

Y7 Science

Term	1	2	3	4	5	6						
Topic	7E Mixtures and separation	7F Acids and alkalis	7A Cells, tissues, organs and system	7B Sexual Reproduction	7J Current Electricity	7I Energy	7G The partial model	7H Atoms, elements and molecules	7C Muscles and bones	7D Ecosystems	7K Forces	7L Sound
Detail	Introduction to Science. Writing a method. Different kinds of mixtures. Solutions. Heating safely. Chromatography. Distillation.	Chemistry in the home. Hazards and controlling risk. Indicators. Acids and alkalinity. Neutralisation. Danger at home.	Life processes. Organs and tissues. Microscopes. Cells, organ systems and transplants.	Animal sexual reproduction. Reproductive organs. Becoming pregnant. Gestation and birth. Growing up. The work of zoos.	Discovering electricity. Switches and current. Series and parallel circuits. Changing current and using electricity.	Energy and changes. Energy from food. Energy transfers and stores. Fuels. Other energy resources. Using resources.	Sorting rubbish. Solids, liquids and gases. Particles and Brownian motion. Diffusion. Air pressure. Waste.	The air we breathe. Earth's elements. Metals and non metals. Making compounds. Chemical reactions.	Fitness. Muscles and breathing. The skeleton. Muscles and unbalanced. Safety standards.	Variation. Adaptations. Effects of the environment. Transfer in food chains. Nomads.	Different forces. Springs. Friction. Pressure. Balanced and unbalanced. Safety standards.	Animal sounds. Making sounds. Detecting sounds. Using sound. Comparing waves. Animals and noise.
Mastered	Classify colloids as foams, emulsions, gels and aerosols, based on what they are made up of. Justify the decision to separate a mixture in a certain way.	Describe the use and importance of the Hazchem code. Evaluate the effectiveness of different indicators. Apply ideas	Compare life processes in a range of plants and animals. Identify similarities between the functions of different organs (including common life processes). Estimate sizes under a microscope.	Explain the implications of different methods of fertilisation in fish, birds and mammals. Compare the reproductive systems of humans and other animals and suggest causes of reproductive problems. Explain IVF and hormones used to increase the chance of pregnancy. Problems in puberty	Recall how electrical cells work. Evaluate a physical model for electric circuits on how well it explains data or observations. Use knowledge of switches and parallel circuits to devise circuits for specified purposes. Use a model to explain the idea of voltage. Apply their knowledge of voltage, current and electrical safety to novel situations	Calculate the energy requirements for a particular person or activity. Identify useful and wasted energies. Decide and explain the best energy resources to use in an area. Explain whether a machine is more efficient than another.	Appreciate that some substances are difficult to categorise. Use the particle model to explain other observations about matter. Explain how evidence from Brownian motion is used to support the particle theory. Carry out a calculation to work out the speed of diffusion. Explain how barometers work.	Recall that atoms can be joined together by bonds and that bonds affect the shape of a molecule. Explain how new evidence has changed ideas about elements. Interpret experimental evidence to identify elements. Write simple chemical formulae from molecular structures. Apply knowledge of thermal decomposition in carbonates to other compounds.	Explain how muscle cells are adapted to their function. Explain how a red blood cell is adapted to its function. Identify the limitations of different types of skeletons. Consider the consequences of the effects of frictional and impact forces on joints. Compare natural hip joints with their artificial replacements. Describe the importance of testing drugs.	Describe how hybrids can be distinguished from species. Explain how particular adaptations limit an organism's distribution. Recall the differences between innate and learned behaviours. Evaluate food chains and food webs as models of feeding relationships. Use data to create food webs. Compare models of energy transfer in food chains.	Compare the way in which force meters and balances that compare masses work. Students analyse new situations involving springs. Draw lines of best fit on scatter graphs. Explain applications of pressure in different situations. Explain the effects of balanced and unbalanced forces in unfamiliar situations.	Apply knowledge of sound to new contexts. Explain why the intensity of sound decreases with increasing distance from a source in terms of the energy dissipating. Explain how human hearing can be damaged by sound. Calculate depth or distance from time and velocity of ultrasound.
Secure	Group materials using their states of matter as justification. Classify mixtures as suspensions, colloids and solutions, based on what they look like and whether they separate on standing	Describe the difference between substances that are corrosive or irritants. Explain why litmus is purple in neutral solutions.	Identify ways in which an organism shows each life process. Describe the functions of a large range of human, animal and plant organs. Calculate the total microscope magnification using a formula.	Compare the sexual reproduction of fish, animal and birds. Make deduction about reproductive processes. Describe what happens during cell division. Explain the purpose of the menstrual cycle.	Describe and explain how changing the number or type of components in a circuit affects the current. Construct a circuit from instructions. Explain why the lights in a house are wired in parallel. Explain how a variable resistor works. Explain how a domestic ring main is a form of parallel circuit.	Explain the differing energy needs of people of different ages and activity levels. Describe energy transfer chains for given situations. Recall the law of conservation of energy. Compare the temperature rise of water when some fuels are burnt. Explain how certain gases cause the greenhouse effect.	Describe the properties of the three states of matter in terms of shape, volume and compressibility. Use the particle theory to explain the properties of solids, liquids and gases. Explain how Brownian motion occurs, using particle theory. Explain how diffusion occurs in terms of movement of particles. Model simple reactions using word equations.	Represent atoms, molecules of elements and simple compounds using a model. Explain why some elements have been known for much longer than others. Use ideas about the periodic table to identify the positions of metal and non-metal elements. Name simple compounds formed from two elements. Model simple reactions using word equations.	Use a model to explain how lungs expand and contract. Identify muscle cells as being adapted to their function. Describe the structure of capillaries is related to their function. Describe the structure of red blood cells. Explain why antagonistic muscles are used to operate bones in many joints. Explain the effects of stimulants and depressants.	Tell the difference between and identify examples of continuous and discontinuous variation. Explain how particular adaptations increase the chances of survival. Explain how environmental variation is caused. Describe how the distribution of organisms is controlled by the availability of resources. Interpret models of energy transfer (pyramids of numbers).	Describe how to use a force meter and a newtonmeter. Explain the difference between mass and weight. Describe how the extension of a spring depends on the force applied. Explain some ways in which friction can be changed. Use the formula relating force, pressure and area. Explain why a vehicle needs a force from the engine to keep moving at a constant speed.	Relate the volume/intensity of a sound to the size of the vibrations producing it. Use a model incorporating the idea of vibrations to explain how sound travels through different materials. Evaluate different materials used for sound insulation. Describe the functions of the parts of the ear. Explain sonar and echolocation. Model transverse and longitudinal waves.
Developing	Describe what the three states of matter are like. Identify mixtures. Describe how insoluble solids can be separated from a liquid.	Recognise common hazards when in the lab and suggest ways of ensuring they do not cause harm. Use solutions of known acidity/alkalinity in order to deduce a colour chart for an indicator	Describe the life processes. Describe the functions of major human and plant organs. Describe the functions of the parts of a light microscope.	Identify animals that reproduce sexually and correct use of term. Describe the functions of the structures and organs of the human reproduction system. Recall the names of the structures surrounding the developing foetus.	Model circuits using simple circuit diagrams. Measure current and state its unit. State what is meant by series circuit, parallel circuit. Recall how the current changes when the voltage of the supply changes. Recall how the different wires are connected in a plug.	Compare the temperature rise of water when some fuels are burnt. Identify situations in which an energy transfer is taking place. Describe advantages and disadvantages of different energy resources. Recall the different ways in which energy can be transferred.	Record observations and describe simple properties of the three states of matter. Describe, draw and recognise the arrangement of particles in solids, liquids and gases. State where Brownian motion can be observed. Make a prediction about diffusion. Describe how moving gas particles cause pressure when they hit the walls of their container.	Explain the differences between elements, compounds and mixtures. Recall that different materials have different properties. Use the periodic table to look up symbols for elements. Describe the evidence needed to decide whether an element is a metal or a non-metal. Describe how elements can combine to form compounds. Identify the products and reactants using a word equation.	Describe what happens during gas exchange. Describe what happens when muscles contract and relax. Explain how the heart pumps blood by the action of muscles. Describe the functions of individual bones. Recall that muscles are controlled by the nervous system. Describe the effects of stimulants and depressants, including on reaction times.	Identify variation between organisms of the same type and of different types. Describe the adaptations of a range of organisms to their habitats. Identify and give examples of environmental variation. Use a food web to identify food sources for different animals and give reasons for identifying organisms. Describe the sources and effects of some pesticides.	State what is meant by: friction, air resistance, water resistance. Explain how a force has caused certain effects on an object. Describe how friction forces affect movement. Describe how the pressure depends on force and area. Explain the effects of balanced and unbalanced forces in simple situations.	Describe how to make different sources of sound louder or quieter, or make sounds of different pitches. Recall that sound travels through different materials by vibrations, and needs a medium. Recall that different animals have different hearing ranges. Describe some uses of ultrasound. State the meaning of: transverse wave, longitudinal wave.
Emerging	Working towards: State the meaning of: mixture. State the meaning of: sieving, filtering, insoluble, suspension. Recall the three states of matter and identify solids, liquids, gases.	Recall examples of everyday substances that are acids and alkalis. Recall that acids react with alkalis and this is called neutralisation	Identify things as being alive or not. Locate and identify some human and plant organs. Identify the basic parts of a light microscope. Identify a cell as an animal or plant cell.	Identify ways in which animals care for their offspring. Identify the structures and organs in the human reproduction system. Describe fertilisation. Identify the main points of puberty. Describe puberty	Recall materials that are conductors and insulators. Identify common components of circuits and their symbols. State the units for voltage. Recall some dangers of electricity.	Recall some substances that are used as sources of energy. Describe the factors that affect body mass. Recall the different ways in which energy can be transferred. Recall some substances that are used as sources of energy. Recall examples of renewable fuels and their climates. Recall some effects of climate change.	Classify materials as solids, liquids and gases. State that all materials are made from particles. Describe Brownian motion. Recall some everyday examples of diffusion. Recognise some effects of pressure	Recall the names of the most important gases that are mixed together in air. Recall that elements are often represented by symbols. Identify some common materials as being metals or not. Recall some observations that indicate a chemical reaction. Recall examples of chemical reactions in everyday life.	Recall what happens in respiration. Identify the main organs of the human gaseous exchange system. State what the pulse rate measures and where it is measured. Recall the main functions of the skeleton. Identify the effects and side effects of drugs on the body.	Correctly use the term: habitat. Identify the physical environmental factors that make up the environment in a habitat. Describe how physical environmental factors vary in a habitat, both on a daily basis and seasonally. Use food chains to create food webs and identify food chains within food webs. Define feeding relationships in terms of energy flow.	Describe what a force is. Recall the names of simple forces. Recall the effects of forces on an object. State what is meant by friction. State what is meant by pressure. State what is meant by: balanced forces, unbalanced forces.	State the meaning of pitch, volume, intensity, frequency, amplitude. Describe how a sound changes as you get further from the source. Compare how sounds travel through different materials.
Keywords	Mixture. Suspension. Colloid. Diluted Solution. Transparent. Solute. Solvent. Saturated. Soluble. Hazard. Risk. Evaporation. Chromatography. Chromatogram. Distillation. Desalination.	Neutralisation. Acids. Alkalis. Irritant. Corrosive. Hazard. Risk. Indicator. Pure. Toxic. pH scale. Reactants. Products. Soluble base. Antacids. Acid rain.	Respiration. Excrete. Life processes. Organism. Nutrition. Sense. Grow. Photosynthesis. Tissues. Xylem. Cytoplasm. Nucleus. Chloroplasts. Cell surface membrane. Vacuole. Cell wall.	Hypothesis. Observation. Sexual reproduction. External and internal fertilisation. Egg and sperm cell. Testes. Scrotum. Puberty. Ovary. Oviduct. Uterus. Cervix. Vagina. Placenta. Amnion.	Current. Component. Filament. Ammeter. Conductors. Insulators. Series circuit. Parallel circuit. Voltmeter. Votts. Amps. Resistance. Live, neutral and live wires.	Joule. Kilojoule. Balanced diet. Weight. Mass. Chemical energy. Kinetic energy. Thermal energy. Elastic potential energy. Gravitational potential energy. Nuclear energy.	Corrosive. Flammable. Toxic. States of matter. Cubic centimeters. Fossil fuels. Environment. Acid rain. Particle theory. Particle model. Solid. Liquid. Gas. Compressed. Brownian motion. Diffusion. Small intestine. Vacuum. Air pressure. Physical changes.	Carbon dioxide. Atoms. Molecules. Elements. Compound. Symbols. Recycling. Earth's crust. Flexible. Malleable. Magnetic. Conductors. Brittle. Metals. Metal ores. Bonds. Thermal decomposition. Carbonates.	Respiration. Breathing. Contracts. Relaxes. Inhale. Exhale. Ventilation. Breathing rate. Pulse rate. Capillaries. Arteries. Plasma. White blood cells. Red blood cells. Haemoglobin. Vertebral. Backbone. Skeleton. Ligaments. Tendons. Antagonistic pairs. Biomechanics. Repressant. Endangered. Pesticide. Pyramid of number.	Habitat. Variation. Discontinuous. Continuous. Hybrid. Environment. Adaptations. Community. Ecosystem. Inherited. Gametes. Environmental variation. Diurnal. Nocturnal. Deciduous. Evergreen. Hibernation. Migration. Extinct. Competition. Food webs. Prey. Predator. Interdependent. Endangered. Pesticide. Pyramid of number.	Contct forces. Air resistance. Water resistance. Friction. Uphrust. Non contact forces. Gravity. Static electricity. Magnetism. Grams. Kilograms. Weight. Mass. Stretched. Compressed. Hooke's law. Elastic limit. Force meter. Pascal.	Volume. Pitch. Frequency. Hertz. Amplitude. Vacuum. Sound wave. Oscilloscope. Ear drum. Auditory nerve. Cochlea. Amplify. Ear drum. Decibels. Infrasonic. Ultrasound. Echo. Echolocation. Sonar. Longitudinal wave. Transverse wave. Superposition.
Resource Links	http://www.bbc.co.uk/education/guides/zgvc4wx/revision	http://www.bbc.co.uk/education/guides/zyzn3b9q/revision	http://www.bbc.co.uk/education/guides/z9hycvw/revision	http://www.bbc.co.uk/education/subjects/z4882hv	http://www.bbc.co.uk/education/guides/zsfgr82/revision	http://www.bbc.co.uk/education/topics/zc3g87h	http://www.bbc.co.uk/education/guides/z2wmxnb/revision	http://www.bbc.co.uk/education/guides/z1zhpv4/revision	http://www.bbc.co.uk/education/guides/zpkq7y/revision	http://www.bbc.co.uk/education/guides/zq4wjs/revision	http://www.bbc.co.uk/education/topics/z4brd2p	http://www.bbc.co.uk/education/guides/z8d2mp3/revision