

Year 8 Sequence of Learning (SoL)

Biology

Chapter 1: Health and lifestyle				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 1.1 – Nutrients	- Give the definition of a balanced diet - Name the seven components of a balanced diet, giving examples - Describe the role of each component of a balanced diet	balanced diet, carbohydrate, fibre, lipids, mineral, nutrient, protein, starch, sugar, vitamin	Science literacy Homework
2	Lesson 1.2 – Food tests	- Name the chemicals used to test foods for starch, lipids, sugar, and protein - Give the positive result for each food test - Describe how to test foods for starch, lipids, sugar, and protein	Benedict's solution, biuret solution, food test, iodine	
3	Lesson 1.3 – Unhealthy diet	- Describe some health issues caused by an unhealthy diet - Give the definition of a vitamin or mineral deficiency - Compare the energy requirements of different people	deficiency, malnourishment, obese, starvation	
4	Lesson 1.4 – Digestive system	- Describe the process of digestion - Describe the functions of the main structures in the digestive system	anus, bile, digestion, digestive system, enzyme, gullet, large intestine, rectum, small intestine, stomach, villi	
5	Lesson 1.5 – Bacteria and enzymes in digestion	- Describe the role of bacteria in digestion - Give the definition of an enzyme - Describe the role of enzymes in carbohydrate, protein, and lipid digestion	carbohydrase, lipase, protease	Core question HW
6	Lesson 1.6 – Drugs	- Give the definition of a drug - Describe the difference between recreational and medical drugs	addiction, catalyst, depressant, drug, medicinal drug, recreational drug, stimulant, withdrawal symptom	
7	Lesson 1.7 – Alcohol	- Describe some effects of alcohol on the body - Describe some health problems caused by alcohol consumption - Describe some effects of alcohol consumption on conception and pregnancy	alcoholic, ethanol, unit of alcohol	
8	Lesson 1.8 – Smoking	- Describe the effects of the components of tobacco smoke on the body. - Describe some health problems caused by smoking - Describe some effects of smoking on pregnancy	carbon monoxide, nicotine, passive smoking, tar, tobacco	
9	REVISION LESSON			
10	ASSESSMENT LESSON			Core question HW due
11	FEEDBACK LESSON			

Chapter 2: Biological processes				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 2.1a – Photosynthesis	- Describe the process of photosynthesis - Give the word equation for photosynthesis - Describe how to test a leaf for the presence of starch:	algae, chlorophyll, chloroplast, photosynthesis, producer	Science literacy Homework
2	Lesson 2.1b – Photosynthesis	Describe how to test a leaf for the presence of starch:	consumer, microorganism	
3	Lesson 2.2 – Leaves	- Describe the main adaptations of a leaf. - Describe the role of stomata.	guard cells, stomata	

		Describe how water is transported through a plant		
4	Lesson 2.3 – Plant minerals	- Describe how a plant uses minerals for healthy growth. - Describe the symptoms of plant mineral deficiencies. - Explain why farmers use fertilisers	deficiency, fertiliser, magnesium, nitrates, phosphates, potassium	
5	Lesson 2.4 – Aerobic respiration	- Describe the process of aerobic respiration - Give the word equation for aerobic respiration Describe how the reactants and products of respiration are transported to and from cells	aerobic respiration, haemoglobin, mitochondria, plasma	Core question HW
6	Lesson 2.5 – Anaerobic respiration	- Compare the processes of aerobic and anaerobic respiration - Write the word equation for the process of anaerobic respiration - Write the word equation for fermentation	anaerobic respiration, fermentation, oxygen debt	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 3: Ecosystems and adaptations				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 3.1 – Food chains and webs	- Use relevant information to construct a food chain. - Describe the feeding relationships between organisms within a food chain. - Describe the feeding relationships between organisms within a food web.	food chain, food web, predator, prey, producer	Science literacy Homework
2	Lesson 3.2 – Disruption to food chains and webs	- Describe what is meant by the interdependence of organisms. - Suggest and justify how the change in population of one organism affects the population of another within a food web. - Describe how toxic materials can accumulate in a food chain	bioaccumulation, insecticide	
3	Lesson 3.3 – Ecosystems	- Define the terms habitat, community, and ecosystem - Describe how different organisms co-exist within an ecosystem	community, decomposer, ecosystem, environment, habitat, interdependence, niche, population	
4	Lesson 3.4 – Competition	- Explain the resources that plants, and animals compete for - Describe the interaction between predator and prey populations	competition	Core question Homework
5	Lesson 3.5 – Adapting to change	- Describe how organisms are adapted to their environment - Describe how organisms adapt to environmental changes	adaptation, camouflage, hibernation, migration	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 4: Inheritance				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 4.1 – Variation	- Give the definition of variation - Use examples to describe the difference between inherited and environmental variation	biodiversity, environmental variation, inherited variation, species, variation	Science literacy Homework
2	Lesson 4.2 – Continuous and discontinuous	- Use examples to describe the difference between continuous and discontinuous variation. - Choose and justify the most appropriate graph to display examples of variation data.	continuous variation, discontinuous variation	
3	Lesson 4.3 – Inheritance	- Give the definitions of DNA, chromosome, and gene - Describe how characteristics are inherited - Describe how scientists worked together to develop the DNA model	chromosome, DNA, gene, nucleus	Core question HW

4	Lesson 4.4 – Natural selection	- Describe the role of the fossil record as evidence for evolution. - Describe the process of natural selection. - Describe how new species evolve through the process of natural selection	adaptation, evolution, natural selection	
5	Lesson 4.5 – Extinction	- Describe some factors that may lead to extinction. - Describe how gene banks can be used to prevent the extinction of a species.	endangered, extinct, fossil, gene bank	
6	REVISION LESSON			
7	ASSESSMENT LESSON			
8	FEEDBACK LESSON			

Chemistry

Chapter 1: The Periodic Table				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 1.1 – Three elements	- Describe the properties of three elements - Explain how the uses of three elements are determined by their properties	metal, metalloid, non-metal	Science literacy Homework
2	Lesson 1.2 – Physical properties of metals and non-metals	- Use the Periodic Table to determine whether a given element is a metal or non-metal - Give the definition of physical properties - Describe the physical properties of typical metal and non-metal elements	physical property	
3	Lesson 1.3 – Chemical properties of metals and non-metals	- Give the definition of chemical properties - Describe the chemical properties of metals and non-metals	chemical property, reactive, unreactive	
4	Lesson 1.4 – Groups and periods	- Give the group and period number of an element in the Periodic Table - From data presented in tables or bar charts, describe patterns in the properties of elements in groups or periods - Using data, predict the properties of another element in a group or period	group, period	
5	Lesson 1.5 – The elements of Group 1	- Describe the physical properties of the Group 1 elements - Using data from tables or bar charts, describe patterns in the melting and boiling points of the Group 1 elements - Use patterns to predict reactions of Group 1 elements with water	Group 1, Alkali metals	Core question HW
6	Lesson 1.6 – The elements of Group 7	- Describe the physical properties, including colour and states at room temperature, of the Group 7 elements - Using data from bar charts, describe patterns in the melting and boiling points of the Group 7 elements - Use patterns to predict reactions of Group 7 elements with iron	Group 7, halogen	
7	Lesson 1.7 – The elements of Group 0	- Describe the physical properties of the Group 0 elements - From data presented in bar charts, describe patterns in the melting and boiling points of the Group 0 elements - Use patterns to predict properties of Group 0 elements	Group 0, noble gases	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 2: Separation techniques				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 2.1 – Pure substances	Give the definition of pure in science	pure, impure	Science literacy Homework

		Use a temperature-time graph for a melting substance to determine whether it is pure		
2	Lesson 2.2 – Mixtures	- Give the definition of a mixture - Compare mixtures and compounds	mixture	
3	Lesson 2.3 – Solutions	- Give the definitions of solution, solute, solvent, and dissolve - Use the particle model to explain dissolving - Predict the mass of a solution made from given masses of solute and solvent	solution, solute, solvent, dissolve	
4	Lesson 2.4 – Solubility	- Give the definition of solubility - Plot a solubility-temperature graph from data in a table - Describe how solubility changes with temperature for a named substance, given data in a table or line graph	solubility, soluble, insoluble	
5	Lesson 2.5 – Filtration	- Name the types of mixtures that can be separated by filtration - Explain how filtration works - Explain some uses of filtration	filtration, filtering, filtrate, residue	Core question HW
6	Lesson 2.6 – Evaporation and distillation	- Use the particle model to explain how evaporation works - Describe how to use distillation to separate mixtures - Determine whether to use evaporation or distillation to separate a named substance from a solution	distillation	
7	Lesson 2.7 – Chromatography	- Describe how to use chromatography to separate the substances in a mixture - Analyse chromatograms to identify substances in mixtures	chromatography, chromatogram	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 3: Metals and other materials				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 3.1 – Metals and acids	- Use a pattern to predict the products of the reaction of a metal with an acid - Write a word equation for the reaction of a metal with an acid, given the names of the reactants and products	unreactive	Science literacy Homework
2	Lesson 3.2 – Metals and oxygen	- Use a pattern to predict the products of the reaction of a metal with oxygen - Write a word equation for the reaction of a metal with oxygen, given the names of the reactants and products - Compare the patterns in the reactivity of metals with acids and with oxygen	unreactive	
3	Lesson 3.3 – The reactivity series	- Use a pattern to predict the products of the reaction of a metal with water - Write a word equation for the reaction of a metal with water, given the names of the reactants and products - Use the reactivity series to predict how vigorously metals react with acids, oxygen, and water	reactivity series	
4	Lesson 3.4 – Metal displacement reactions	- Write the meaning of displacement reaction - Identify pairs of substances that do, and do not, react in displacement reactions - Predict the products of displacement reactions	displace, displacement (reaction)	Core question HW
5	Lesson 3.5 – Extracting metal	- Describe the two steps needed to extract a metal from its ore - State which metals in the reactivity series can be extracted by heating their oxides with carbon - Calculate the mass of metal in an ore	ore	

6	Lesson 3.6,7,8 – Ceramics, polymers and composites	- Describe the properties of ceramics - Explain how the properties of ceramics make them suitable for their uses - Explain the properties of some composites - Explain why the properties of composites make them suitable for their uses	carbon fibre, ceramic, composite, natural polymer, polymer, synthetic polymer	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 4: The Earth				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 4.1 – The Earth and its atmosphere	- Compare the layers of the Earth - Describe the composition of the Earth’s atmosphere	atmosphere, core, crust,	Science literacy Homework
2	Lesson 4.2 – Sedimentary rocks	- Explain two properties of sedimentary rocks - Describe the four stages in the formation of sedimentary rock - Explain how the properties of sedimentary rocks make them suitable for their uses	erosion, cementation, compaction, deposition, durable, porous	
3	Lesson 4.3a – Igneous rocks	- Describe how igneous rocks form - Explain the properties of igneous rocks - Explain how the properties of igneous rocks make them suitable for their uses	durable	
4	Lesson 4.3b – Metamorphic rocks	- Describe how metamorphic rocks form - Explain the properties of metamorphic rocks - Explain how the properties of metamorphic rocks make them suitable for their uses	durable	
5	Lesson 4.4 – The rock cycle	- Use the rock cycle to describe how the materials in rocks are recycled - Explain how uplift provides evidence for the rock cycle	erosion	
6	Lesson 4.5 – The carbon cycle	- Explain the relative stability in the concentration of carbon dioxide in the atmosphere over part of the Earth’s history - Describe the processes by which carbon atoms move from one store to another	carbon cycle, carbon store, combustion, deforestation	
7	Lesson 4.6 – Global heating	- Describe what the greenhouse effect is - Give the definition of global heating - Describe how the concentration of carbon dioxide in the atmosphere has changed	global heating, greenhouse effect	Core question HW
8	Lesson 4.7 – Climate change	- Explain why global heating happens - Describe some impacts of global heating - Describe how to prevent climate change	climate change, global heating, global warming,	
9	Lesson 4.8 – Recycling	- Give the definition of recycling - Describe how aluminium is recycled - Describe some advantages and disadvantages of recycling	Reduce, reuse, recylce	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Physics

Chapter 1: Electricity and magnetism				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework

1	Lesson 1.1 – Charging up	- Describe how charged objects interact - Describe how objects can become charged - Give the definition of an electric field	electric charge, electron, positive, negative, neutral, neutron, proton	Science literacy Homework
2	Lesson 1.2 – Circuits and current	- Describe how to measure current in a simple circuit - Draw circuit diagrams	ammeter, amps, battery, cell, circuit symbol, conductor, current, insulator, lightning, motor, parallel, series, switch, terminals, voltage, voltmeter, volts	
3	Lesson 1.3 – Potential difference	- Give the definition of potential difference in terms of energy and force - Describe how to measure potential difference in a simple circuit - Describe what the rating of a circuit component means	potential difference, rating	
4	Lesson 1.4 – Resistance	- Give the definition of resistance - Calculate resistance using simple values of potential difference and current - Describe the difference between conductors and insulators in terms of resistance	ohms, resistance	
5	Lesson 1.5 – Changing the subject	- Change the subject of an equation - Change the subject of the resistance equation to calculate values for current and potential difference current.	relationship	
6	Lesson 1.6 – Series and parallel	- Describe the difference between series and parallel circuits - Describe how current varies in series and parallel circuits - Describe how potential difference varies in series and parallel circuits	parallel, series	Core question HW
7	Lesson 1.7 – Magnets and magnetic fields	- Give the definition of a magnetic field - Describe how to investigate and represent the shape of a magnetic field - Describe the Earth's magnetic field	attract, magnet, magnetic field, magnetic field lines, magnetic material, north pole, repel, south pole	
8	Lesson 1.8 – Electromagnets	- Describe the magnetic field around a current-carrying wire - Describe how to make an electromagnet - Describe how to change the strength of an electromagnet	core, electromagnet, magnetise	
9	Lesson 1.9 – Using electromagnets	- Describe some uses of electromagnets - Compare permanent magnets and electromagnets - Describe how a simple motor works	relay	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 2: Energy				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 2.1 – Food and fuels	- Compare the energy values of foods and fuels - Compare the energy requirements of different activities	chemical store, fossil fuel, fuels	Science literacy Homework
2	Lesson 2.2 – Energy resources	- Describe how fossil fuels are formed - Describe the difference between a renewable and a non-renewable energy source - Describe how electricity is generated with renewable and non-renewable resources	nergy resources, non-renewable, nuclear, renewable, uranium	
3	Lesson 2.3 – Energy adds up	- Describe the energy stores involved in everyday transfers - Describe the ways of transferring energy between stores - Use the law of conservation of energy in energy analysis	energy, energy store, gravitational potential store, kinetic store, law of conservation of energy	
4	Lesson 2.4 – Energy and temperature	- Describe the difference between energy and temperature in terms of the particles in a substance - Describe the factors that affect the change in temperature of a substance - Explain what is meant by equilibrium in terms of energy and temperature	equilibrium, temperature, thermal store, thermometer	

5	Lesson 2.5 – Energy transfer: particles	- Describe how energy is transferred by particles during conduction - Describe how energy is transferred by particles during convection - Explain how an insulator can reduce energy transfer – In an ins	conduction, conductor, convection, convection current, dissipated, insulator	
6	Lesson 2.6 – Energy transfer: radiation	- Give the definition of radiation - Give the waves of the electromagnetic spectrum - Compare energy transfer by conduction, convection, and radiation	electromagnetic, electromagnetic spectrum, infrared radiation, radiation, thermal imaging camera	Core question HW
7	Lesson 2.7 – Energy transfer: forces	- Give the definition of work - Calculate work done - Apply the law of conservation of energy to simple machines	lever, ramp, simple machine, work	
8	Lesson 2.8 – Energy and power	- Describe the difference between energy and power - Calculate power and energy - Calculate the cost of using domestic appliances	joules, kilojoules, kilowatt hours, kilowatts, power rating, watt	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			

Chapter 3: Motion and pressure				
Lesson Number	Key Question/ Lesson Title	Learning Objective(s)	Key Words/ Concepts	Homework
1	Lesson 3.1 – Speed	- Calculate average speed - Describe the difference between average and instantaneous speed - Describe examples of relative motion – Relative m	acceleration, average speed, instantaneous speed, metres per second, speed	Science literacy Homework
2	Lesson 3.2 – Motion graphs	- Describe motion using a distance - Use data from a distance-time graph to calculate average speed	distance-time graph	
3	Lesson 3.3 – Pressure in gases	- Describe how volume and temperature affect gas pressure - Give the definition of atmospheric pressure - Describe how atmospheric pressure changes with height	atmospheric pressure, gas pressure	
4	Lesson 3.4 – Pressure in liquids	- Describe how liquids exert a pressure in all directions - Describe how liquid pressure changes with depth - Explain why some everyday objects float and some sink	incompressible, liquid pressure	Core question HW
5	Lesson 3.5 – Pressures on solids	- Give the definition of pressure and give the direction that it acts in - Calculate pressure - Describe situations where high and low pressures are useful	compressed, density, newtons per metre squared, pascal, pressure	
6	Lesson 3.6 – Turning forces	- Give the definition of the moment of a force – - Calculate the moment of a force - Apply the law of moments	centre of gravity, centre of mass, law of moments, moment, newton metres, pivot, relative motion	
	REVISION LESSON			
	ASSESSMENT LESSON			
	FEEDBACK LESSON			