

Curriculum Mapping: Science Year 7-9

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Introduction and safety 7A Cells 7K Forces	7G Particle model 7B Reproduction	7E Acids 7 I Energy	7H Solutions 7C Environment and feeding relationships	7F Reactions 7J Electricity	7L Space 7D Variation and classification
Year 7 -	Concepts • learn that cells are the basic units of life and are organised into tissues from which organs are made • explore cell structure and differences between plant and animal cells • learn about some functions of cells • consolidate and build on their concept of force and its measurement • identify the origin of friction, air resistance, upthrust and weight and describe situations in which these forces act • distinguish between mass and weight • use the concept of speed • relate forces acting to changes in motion • identify situations in which forces are balanced and unbalanced	Concepts • learn how the particle model can be used to explain differences between solids, liquids and gases • explore how experimental evidence relates to theories and models • extend their earlier ideas about human reproduction and consider how offspring are protected and nurtured • consider and compare reproductive patterns in other animals with those in humans • relate what they know of the way their bodies change during adolescence to knowledge about human reproduction, growth and the menstrual cycle	Concepts • learn about acids and alkalis as classes of chemicals with distinct properties and uses • use indicators to classify solutions as acidic, alkaline or neutral • use the pH scale to compare the acidity and alkalinity of different solutions • begin to explore neutralisation • are introduced to the concept of energy in the context of fuels as convenient and therefore valuable sources • consider the nature and origin of fossil fuels and renewable sources of energy and how their use has implications for the environment • consolidate and extend their ideas about energy resources for living things: food for people and sunlight for plants • link the energy resources of the role of the Sun as the ultimate source of most of the Earth's energy resources	Concepts • extend their knowledge of dissolving and the separation of the components of a solution and relate this to particle theory • begin to distinguish between a 'pure' substance and a mixture • apply the particle model of solids, liquids and gases in a range of contexts • how habitats vary • how plants and animals are adapted to live in a particular habitat • how plants and animals interact with their environment and with each other, including feeding relationships • about adaptations for feeding • how to link food chains to make webs	Concepts • are introduced to the idea that chemical change results in new substances that are different from the ones from which they were made • explore some simple chemical reactions of acids in which a gas is made • explore burning as a chemical reaction involving a gas, air or oxygen • identify hydrogen and carbon dioxide as substances made during some of these reactions • work with gases to understand that gases are real materials • begin to use word equations as shorthand descriptions of reactions • use concepts of electric current and energy transfer to explain the working of circuits • explain patterns in the measurements of current and voltage • use the concept of resistance qualitatively • build circuits in which current flow is usefully controlled	Concepts consolidate their ideas about the Sun and Moon, and use models of these to explain phenomena such as eclipses and the seasons. • learn that planets and satellites are seen by reflected light and that the Sun, as a star, emits light • compare the Sun with other stars • explore variation within and between species • consider why classification is important and are introduced to scientific classification of animals • investigate patterns of variation in living things and ways of representing and explaining the occurrence of variations



				consider the hazards of	
				electricity for humans	
Justification:	Justification:	Justification:	Justification:	Justification:	Justification
The cells unit draws on ideas developed in the key stage 2 programme of study. It relates to unit 5A 'Keeping healthy' and unit 6B 'Micro-organisms' in the key stage 2 scheme of work. The unit relates closely to unit 7B 'Reproduction' and unit 7D 'Variation and classification'. It introduces ideas and experimental techniques which pupils may not have encountered in the key stage 2 scheme of work. It provides the foundation for work on cells in all year 8 and year 9 units. The forces unit uses ideas developed in the key stage 2 programme of study. It builds on ideas introduced in unit 4E 'Friction' and unit 6E 'Balanced and unbalanced forces' in the key stage 2 scheme of work. This unit lays the foundation for unit 9J 'Gravity and space', unit 9K 'Speeding up' and unit 9L 'Pressure and moments.	The unit on the particle model uses ideas developed in the key stage 2 programme of study. If builds on unit 4D 'Solids, liquids and how they can be separated', unit 5D 'Changing state' and unit 5C 'Gases around us', unit 5D 'Changing state' and unit 6C 'More about dissolving' in the key stage 2 scheme of work. This unit lays the foundation for subsequent work on particles. Thie reproduction unit draws on ideas developed in the key stage 2 programme of study. If builds on unit 5B 'Life cycles' in the key stage 2 scheme of work and on unit 7A 'Cells'. This unit relates to: • PSHE • drugs education • sex education	The unit on acids uses ideas developed in the key stage 2 programme of study. It builds on unit 6C 'More about dissolving' and unit 6D 'Reversible and irreversible changes' in the key stage 2 scheme of work. This unit introduces pupils to chemicals, reactions and practical techniques which are likely to be new to them, through using a range of acids and alkalis encountered in familiar and laboratory contexts. It lays the foundation for work on reactions of acids in unit 9E 'Reactions of metals and metal compounds and work on carbonate rocks in unit 8G 'Rocks and weathering' and unit 8H 'The rock cycle' This energy unit introduces pupils to a topic which may be new to them, although it has links with work done in key stage 2. It builds on ideas introduced in unit 6A 'Interdependence and adaptation' (green plants need light), unit 6D 'Reversible and irreversible changes' (burning), unit 6G 'Changing circuits' (electrical conduction) and unit 4C 'Keeping warm' (temperature; thermal insulation) in the key stage 2 scheme of work. In unit 8I 'Heating and cooling', pupils will study energy transfer and change of state, and use particle explanations. In unit 91 'Energy and electricity', pupils will study energy transformations and energy conservation.	This unit develops work on solids, liquids and separating mixtures in the key stage 2 programme of study. It builds on unit 4D 'Solids, liquids and how they can be separated', unit 5C 'Gases around us', unit 5D 'Changing state', unit 6C 'More about dissolving' and unit 6D 'Reversible and irreversible changes' in the key stage 2 scheme of work. The unit builds on ideas introduced in unit 7G 'Particle model of solids, liquids and gases. This unit draws on ideas developed in the key stage 2 programme of study. It builds on unit 4B 'Habitats' and unit 6A 'Interdependence and adaptation' in the key stage 2 scheme of work. The energy transfer ideas of unit 7I 'Energy resources' are used in considering feeding relationships between organisms. As unit 7I 'Energy resources' has been covered first, then links can be made to the burning of fuels and foods and the Sun as the energy resource for plants.	This unit uses ideas developed in the key stage 2 programme of study. It builds on ideas introduced in unit 5C 'Gases around us and unit 6D 'Reversible and irreversible changes' in the key stage 2 scheme of work. This unit relates closely to unit 7E 'Acids and alkalis. Unit 9E 'Reactions of metals and metal compounds and unit 9F 'Patterns of reactivity' include further work on the reactions of acids and on burning as a chemical change. Unit 9H 'Using chemistry' includes work on the conservation of mass in chemical reactions, including burning. This unit uses ideas developed in the key stage 2 programme of study. It builds on ideas introduced in unit 6G 'Changing circuits and unit 4F 'Circuits and conductors' in the key stage 2 scheme of work.	This unit uses ideas developed in the key stage 2 programme of study. It builds on ideas introduced in unit 5E 'Earth, St and Moon' and unit 6F 'How we see things' in the key stage 2 scheme of work. The unit relates to unit 9J 'Gravity and space'. Reflection of light is covered in unit 8K 'Light'. This unit draws on ideas developed in the key stage 2 programme of study. It builds on unit 5B 'Life cycles and uni 6A 'Interdependence and adaptation' in the key stage 5 scheme of work, and on unit 7C 'Environment and feeding relationships. It provides a foundation for unit 8D 'Ecological relationships and unit 9A 'Inheritance and selection'.
lier 3 vocabulary	lier 3 vocabulary	lier 3 vocabulary	lier 3 vocabulary	lier 3 vocabulary	iler 3 vocabulary
Organ, tissue, cell.	1	Acids alkalis indicator	Solution, solvent, solute,	Hydrogen, oxygen,	Planets, asteroids, satellite
		, toras, ancais, interearch,			



	nucleus, vacuole, cell wall, magnification Drag, upthrust, weight, mass, density, repeat reading, line of best fit Assessment: Multiple choice test	Particle, diffusion, gas pressure, vibration, theory, model, evidence, data Ovary, testis, oviduct, uterus, menstruation, ovulation, fertilisation, placenta, sperm, gestation, puberty, inherited, embryo, foetus Assessment: Recall and application	equation, harmful, corrosive, hazard, risk, pH, hydrochloric acid, sodium hydroxide Energy, fuel, accuracy, control of variables, reliability of results, repeat reading Assessment: Multiple choice	saturated, filtration, distillation, chromatography, chromatogram Predator, prey, food web, migration, hibernation, dormant, producer, consumer, carnivore, sample size, reliable data Assessment: Recall and application	carbon, calcium carbonate, reactant, product Battery, cell, fuse, power supply, current, resistance, energy transfer Assessment: Multiple choice	Segment, abdomen, vertebrate, invertebrate, characteristics, mammal, reptile, amphibian, bird, fish, taxonomic groups, classify. Assessment Recall and application
	Wider reading/Cultural capital find out about the history collect and discuss adver look for stories (not necess situations in which evidem read newspaper and ma observe hazard signs on t use the internet to find ou look at labels of househol find out about wildlife con visit museums, planetariun watch TV programmes ar visit a museum, zoo, bota use the internet to find ou	of the microscope, including the lig trising and publicity material relating sarily in a scientific context) in news ice is important. gazine articles about cloning. ransport vehicles and in public place about fossil fuels and renewable e Id liquids to find out whether they ar nservation projects or ecology cent m or virtual observatory through the nd use the internet to find out about nical garden or fishery to observe a th more about the variety and classi	In the microscope and electron micro of to streamlining and reducing fric papers, magazines and on televis ess. energy sources. e pure liquids or mixtures. res in their locality. internet, eg www.jb.man.ac.uk/ t current exploration of the solar sy wider selection of living things. fication of living things, eg www.n	oscope and their use in developir tion, eg in cars, bicycles, sports clu ion and radio where evidence is o ystem. hm.ac.uk/	ng our understanding of the organ othing, oils and lubricants. collected and considered, so that	isation of living things. they appreciate the variety of
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	8A Food and digestion 8E Atoms and elements	81 Heating and cooling 8B Respiration	8F Compounds and mixtures 8J Magnets and electromagnets	8C Microbes and diseases 8K Light	8G Rocks and weathering 8L Sound and hearing	8D Ecological relationships 8H The rock cycle
Year 8 -	Concepts • about different foods and how they can be combined to produce a balanced diet • how food is broken down by digestion so it can be used by the body, for energy, growth and repair. • learn that the huge range of materials is made from a relatively small number of elements	Concepts •recognise the need for a temperature scale •learn to distinguish between heat (as energy) and temperature •learn about mechanisms of heat transfer: conduction, convection and radiation, and apply this to familiar contexts •learn about expansion and change of state in solids, liquids and gases	Concepts • distinguish between elements and compounds and how they are represented by symbols and formulae • recognise chemical change as a process in which atoms join together in new ways • distinguish between compounds and mixtures • distinguish between chemical reactions in	Concepts •learn that micro- organisms share the characteristics of other living things •find out about growing micro-organisms to make products, and about the role of micro-organisms in infectious diseases •learn about the body's defence systems and how immunisation can protect	Concepts • earn about rock texture as one of the key characteristics of different rock types • model rock texture • learn about the processes of weathering, erosion, transportation and sedimentation • relate processes, eg evaporation and dissolving, involved in rock	Concepts •study a habitat in detail and learn how: –organisms can be identified, and sizes of populations compared –feeding relationships can be modelled quantitatively –living things within a community influence each other and are affected by the environment •learn about the major rock-forming processes



 learn that each element is composed of one sort of atom only explore the characteristics of some elements use the particle model to describe what happens when elements combine 	 use the particle model to explain conduction, convection and change of state how cells are supplied with the materials they need for respiration how cells in animals and plants release energy that the process of respiration is similar in all cells 	which new compounds are formed and the formation of mixtures • identify magnetic materials, make a magnet and test the strength of a magnet • use the concepts of a magnetic field, a permanent magnet and an electromagnet • investigate factors affecting the strength of an electromagnet • explain the working of a number of devices that use magnets and	against microbial infections • build on their knowledge of light and its effects • learn how we see objects • represent light as a ray and use this concept to explain reflection and refraction • find out about the origin of coloured light and the appearance of coloured objects	formation to processes observed in other contexts • consider processes operating on different timescales • build on their knowledge of sound and hearing • explain how sound travels through media • give an explanation of how the ear works, find out about the harmful effects of loud noise and how loud noise can be reduced	 learn how rock-forming processes are linked by the rock cycle use the concept of rock texture as one of the key characteristics of igneous, sedimentary and metamorphic rocks relate processes observed in other contexts, eg crystallisation, to processes involved in the rock cycle consider processes operating on different timescales
		electromagnets			
Justification:	Justification	Justification:	Justification:	Justification:	Justification:
Inis unit draws on ideas about	Inis Unit uses ideas	Inis unit builds on unit 8E	Inis unit draws on ideas	This unit builds on unit 3D	This unit builds on unit /C
in the key stage 2	developed in the key sldge	Work on temperature	developed in the key	Rocks and soils in the key	relationships' and unit 7D
In the key stuge 2 programme of study. It builds	2 programme of study. If	molting points and boiling	study It builds on unit 48	The two units about Earth	Wariation and
on unit 54 'Keeping healthy'	in unit 4C 'Keeping warm'	points relates to unit 8	'Microorganisms' in the	science draw on work	classification' It draws on
in the key stage 2 scheme of	and unit 5D 'Changing	'Heating and cooling'	key stage 2 scheme of	about pH in unit 7E 'Acids	unit 8C 'Microbes and
work and on unit 74 'Cells'	state' in the key stage 2	This unit relates closely to	work and on unit 8B	and alkalis' work on	disease' and relates to unit
The particle model of matter	scheme of work In unit 7	unit 7G 'Particle model of	'Respiration' In unit 9B 'Fit	evaporation in unit 7H	9C 'Plants and
is introduced in unit 7G	'Energy resources' pupils	solids liquids and ages'	and healthy' pupils have	'Solutions' work on	photosynthesis' and unit 9G
'Particle model of solids	will have identified that	and to unit 7H 'Solutions'	further opportunities to	mixtures in unit 8E	'Environmental chemistry'
liquids and cases' and is	when fuels burn they	Ideas in this unit about	consider the transmission	'Compounds and	It provides a foundation for
revisited in this unit in the	release energy and have	mixtures are picked up in	and incidence of	mixtures' and work on	unit 9D 'Plants for food'. It
context of digestion. The	noted the consequent rise	unit 8G 'Rocks and	infectious diseases. This	changes of state in unit 8	also provides a foundation
energy transfer ideas of unit 71	in temperature. In unit 7G	weatherina' and unit 8H	unit lays the foundation	'Heating and cooling'.	for work in key stage 4 on
'Energy resources' are used in	'Particle model of solids,	'The rock cycle'.	for work in key stage 4 on	The unit provides a	energy transfer through an
the context of digestion.	liquids and gases', pupils will	Consideration of air as a	the body's defences	foundation for work on	ecosystem and its
Energy should be	have encountered the	mixture relates to unit 8B	against infection and the	the rock cycle in unit 8H	relationship to food
distinguished from 'stuff'	particle model of matter. In	'Respiration' and unit 9B	uses of micro-organisms in	'The rock cycle'. Ideas	production.
(food as the energy resource	unit 91 'Energy and	'Fit and healthy'.	biotechnology.	about weathering	This unit builds on unit 8G
or fuel).	electricity', pupils will study	This unit builds on work	This unit uses ideas	are revisited in unit 9G	'Rocks and weathering'
This unit relates closely to unit	energy transformation and	done in unit 3E 'Magnets	developed in the key	'Environmental chemistry'.	and work on the particle
7G 'Particle model of solids,	energy conservation.	and springs' in the key	stage 2 programme of	Together with unit 8H 'The	model in unit 7G 'Particle
liquids and gases' and unit 7H	This unit builds on unit 8A	stage 2 scheme of work	study. It builds on ideas	rock cycle', this unit lays	model of solids, liquids and
'Solutions', in which the	'Food and digestion', which	and on unit 7J 'Electrical	introduced in unit 3F 'Light	the foundation for work in	gases' and in unit 81
particle model is introduced	needs to have been	circuits. It lays the	and shadows' and unit 6F	key stage 4 on rock	'Heating and cooling'.
and developed.	covered first. It is closely	toundation for unit 91	'How we see things' in the	tormation and	Work on carbonates relates
The unit provides a	linked to the section on	'Energy and electricity',	key stage 2 scheme of	deformation and on	to work on acids and
toundation for unit 8F	breathing and smoking in	which includes the	work. Sound travel is	processes involving	carbonates in unit /F
"Compounds and mixtures",	Unit YB 'Fit and healthy'. The	generation and uses of	compared to light in unit	tectonic plates.	Simple chemical
UNIT YE REACTIONS OF METALS	UTILI RELATES TO WORK ON TOODS	electricity.	or sound and hearing'.		TEACTIONS", ROCKS AS



and metal compounds' and unit 9F 'Patterns of reactivity'.	and fuels in unit 71 'Energy resources' and to work on oxygen and burning in unit 7F 'Simple chemical reactions'. The unit lays the foundation for work on the composition of the blood, the structure of blood cells and the circulatory system at key stage 4.		The drawing of objects in different lighting conditions is covered in unit 8A 'Objects and viewpoints' in the art and design scheme of work. Light as a wave is studied at key stage 4.	This unit uses ideas developed in key stage 2. If builds on unit 5F 'Changing sounds' in the key stage 2 scheme of work. The wave nature of sound is further developed in key stage 4.	mixtures are considered in unit 8F 'Compounds and mixtures'. There are also connections with work on fossil fuels in unit 7I 'Energy resources'. This unit, together with unit 8G 'Rocks and weathering', provides the foundation for work in key stage 4 on rock formation and deformation and processes involving tectonic plates.
Tier 3 vocabulary	Tier 3 vocabulary	Tier 3 vocabulary	Tier 3 vocabulary	Tier 3 vocabulary	Tier 3 vocabulary
Intestine, villus, carbohydrate, protein, enzyme, absorb Element, compound, atom, molecule, symbol, formula, state, predicting	Conduction, convection, radiation, insulator, conductor Lung, trachea, bronchus, ribcage, red blood cell, haemoglobin, artery, vein, breathing, ventilation, inspire, respire, inhale, exhale	Element, compound, mixture, atom, composition, pure North seeking pole, south seeking pole, magnetic field, core, solenoid, coil	Bacteria, viruses, fungi, measles, chicken pox, infection, pathogen, infectious disease, immunity, food poisoning, vaccination, inoculation, antibiotic, epidemic Transparent, opaque, spectrum, reflection, refraction, image	Chemical weathering, abrasion, sedimentation, granite, limestone, sandstone, sedimentary, layers, porosity Loud, soft, quiet, high, low, pitch, noise pollution, temporary deafness, frequency, amplitude, wave, volume	Community, habitat, pyramid of numbers, environment, ecosystem, quadrat sampling, transect, population sizes, reliable data Igneous, metamorphic, sedimentary, magma, lava, erupt, relative density, iron rich, crystals, aligned, porous
Assessment:	Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Multiple choice	Recall and application	Multiple choice	Recall and application	Multiple choice	Recall and application

Wider reading/Cultural capital

• read articles in magazines and newspapers about issues relating to food and diet, eg for athletes, pregnant women, very young children.

• ask grandparents and other older people about materials that were used for clothing and utensils before plastics and synthetic fibres became so widely available.

- find out what happens in the airways of asthma sufferers.
- look at labels on household materials and on clothes to find out what they are made from and to identify the names of chemical compounds.
- • observe the use of magnetic tags fitted to clothes to prevent shoplifting in clothes shops.
- follow news stories about outbreaks of diseases such as typhoid, dysentery or cholera after natural disasters.
- observe the effects of coloured lighting in shops, in theatres and on TV.
- watch television programmes or videos about the Earth, which will help them understand how rocks are formed.
- consider the effects of loud noise on hearing.
- read newspaper articles, magazine articles and books about habitats, including those that are under threat or where protection schemes have resulted in species reestablishing themselves.
- watch wildlife videos and television programmes about a range of very different habitats.



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	9A Inheritance and selection 9E Reactions of metals and metal compounds 9I Energy and electricity	9B Fit and healthy 9F Patterns of reactivity 9J Gravity and space	9C Plants and photosynthesis 9G Environmental chemistry 9K Speeding up	9D Plants for food 9H Using chemistry. 9L Pressure and moments		
Year 9 -	Concepts • that characteristics are inherited and how this is used in selective breeding • why selective breeding is important • about variations arising from environmental differences • explore the properties of metals and non-metals • learn that different acids react in similar ways with metals, with metal carbonates and with metal carbonates and with metal oxides • represent elements by symbols and compounds by formulae • use word and symbol equations to describe these reactions • explore a range of useful energy transfers and transformations • discuss the use of electricity as a convenient way to transfer energy to do useful things • associate the concept of voltage with the transfer of energy in a circuit • investigate the voltage of cells • study how electricity is generated, with reference to environmental impacts • use the principle of conservation of energy to identify ways in which energy is dissipated during transfers	Concepts • how the human respiratory, digestive and circulatory systems interact to maintain activity • about the functions of the skeleton • about ways in which diet, exercise, smoking and drugs affect health • learn that although metals react in a similar way with oxygen, water and acids, some react more readily than others • establish and use a reactivity series for metals • represent chemical reactions by word and/or symbol equations • learn about the gravitational pull between bodies; how it depends on the masses of bodies and the distance between them • relate the movement of planets around the Sun, and that of satellites around the Earth, to gravitation • study how artificial satellites are used to observe the Earth and provide information about the solar system and the universe • find out about space exploration	Concepts • about photosynthesis as the key process producing new plant biomass • that the carbon dioxide for photosynthesis comes from the air and that the water is absorbed through the roots • that chlorophyll enables a plant to utilise light in photosynthesis • about the role of the leaf in photosynthesis • about the importance of photosynthesis to humans and other animals • learn that rocks, soils and building materials have a variety of chemical characteristics • learn that chemical weathering alters rocks and building materials over time • consider how the atmosphere and water resources are affected by natural processes and the activity of humans • consider how environmental issues • use the concept of speed • consider the relationship between forces (including	Concepts •learn about humans as part of a complex food web •learn about factors affecting plant growth •learn how management of food production has many implications for other animal and plant populations in the environment •consider some of the issues involved in sustainable development of the countryside •find out more about how chemical reactions can be used as an energy source •consider how chemical reactions are used to make new materials •model chemical reactions as the rearrangement of atoms, and use the model to explain that matter is not lost •represent chemical reactions by word and/or symbol equations •study pressure on solids and describe applications of this in everyday appliances •study hydrostatic pressure in fluids and describe an application, eg hydraulic jack	Concepts	Concepts



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observed neutralisation reactions, and in unit 7F 'Simple chemical reactions', they will have identified that and unit 9H 'Using chemistry'. The unit lays the foundation for work in key between acids and metals and between acids and and between acids and and between acids and and unit 7L 'The solar system greunlikely to have'Environmental chemistry' and unit 9H 'Using chemistry'. The unit lays the foundation for work in key of acids in unit 9Efor work in key stage 4 on the impact of humans on the environment, the management of food- production systems and the importance of sustainable development.observed neutralisation 'Simple chemical reactions', they will have identified that there are chemical reactions and between acids and metals and between acids and and unit 7L 'The solar system are unlikely to have'Environmental chemistry' and unit 7L 'The solar system and unit 7L 'The unit further solar systemfor work in key stage 4 on the impact of humans on the environment, the management of food- production systems and the importance of sustainable development.	and alkalis', pupils will have	turther in unit 9G	'Simple chemical	provides the foundation		
reactions, and in unit /F 'Simple chemical reactions', they will have identified that between acids and metals and unit 9H 'Using chemistry'. The unit lays the foundation for work in key between acids and metals and between acids and the import of humans on the impact of humans on the environment, the management of food- production systems and the import of humans on the environment, the management of food- production systems and the import of humans on the impact of humans on the environment, the management of food- production systems and the import of humans on the environment, the management of food- production systems and the import of our production systems and the import of humans on the environment, the management of food- production systems and the import of our production systems and the import of humans on the environment, the management of food- production systems and the import on systems and the import of metals and the import of acids in unit 9E production systems and the import of humans on the environment, the management of food- production systems and the import on system of system and unit 7L 'The solar system and unit 7L 'The solar system the import on system on system of acid, and work on unit 9D 'Plants for 'Reactions of metals and 'Reactions of metals and	observed neutralisation	'Environmental chemistry'	reactions', unit 8G 'Rocks	tor work in key stage 4 on		
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they will have identified that there are chemical reactions between acids and metals and between acids and are unlikely to havefoundation for work in key stage 4 on metals and their compounds.on work on the reactions of acids in unit 9E 'Reactions of metals and metal compounds'. It relates to work on growing and unit 7L 'The solar system and unit 7L 'The unitmanagement of food- production systems and the importance of sustainable development.they will have identified that between acids and and between acids and are unlikely to havefoundation for work in key stage 4 on metals and their compounds.on work on the reactions of acids in unit 9E 'Reactions of metals and metal compounds'. It relates to work on growing plants in unit 9D 'Plants for 'Reactions of metals and 'Reactions of metals and	'Simple chemical reactions',	chemistry'. The unit lays the	8H 'The rock cycle', and	the environment, the		
there are chemical reactions between acids and metals and between acids and carbonates. However, they are unlikely to havestage 4 on metals and their compounds.of acids in unit 9E 'Reactions of metals and metal compounds'. It relates to work on growing plants in unit 9D 'Plants forproduction systems and the importance of sustainable development.the importance of sustainable development.'Reactions of metals and metal compounds'. It relates to work on growing plants in unit 9D 'Plants forThis unit builds on unit 9E 'Reactions of metals and the importance of sustainable development.	they will have identified that	foundation for work in key	on work on the reactions	management of food-		
between acids and metals and between acids and carbonates. However, they are unlikely to have considered the other	there are chemical reactions	stage 4 on metals and their	of acids in unit 9E	production systems and		
and between acids and carbonates. However, they are unlikely to have considered the other	between acids and metals	compounds.	'Reactions of metals and	the importance of		
carbonates. However, they are unlikely to have considered the other	and between acids and	This unit builds on unit 7K	metal compounds'. It	sustainable development.		
are unlikely to have and unit 7L 'The solar system plants in unit 9D 'Plants for 'Reactions of metals and	carbonates. However, they	'Forces and their effects'	relates to work on growing	This unit builds on unit 9E		
considered the other and her word. The unit food, and work on using metal compounds, and	are unlikely to have	and unit 7L 'The solar system	plants in unit 9D 'Plants for	'Reactions of metals and		
	considered the other	and beyond'. The unit	food' and work on using	metal compounds' and		



				1
products of these reactions.	relates to unit 9K 'Speeding	energy resources in unit 91	Unit 9F Patterns of	
With some pupils, teachers	up'. It lays the foundation	'Energy and electricity'.	reactivity'. It relates to	
may wish to concentrate on	for work in key stage 4 on	This unit provides	other units, particularly to	
some of the new topics,	theories about the nature	opportunities to revisit and	aspects of photosynthesis	
extending activities, and with	and evolution of the	revise topics met in other	and respiration in unit 8B	
others to spend more time on	universe.	units in years 7 and 8. With	'Respiration' and unit 9C	
revision of previous work. This		some pupils teachers	'Plants and	
unit lays the foundation for		may wish to concentrate	photosynthesis' and to	
unit 9E 'Patterns of reactivity'		on some of the new	units about energy – unit	
This unit builds on work on		topics extending	81 'Heating and cooling'	
cleatricity and operavin units		activities, and with others	and unit 91 (Enorgy and	
		to spand more time an	and unit friendly und	
/T Energy resources , /J		io spend more lime on		
Electrical circuits' and 81		revision of previous work.	provides opportunities to	
'Heating and cooling'. If		The unit provides the	revisit and revise topics	
relates to work on the		toundation for work in key	met in other units in years	
reactivity of metals in unit 9F		stage 4 on changes to the	7 and 8. With some pupils,	
'Patterns of reactivity' and		atmosphere and Earth.	teachers may wish to	
work on fuels in unit 9G		The unit builds on work in	concentrate on some of	
'Environmental chemistry'		unit 7K 'Forces and their	the new topics, extending	
		effects'. It relates to some	activities, and with others	
		of the ideas in unit 9J	to spend more time on	
		'Gravity and space'.	revision of previous work.	
		There is further work on	This unit provides the	
		forces in unit 9L 'Pressure	foundation for work in key	
		and moments'	stage 4 on using chemical	
			reactions to make new	
			materials	
			This unit builds on unit 7K	
			'Earcas and their offacts'	
			roices and men enecis	
			speeding up . work on	
			muscles as levers relates	
			to unit 98 'Fit and	
			healthy'. This unit lays the	
			toundation for further	
			quantitative work on	
			forces in key stage 4. This	
			unit provides opportunities	
			to revisit and revise topics	
			met in other units, eg	
			forces, particle theory.	
			With some pupils,	
			teachers may wish to	
			concentrate on some of	
			the new topics, extending	
			activities, and with others	
			to spend more time on	
			revision of previous work	



Tier 3 vocabularyClone, gene, geneticinformation, gamete,genetically modified,selective breeding, variety,breed, speciesMagnesium sulfate, coppercarbonate, copper nitrate,sodium chloride, salt,reaction, productConservation, dissipation,electric generator, dynamo,power station	Tier 3 vocabulary Vitamins, minerals, cilia, emphysema, addiction, trial Displacement, reactivity, salt, reactant, product, order of reactivity, qualitative observations Mass, weight, gravitational attraction, orbit, revolve	Tier 3 vocabulary Conifer, palisade cell, chlorophyll, biomass, photosynthesis, Ozone depletion, global warming, acid rain, catalytic convertor, air and water quality Accuracy, precision, proportional, constant speed, acceleration	Tier 3 vocabulary Herbivore, pesticide, weedkillers, nutrient, fertilisers, toxins, insecticide, fungicide, herbicide, competition, compete yield Mono-, poly-, -oxide, -ate Force, area, hydraulic, pneumatic, moment, pivot, lever, turning effect, counter balance	Tier 3 vocabulary	Tier 3 vocabulary
Assessment: Multiple choice	Assessment: Recall and application.	Assessment: Multiple choice	Assessment Recall and application	Assessment:	Assessment:

• watch television programmes or read newspaper and magazine articles about cloning and cellular 'surgery' and the impact of GMOs on the environment and evaluate whether such information is biased.

- metal corrosion in the locality.
- survey the power rating of various devices in the home or observe their electricity meter when different appliances are running.
- find out about the strategies available to people wishing to give up smoking.
- read news stories about metals, metal extraction and mining.
- use the internet to communicate with space scientists online and access images from satellites, eg NASA's websites www.nasa.gov
- read about forest clearances and the consequent loss of biodiversity.
- read books, newspaper articles and periodicals about the environment, weather and climate changes.
- collect examples of speed measured during sporting events, eg athletics, motor racing, tennis, and note the units and precision of the values expressed.
- identify a number of devices in the home that rely on levers.