

| YEAR 8 | | Description | Levels covered | Skills & content covered | Skills & content revisited |
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| SCIENCE | | | | | |
| UNIT 1 | Space | This unit is all about the environment, earth and the universe - 'astronomy and space science provide insight into the nature and observed motions of the sun, moon, stars, planets and other celestial bodies' The unit covers some aspects of the solar system. It highlights the major components of the solar system, the different planets and moons. The different seasons and days and nights. | 3 to 8 | Solar system/moons/asteroid/planets/earth/orbit/axis/day/night/season/stars/sun/luminous/non-luminous/milky way/constellation/terrestrial/asteroid/dwarf planet/gas giant | Understand that scientific methods and theories develop as scientists modify earlier explanations to take account of new evidence and ideas, as they complete the 'what's in the universe' activity sheet. |
| UNIT 2 | Chemical reactions | This unit covers chemical and physical reactions. Teachers need to emphasise that some physical changes also involve colour changes and gas evolution and that a chemical reaction is distinguished by changes in the ways atoms are bonded together. Pupils should learn to represent and explain chemical reactions by word equations, models or diagrams'. The unit enables the students to write and complete chemical equations. They will study about chemical reactions that take place when fuels burn and how else chemical reactions can be used as energy resources. They will explore how fuels burn and complete word and symbol equations on complete and incomplete combustion. Students will explore the processes of different types of reactions like thermal decomposition, exothermic and endothermic reactions. | 3 to 8 | Physical/chemical/colour/gas/acid/symbol/chemical reaction/catalyst/reactant/product/decomposition/oxidation/conservation of mass/balanced symbol equation/endothermic/exothermic/non-renewable | Use appropriate methods and apparatus for an experiment for doing the 'finding about reactions' worksheet. Students will make accurate observations and perform the following experiments: physical and chemical reactions, reacting elements to complete word equations, burning fuels to investigate whether all fuels release the same amount of energy, testing for carbon dioxide, and thermal decomposition reactions. and categorise the reactions. In all the experiments the data will be recorded in appropriate tables, patterns will be analysed in the data. |
| UNIT 3 | Reproduction | The unit covers aspects of puberty and growth. The different components and functions of the male and female reproductive systems. Pregnancy and child birth is also explored in this unit. Pupils should learn that harmful substances and viruses can cross the placenta into the foetus and affect development. Pupils should learn that a drug is any substance that changes the way the body or mind works; that drugs alter the way the body works physically or mentally. | 3 to 8 | Female/puberty/male/sperm/egg/uterus/ovary/oviduct/testes/scrotum/penis/vulva/ovulation/adolescence/ejaculation/cilia/cervix/penis/sexual intercourse/contraceptive/gestation/umbilical cord/menstrual cycle/sex hormones. | Students will use appropriate scientific terminology to identify all parts of the male and female reproductive systems and identifying the important steps in pregnancy and child birth. |
| UNIT 4 | The periodic table | This unit states that pupils will explore the properties of metals and non-metals. They will study what happens when metals react with acids. Students will learn about the chemical reactions between acids and metal oxides. The students will explore the principles underpinning the Mendeleev periodic table. This unit states that pupils will establish and use a reactivity series for metals. | 3 to 8 | metals/non-metals/reactivity series/chemical reactions/metals/acids/oxygen/metalloids/acid rain/halogen/density/period 1/halogen/group 7/displacement reactions/noble gas/unreactive. | Students will use data and observations from the practical on identifying observations when classifying metals and non-metals. They will also use data and perform experiments to predict and determine the properties of the alkali, halogens and group 0 elements. |
| UNIT 5 | Forces 2 | In this unit pupil will study the quantitative relationship between average speed, distance, and time and the relative motion of trains and cars passing one another. They will study representations of a journey on a distance-time graph by interpreting these graphs, calculating speed from the graph and plotting data on a distance-time graph accurately. Pupils will learn how to use the quantitative relationship between force, area and pressure. Pupils will explore pressure in fluids by describing and explaining atmospheric pressure in liquids and gases. They will describe the factors that affect gas pressure and explain how atmospheric pressure changes with height. They will also describe how liquid pressure changes with depth and predict how water pressure changes. Additionally, pupils will be required to calculate pressure and apply ideas of pressure to different situations, as well as describing what is meant by 'moments' and calculating the moment of a force. | 3 to 8 | Speed, meters per second, instantaneous speed, relative motion, distance-time graph, acceleration, gas pressure, compressed, atmospheric pressure, density, liquid pressure, incompressible, pivot, moment, centre of mass, centre of gravity, law of moments. | plan an investigation into balance, making sufficient observations with precision. <ul style="list-style-type: none"> identify a pattern in their results and use this to draw conclusions, relating these to the principle of moments. make systematic observations of balance and use these to draw conclusions. account for anomalies in the observations of balance and evaluate their conclusions by reference to the principle of moments. describe non-linear relationships between speed and distance travelled justify appropriate levels of precision in measuring speed interpret speed-time graphs of falling objects explain how a technological development contributed to faster travel. |

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| UNIT 6 | Chemical reactions 2 | In this unit pupils will explore the idea of chemical reactions as the rearrangement of atoms. They will learn how to represent chemical reactions using formulae and using equations. Pupils will study combustion, thermal decomposition, oxidation and displacement reactions. They will also explain conservation of mass in a chemical reaction and calculate masses of reactants and products. This unit also covers exothermic and endothermic chemical reactions. Pupils will be required to describe the characteristics of exothermic and endothermic changes, calculate temperature change and draw conclusions in a range of familiar exothermic and endothermic reactions. | 3 to 8 | Thermite reaction, displacement reaction, displace, reactivity, state symbol, ore | |
| UNIT 7 | Ecology | In this unit pupils will study the different relationships in an ecosystem. They will explore the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops and will also explain various sampling techniques used to take measurements in an ecosystem. Pupils will look at how organisms affect, and are affected by, their environment, including the accumulation of toxic materials. Furthermore, they will study the importance of plant reproduction through insect pollination. | 3 to 8 | Food chain, food web, interdependence, population, bioaccumulation, ecosystem, community, habitat co-exist, niche, algae, produce, consumer, minerals, fertiliser. | Suggest what data should be collected to investigate a habitat and choose appropriate apparatus and techniques to make measurements and observations • use a sampling technique to collect data to compare populations in habitats. collect data to investigate a question about a habitat using appropriate apparatus and techniques • use ICT to collect, store and present information. plan how to collect reliable data, taking into account the fact that variables cannot readily be controlled |
| UNIT 8 | Electricity | In this unit pupils will study the concept of static electricity. They will Explain how objects can become charged, describe how charged objects interact and explore the idea of electric field. Pupils will study circuits and will be required to describe what is meant by current and to set up a circuit including an ammeter to measure current. Pupils will learn about potential difference and used this to explain resistance as as the ratio of potential difference (p.d.) to current. Pupils will also study differences in resistance between conducting and insulating components Pupils will develop these ideas when studying series and parallel circuits. They will be required to describe how current and potential difference vary in series and parallel circuits and also identify the pattern of current and potential difference in series and parallel circuits. | 3 to 8 | Electric charge, positive, negative, attract, repel, atom, proton, electron, neutron, neutral current, lightning, electric field, ammeter, amps, cell, battery, motor, potential difference, voltmeter, volts, rating, voltage, series, parallel, resistance, ohms. | Identify patterns in measurements of voltage and use these to draw conclusions about circuits • identify and control key factors in investigating simple cells and identify patterns in their results, including observations that do not fit the main trends. • measure the voltage of a range of cells • present data as charts or tables. • synthesise information from secondary sources about the development of the electricity supply industry and communicate it clearly • consider whether data is sufficient, and account for anomalies. |
| UNIT 9 | Genetics | This unit covers heredity as the process by which genetic information is transmitted from one generation to the next. Pupils will study a simple model of chromosomes, genes and DNA and will explore the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. Pupils will also learn how variation between individuals within a species can be continuous or discontinuous and how variation can lead to competition which can drive natural selection. Pupils will study how changes in the environment can leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction. This unit also covers the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material. | 3 to 8 | Competition, adaptation, interdependence, variation, species, continuous, discontinuous, DNA, chromosomes, gene, evolution, extinct, biodiversity, endangered, gene bank. | use observations to identify questions to investigate about variation between individuals • suggest data to collect to answer the questions; present and analyse the data; identify associations or correlations in their data. • make suggestions about data to be collected to answer questions about variation • with help, present data using ICT and identify patterns or associations. • evaluate graphs and tables of data in relation to sample size. |