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Paper 1: Biology

SB1 Key Concepts in Biology

SB1a Microscopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall what an electron microscope is.	☐	☐	☐
	Recall what is meant by an instrument's resolution.	☐	☐	☐
	Explain why some cell structures can be seen with an electron microscope but not with a light microscope.	☐	☐	☐
	Calculate total magnification using a formula.	☐	☐	☐
	Calculate sizes using magnifications.	☐	☐	☐
	Interpret the SI prefixes milli-, micro-, nano- and pico-.	☐	☐	☐

SB1b Plant and animal cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Identify the parts of plant and animal cells.	☐	☐	☐
	Recall the parts of plant and animal cells.	☐	☐	☐
	Make drawings of plant and animal cells using a light microscope and identify their parts.	☐	☐	☐
	Describe the functions of the sub-cellular structures commonly found in eukaryotic cells (nucleus, cell membrane, cell wall, chloroplasts, mitochondria and ribosomes).	☐	☐	☐
	Estimate sizes using microscope fields of view.	☐	☐	☐
	Estimate sizes using scale bars.	☐	☐	☐

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SB1c Specialised cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how sperm cells are adapted to their function.	☐	☐	☐
	Describe how egg cells are adapted to their function.	☐	☐	☐
	Describe how ciliated epithelial cells are adapted to their function.	☐	☐	☐
	Draw conclusions about a cell's function from its adaptations.	☐	☐	☐

SB1d Inside bacteria

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Identify the common parts of bacteria.	☐	☐	☐
	Describe the functions of common parts of bacteria.	☐	☐	☐
	Describe why bacteria are classified as being prokaryotic.	☐	☐	☐
	Change numbers to and from standard form.	☐	☐	☐
	Compare eukaryotic and prokaryotic cells.	☐	☐	☐

SB1e Enzymes and nutrition

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State that enzymes are proteins.	☐	☐	☐
	Give examples of enzymes and where they are found in the human body and in other species.	☐	☐	☐
	Recall the subunits from which carbohydrates, proteins and lipids are formed (sugars, amino acids, fatty acids and glycerol).	☐	☐	☐
	Describe what enzymes do (catalyse the synthesis and breakdown of substances, such as carbohydrates, proteins and lipids, by speeding up the rate of reaction).	☐	☐	☐
	Define an enzyme as a biological catalyst.	☐	☐	☐
	Explain why catalysis by enzymes is important for life processes (because reactions happen much faster).	☐	☐	☐

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SB1f Testing foods

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe how to test for starch in food.	☐	☐	☐
5th	Describe how to test for reducing sugars in food.	☐	☐	☐
5th	Describe how to test for proteins in food.	☐	☐	☐
5th	Describe how to test for lipids in food.	☐	☐	☐
7th	Explain how calorimetry can be used to measure the energy in food.	☐	☐	☐
8th	Evaluate calorimetry tests for accuracy.	☐	☐	☐

SB1g Enzyme action

Step	Learning outcome	Had a look	Nearly there	Nailed it!
7th	State what enzyme specificity means.	☐	☐	☐
7th	State that an enzyme's action is due to its active site.	☐	☐	☐
7th	Describe the role of the active site in enzyme function (including specificity).	☐	☐	☐
9th	Use the lock-and-key model to develop explanations for enzyme activity.	☐	☐	☐
8th	Explain why enzymes have a particular shape, as a result of the sequence of amino acids in the chain.	☐	☐	☐
9th	Explain how enzymes become denatured.	☐	☐	☐

SB1h Enzyme activity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
8th	Describe the effect of temperature on enzyme activity.	☐	☐	☐
8th	Describe the effect of substrate concentration on enzyme activity.	☐	☐	☐
8th	Describe the effect of pH on enzyme activity.	☐	☐	☐
8th	Explain what is meant by the optimum pH/temperature of an enzyme.	☐	☐	☐
9th	Calculate the rate of enzyme activity from experimental data.	☐	☐	☐
9th	Explain why temperature, substrate concentration and pH affect enzyme activity.	☐	☐	☐

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SB1i Transporting substances

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State that substances are transported by diffusion, osmosis and active transport.	☐	☐	☐
	Describe how substances are transported by active transport (including the need for energy).	☐	☐	☐
	Explain how substances are transported by diffusion.	☐	☐	☐
	Explain how substances are transported by osmosis.	☐	☐	☐
	Explain the effects of osmosis on cells and tissues.	☐	☐	☐
	Investigate osmosis in potatoes.	☐	☐	☐
	Calculate percentage gain and loss of mass in osmosis.	☐	☐	☐

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SB2 Cells and control

SB2a Mitosis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	List the names and order of the stages of the cell cycle, including mitosis.	☐	☐	☐
	Describe what happens in each stage of the cell cycle, including mitosis.	☐	☐	☐
	Describe why mitosis is important for an organism. (growth, repair, asexual reproduction)	☐	☐	☐
	Explain why organisms may rely on asexual reproduction.	☐	☐	☐
	Describe how mitosis produces genetically identical, diploid cells.	☐	☐	☐
	Describe how cancers grow.	☐	☐	☐

SB2b Growth in animals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Define growth in animals as an increase in cell number and size.	☐	☐	☐
	Give examples of specialised animal cells.	☐	☐	☐
	Describe how structure of specialised animal cells is related to their function.	☐	☐	☐
	Explain why cell differentiation is important in the development of specialised cells.	☐	☐	☐
	Use percentile growth curves to interpret growth in children.	☐	☐	☐

SB2c Growth in plants

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe the stages of growth in plants (cell division/mitosis, elongation, differentiation).	☐	☐	☐
	Give examples of specialised plant cells.	☐	☐	☐
	Describe how the structures of specialised plant cells are related to their functions.	☐	☐	☐
	Explain why cell differentiation is important in the development of specialised cells in plants.	☐	☐	☐

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SB2d Stem cells

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe where stem cells are found.	☐	☐	☐
	Describe the function of stem cells in plants and animals.	☐	☐	☐
	Compare embryonic and adult stem cells in animals.	☐	☐	☐
	Give examples of where stem cells may be used in medicine.	☐	☐	☐
	Identify benefits and risks of using stem cells in medicine.	☐	☐	☐
	Evaluate the use of stem cells in medicine (by comparing their benefits and risks).	☐	☐	☐

SB2e The brain

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe what the brain is made up of.	☐	☐	☐
	Identify different parts of the brain (cerebellum, cerebral hemispheres, medulla oblongata).	☐	☐	☐
	Describe the functions of different parts of the brain (cerebellum, cerebral hemispheres, medulla oblongata).	☐	☐	☐

SB2g The nervous system

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	List the parts of the nervous system.	☐	☐	☐
	Describe how the nervous system detects stimuli.	☐	☐	☐
	Describe the structure of sensory neurones.	☐	☐	☐
	Describe the routes that impulses take to and from the brain.	☐	☐	☐
	Explain how sensory neurones are adapted to their functions (including the myelin sheath).	☐	☐	☐

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SB2h The eye

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Identify the main parts of the eye.	☐	☐	☐
	Explain how the cornea, lens, iris and retina are adapted to their functions.	☐	☐	☐
	Explain how receptor cells allow full colour vision in bright light.	☐	☐	☐
	Describe common eye defects (cataracts, long-sightedness, short-sightedness, colour blindness).	☐	☐	☐
	Describe how cataracts are treated.	☐	☐	☐
	Explain how long- and short-sightedness can be corrected.	☐	☐	☐

SB2i Neurotransmission speeds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how the nervous system responds to stimuli.	☐	☐	☐
	Describe the structures of motor neurones and relay neurones.	☐	☐	☐
	Explain how motor neurones are adapted to their functions.	☐	☐	☐
	Explain the action and function of synapses.	☐	☐	☐
	Explain how the structure of the reflex arc allows a faster response.	☐	☐	☐
	Describe the structure and function of the reflex arc.	☐	☐	☐

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SB3 Genetics

SB3a Sexual and asexual reproduction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe features of asexual reproduction (rapid reproductive cycle, no need for mate, no variation of offspring).	☐	☐	☐
	Explain how some features of asexual reproduction can be advantageous or disadvantageous.	☐	☐	☐
	Describe features of sexual reproduction (slower reproductive cycle, requires mate, variation in offspring).	☐	☐	☐
	Explain how some features of sexual reproduction can be advantageous or disadvantageous.	☐	☐	☐
	Compare the advantages and disadvantages of asexual and sexual reproduction in evaluating the life cycle of an organism.	☐	☐	☐

SB3b Meiosis

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall that gametes are produced by meiosis.	☐	☐	☐
	Describe what happens in meiosis. [without details of the stages]	☐	☐	☐
	Explain why haploid gametes are needed for sexual reproduction.	☐	☐	☐
	Recall what an organism's genome is.	☐	☐	☐
	Describe where genes are found.	☐	☐	☐
	Recall the function of genes.	☐	☐	☐

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SB3c DNA

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall where DNA is found in a eukaryotic cell.	☐	☐	☐
	Name the bases in DNA.	☐	☐	☐
	Recall the pairing of bases in DNA.	☐	☐	☐
	Describe how DNA strands are held together.	☐	☐	☐
	Describe the overall structure of DNA.	☐	☐	☐
	*Describe how DNA can be extracted from fruit.*	☐	☐	☐

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Paper 2: Chemistry

SC1 States of Matter

SC1a States of matter

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Name the three states of matter, and the physical changes that occur between them.	☐	☐	☐
	Describe the arrangements and movement of particles in the different states of matter.	☐	☐	☐
	Use information to predict the state of a substance.	☐	☐	☐
	Describe the relative energies of particles in the different states of matter.	☐	☐	☐
	Explain why the movement and arrangement of particles change during changes of state.	☐	☐	☐
	Explain why the energy of particles changes during changes of state.	☐	☐	☐

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SC2 Methods of Separating and Purifying Substances

SC2a Mixtures

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe the differences between a pure substance and a mixture.	☐	☐	☐
	Use melting point information to decide whether a substance is pure or is a mixture.	☐	☐	☐
	Describe what happens to atoms at a pure substance's melting point.	☐	☐	☐
	Interpret a heating curve to identify a melting point.	☐	☐	☐
	Explain why the temperature does not change as a pure substance melts.	☐	☐	☐

SC2b Filtration and crystallisation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State some mixtures that can be separated by filtration.	☐	☐	☐
	State some mixtures that can be separated by crystallisation.	☐	☐	☐
	Draw and interpret diagrams showing how filtration and crystallisation are done.	☐	☐	☐
	Explain the formation of crystals during crystallisation.	☐	☐	☐
	Explain how mixtures are separated by filtration.	☐	☐	☐
	Explain ways of reducing risk when separating mixtures by filtration and crystallisation.	☐	☐	☐

SC2c Paper chromatography

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how some mixtures can be separated by chromatography.	☐	☐	☐
	Identify pure substances and mixtures on chromatograms.	☐	☐	☐
	Identify substances that are identical on chromatograms.	☐	☐	☐
	Draw and interpret diagrams showing how chromatography is done.	☐	☐	☐
	Explain how substances can be separated by chromatography.	☐	☐	☐
	Calculate R_f values and use them to identify substances.	☐	☐	☐

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SC2d Distillation

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how to carry out, and explain what happens in, simple distillation.	☐	☐	☐
	Distinguish between simple distillation and fractional distillation.	☐	☐	☐
	Identify when fractional distillation should be used to separate a mixture.	☐	☐	☐
	Describe how to carry out fractional distillation.	☐	☐	☐
	Explain how the products of fractional distillation are linked to the boiling points of the components.	☐	☐	☐
	Explain what precautions are needed to reduce risk in a distillation experiment.	☐	☐	☐

SC2e Drinking water

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain why water used in chemical analysis must not contain dissolved salts.	☐	☐	☐
	Describe how fresh water can be produced from seawater.	☐	☐	☐
	Describe the steps needed to make fresh water suitable for drinking.	☐	☐	☐
	Suggest how to purify water when you know what it contains.	☐	☐	☐
	Evaluate the hazards and control the risks present when purifying water.	☐	☐	☐

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SC3 Atomic Structure

SC3a Structure of an atom

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how Dalton's ideas about atoms have changed.	☐	☐	☐
	Describe how the subatomic particles are arranged in an atom.	☐	☐	☐
	Explain how atoms of different elements are different.	☐	☐	☐
	Recall the charges and relative masses of the three subatomic particles.	☐	☐	☐
	Explain why all atoms have no overall charge.	☐	☐	☐
	Describe how the size of an atom compares to the size of its nucleus.	☐	☐	☐

SC3b Atomic number and mass number

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State where most of the mass of an atom is found.	☐	☐	☐
	State the meaning of atomic number.	☐	☐	☐
	State the meaning of mass number.	☐	☐	☐
	Describe how the atoms of different elements vary.	☐	☐	☐
	State the number of electrons in an atom from its atomic number.	☐	☐	☐
	Calculate the numbers of protons, neutrons and electrons using atomic and mass numbers.	☐	☐	☐

SC3c Isotopes

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State what is meant by an isotope.	☐	☐	☐
	Identify isotopes from information about the structure of atoms.	☐	☐	☐
	Calculate the numbers of protons, neutrons and electrons using atomic numbers and mass numbers.	☐	☐	☐
	Explain why the relative atomic mass of many elements is not a whole number.	☐	☐	☐

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SC4 The Periodic Table

SC4a Elements and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the chemical symbols of some common elements.	☐	☐	☐
	Describe how Mendeleev arranged elements into a periodic table.	☐	☐	☐
	Describe how Mendeleev predicted the existence and properties of some elements yet to be discovered.	☐	☐	☐
	Explain how Mendeleev's early ideas were supported by later evidence.	☐	☐	☐

SC4b Atomic number and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain some problems Mendeleev had when ordering the elements.	☐	☐	☐
	Explain the meaning of the term 'atomic number'.	☐	☐	☐
	Describe how the elements are arranged in the modern periodic table.	☐	☐	☐
	Recall the positions of metals and non-metals in the periodic table.	☐	☐	☐

SC4c Electronic configurations and the periodic table

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State what the term 'electronic configuration' means.	☐	☐	☐
	Show electronic configurations in the form 2.8.1 and as diagrams.	☐	☐	☐
	Predict the electronic configurations of the elements hydrogen to calcium.	☐	☐	☐
	Explain the links between an element's position in the periodic table and its electronic configuration.	☐	☐	☐
	Recall the positions of metals and non-metals in the periodic table.	☐	☐	☐

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SC5 Ionic Bonding

SC5a Ionic bonds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formulae of simple ions.	☐	☐	☐
8th	Explain how cations and anions are formed.	☐	☐	☐
8th	Use dot and cross diagrams to explain how ionic bonds are formed.	☐	☐	☐
8th	Explain the difference between an atom and an ion.	☐	☐	☐
9th	Calculate the numbers of protons, neutrons and electrons in simple ions.	☐	☐	☐
9th	Explain the formation of ions in groups 1, 2, 6 and 7 of the periodic table.	☐	☐	☐

SC5b Ionic lattices

Step	Learning outcome	Had a look	Nearly there	Nailed it!
6th	Recall the formulae of common polyatomic ions, and the charges on them.	☐	☐	☐
7th	Interpret the use of –ide and –ate endings in the names of compounds.	☐	☐	☐
7th	Name ionic compounds using –ide and –ate endings.	☐	☐	☐
8th	Work out the formula of an ionic compound from the formulae of its ions.	☐	☐	☐
8th	Describe the structure of ionic compounds.	☐	☐	☐
8th	Explain how ionic compounds are held together.	☐	☐	☐

SC5c Properties of ionic compounds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
5th	Describe the properties of ionic compounds.	☐	☐	☐
7th	Explain why ionic compounds have high melting points and high boiling points.	☐	☐	☐
7th	Explain why ionic compounds conduct electricity when they are molten and in aqueous solution.	☐	☐	☐
7th	Explain why ionic compounds do not conduct electricity as solids.	☐	☐	☐
7th	Identify ionic compounds from data about their properties.	☐	☐	☐

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SC6 Covalent bonding

SC6a Covalent bonds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain how covalent bonds are formed.	☐	☐	☐
	Recall the names of some common molecular elements.	☐	☐	☐
	Recall the names of some common molecular compounds.	☐	☐	☐
	State the bonding that is found in molecules.	☐	☐	☐
	State the approximate size (order or magnitude) of atoms and small molecules.	☐	☐	☐
	Explain the formation of covalent bonds using dot and cross diagrams.	☐	☐	☐

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SC7 Types of Substance

SC7a Molecular compounds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall examples of common covalent, simple molecular compounds.	☐	☐	☐
	Describe the general properties of covalent, simple molecular compounds.	☐	☐	☐
	Explain why covalent, simple molecular compounds have low melting and boiling points.	☐	☐	☐
	Explain why covalent, simple molecular compounds are poor conductors of electricity.	☐	☐	☐
	Describe the structure of a polymer.	☐	☐	☐

SC7b Allotropes of carbon

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall some allotropes of carbon.	☐	☐	☐
	Describe the basic differences between covalent, simple molecules and giant covalent structures.	☐	☐	☐
	Describe the structures of diamond, graphite, fullerenes and graphene.	☐	☐	☐
	Describe the properties of diamond, graphite, fullerenes and graphene.	☐	☐	☐
	Explain the properties and uses of diamond and graphite in terms of their structure and bonding.	☐	☐	☐
	Explain the properties of fullerenes and graphene in terms of their structure and bonding.	☐	☐	☐

SC7c Properties of metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe the particles and how they are arranged in metals.	☐	☐	☐
	Explain why metals are malleable.	☐	☐	☐
	Explain why metals conduct electricity.	☐	☐	☐
	Describe the typical properties of metals.	☐	☐	☐
	Describe the typical properties of non-metals.	☐	☐	☐

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SC7d Bonding metals

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Give examples of ionic; covalent, simple molecular; covalent, giant molecular; and metallic substances.	☐	☐	☐
	Describe how the different types of bonds and structures are formed.	☐	☐	☐
	Explain how the structure and bonding of a substance is linked to its physical properties. (Relative melting point and boiling point, relative solubility in water and ability to conduct electricity, as solids and in solution.)	☐	☐	☐
	Explain why we use models to represent structure and bonding.	☐	☐	☐
	Represent structures and bonding using a variety of different models (dot and cross, ball and stick, 2D, 3D).	☐	☐	☐
	Describe the limitations of the different models used to represent structure and bonding (dot and cross, ball and stick, 2D, 3D).	☐	☐	☐

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Paper 3: Physics

SP1 Motion

SP1a Vectors and scalars

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe the difference between weight and mass.	☐	☐	☐
	Explain the difference between a vector and a scalar quantity.	☐	☐	☐
	Describe the difference between displacement and distance.	☐	☐	☐
	Describe the difference between velocity and speed.	☐	☐	☐
	Define the terms: acceleration, force, momentum, energy.	☐	☐	☐

SP1b Distance/time graphs

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall and use equations relating distance, speed and time.	☐	☐	☐
	Describe how speed can be measured in a school laboratory.	☐	☐	☐
	Recall typical speeds for walking, running, cycling and travelling by car.	☐	☐	☐
	Interpret distance/time graphs (including recognising what the steepness of the line tells you).	☐	☐	☐
	Represent journeys on distance/time graphs.	☐	☐	☐
	Determine speed from the gradient of a distance/time graph.	☐	☐	☐

SP1c Acceleration

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the formula relating acceleration, velocity and time.	☐	☐	☐
	Use the formula relating acceleration, velocity and time.	☐	☐	☐
	Recall the equation relating acceleration, velocity and distance.	☐	☐	☐
	Use the equation relating acceleration, velocity and distance.	☐	☐	☐
	Recall the acceleration in free fall.	☐	☐	☐

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	Estimate the magnitudes of some everyday accelerations.	☐	☐	☐

SP1d Velocity/time graphs

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Represent journeys on velocity/time graphs.	☐	☐	☐
	Interpret velocity/time graphs qualitatively.	☐	☐	☐
	Calculate uniform accelerations from the gradients of velocity/time graphs.	☐	☐	☐
	Determine the distance travelled from the area under a velocity/time graph.	☐	☐	☐

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SP3 Conservation of Energy

SP3a Energy stores and transfers

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain, using examples, that energy is conserved.	☐	☐	☐
	Give examples of energy being moved between different stores.	☐	☐	☐
	Interpret diagrams that represent energy transfers.	☐	☐	☐
	Represent energy transfers using diagrams.	☐	☐	☐
	Describe what happens to wasted energy in energy transfers.	☐	☐	☐

SP3b Energy efficiency

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Explain some ways in which energy is transferred wastefully by mechanical processes.	☐	☐	☐
	Explain some ways of reducing unwanted energy transfers in mechanical processes.	☐	☐	☐
	Define what efficiency means.	☐	☐	☐
	Recall and use the formula for calculating energy efficiency.	☐	☐	☐

SP3c Keeping warm

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe the ways in which energy can be transferred by heating.	☐	☐	☐
	Describe ways of reducing unwanted energy transfers using thermal insulation.	☐	☐	☐
	Explain how different ways of reducing energy transfer by heating work.	☐	☐	☐
	Define the meaning of thermal conductivity.	☐	☐	☐
	Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling.	☐	☐	☐

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SP3d Stored energies

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe how different factors affect the gravitational potential energy stored in an object.	☐	☐	☐
	Recall and use the equation for gravitational potential energy.	☐	☐	☐
	Describe how different factors affect the kinetic energy stored in an object.	☐	☐	☐
	Recall and use the equation for kinetic energy.	☐	☐	☐

SP3e Non-renewable resources

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	List the non-renewable energy resources in use today.	☐	☐	☐
	Describe the advantages and disadvantages of non-renewable energy resources.	☐	☐	☐
	Compare the advantages and disadvantages of non-renewable energy resources.	☐	☐	☐
	Explain how the use of non-renewable energy resources is changing.	☐	☐	☐

SP3f Renewable resources

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	List the renewable energy resources in use today.	☐	☐	☐
	Describe the source of energy for different renewable resources.	☐	☐	☐
	Describe the ways in which the different energy resources are used.	☐	☐	☐
	Explain why we cannot use only renewable energy resources.	☐	☐	☐
	Explain how the use of renewable energy resources is changing.	☐	☐	☐

Year 9: Science End of Year Assessment Checklist

SP4 Waves

SP4a Describing waves

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall that waves transfer energy and information but do not transfer matter.	☐	☐	☐
	Describe waves using the terms frequency, wavelength, amplitude, period and velocity.	☐	☐	☐
	Describe the differences between longitudinal and transverse waves.	☐	☐	☐
	Give examples of transverse and longitudinal waves.	☐	☐	☐

SP4b Wave speeds

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the equation relating wave speed, frequency and wavelength	☐	☐	☐
	Use the equation relating wave speed, frequency and wavelength.	☐	☐	☐
	Recall the equation relating wave speed, distance and time.	☐	☐	☐
	Use the equation relating wave speed, distance and time.	☐	☐	☐
	Describe how to measure the velocity of sound in air.	☐	☐	☐
	Describe how to measure the velocity of waves on the surface of water.	☐	☐	☐

SP4c Refraction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe what refraction is.	☐	☐	☐
	Describe how the direction of a wave changes when it goes from one material to another.	☐	☐	☐
	Explain some effects of the refraction of light (explanations in terms of changing speeds are not expected).	☐	☐	☐

Year 9: Science End of Year Assessment Checklist

SP4d Waves crossing boundaries

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Describe some effects of waves being reflected.	☐	☐	☐
	Describe some effects of waves being refracted.	☐	☐	☐
	Describe some effects of waves being transmitted and absorbed.	☐	☐	☐
	Describe how changes in velocity, frequency and wavelength are related when sound waves go from one medium to another.	☐	☐	☐