local area.
- **6SIC.03** Use science to support points when discussing issues, situations or actions.
- **6SIC.04** Identify people who use science, including professionally, in their area and describe how they use science.
- **6SIC.05** Discuss how the use of science and technology can have positive and negative environmental effects on their local area.