

Assessment Guidance

You will be assessed on the three different disciplines of science; Biology, Chemistry and Physics. You will have three tests that will last for 45 minutes each. The assessment will include a range of questions, including some multiple choice questions, some short answer questions and some questions which require longer answers. To access the highest marks for your test, use as many key scientific words as possible.

Equipment you will need: pen, pencil, calculator, ruler.

	Lesson title	Success criteria	Check
Biology: Human health	Muscles and bones	I can identify major human bones using scientific names.	
		I can explain how different bones are adapted to provide support, protection, movement or make blood cells.	
		I can explain how the interactions between bones and muscles enables movement at joints.	
		I can explain the function of muscles, and examples of antagonistic muscles.	
	The circulatory system	I can describe the human circulatory system, including the relationship with the gas exchange system.	
		I can explain how the structure of the heart and the blood vessels are adapted to their functions.	
		I can explain how red blood cells, white blood cells, platelets and plasma are adapted to their functions in the blood.	
		I can explain the need for a transport system in multicellular organisms in terms of surface area: volume ratio.	
	The respiratory system	I can describe some of the substances transported into and out of humans to meet human requirements, including oxygen and carbon dioxide.	
		I can describe the structure and functions of the gas exchange system in humans, including adaptations to function.	
		I can describe the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases.	
		I can measure the volume of lungs.	
	Respiratory diseases	I can name three harmful substances that are found in cigarette smoke, and explain their effects.	
		I can explain the impact of exercise on the respiratory system.	
		I can describe the symptoms of asthma and explain the effects.	
		I can explain how scientists linked smoking with diseases.	
	Working Scientifically	I can explain how toxins in cigarette smoke cause emphysema and arteriosclerosis, and explain the effects.	
		I can explain the difference between fitness and health.	
		I can explain why fitness is important to keep you healthy.	
		I can calculate my BMI and relate to level of health.	
I can record my heart and breathing rate and use these as an indicator of fitness.			
I can define recovery time and use it to explain fitness levels.			
	I can use a variety of data to justify the fitness of an individual.		
	I can define a drug giving examples.		

	How do drugs affect body systems?	I can describe and explain some effects of drugs on the human body.	
		I can explain the difference between a drug and a medicine.	
Chemistry: Environmental chemistry	The Earth & the Atmosphere	I can recall the composition & structure of the Earth	
		I can recall the rock cycle & the formation of igneous, sedimentary & metamorphic rocks	
		I can recall the composition of the atmosphere	
		I can interpret evidence for the theory of the evolution of our atmosphere	
		I can describe how it is thought our atmosphere evolved	
	Life cycle assessment & recycling	I can recall some of the properties and uses of ceramics, polymers & composites	
		I can describe the basic principles of carrying out a life cycle assessment (LCA)	
		I can interpret data from the LCA of a material or product	
		I can describe a process where a material or product is recycled for a different use & explain why this is viable	
	Carbon compounds	I can recall that crude oil is the main source of hydrocarbons & the feedstock for the petrochemical industry	
		I can describe & explain the separation of crude oil by fractional distillation	
		I can describe fractions as largely a mixture of alkanes & recall the general formula (C_nH_{2n+2})	
		I can describe cracking & the formation of more useful materials	
	Greenhouse Gases	I can recall what is meant by 'greenhouse gas'	
		I can describe the greenhouse effect	
		I can evaluate evidence for causes of climate change looking in particular at fossil fuel consumption & CO_2 conc.	
		I can describe the potential effects of increased methane & CO_2 levels on Earth's climate	
	Common pollutants and their sources	I can recall the main air pollutants	
		I can describe the major sources of these pollutants	
		I can apply sampling techniques	
I can develop questions to answer based on the real world and prior knowledge			
Earth's water resources	I can give examples of the main sources of water used everyday		
	I can explain why potable water is so important		
	I can describe ways of increasing availability of potable water		
Physics: Electricity and electromagnetism	Magnets and magnetic fields	I can describe a magnet and magnetic forces	
		I can describe the magnetic field around a magnet	
		I can describe the magnetic field round different objects	
	Electromagnets	I can describe the magnetic field around a wire and a coil	
		I can build an electromagnet and describe its parts	
		I can test the strength on an electromagnet	
		I can compare methods of measuring the strength of an electromagnet	
	Using electromagnets	I can say that one effect of an electric current is to produce a magnetic field	
		I can describe the motor effect	
		I can build a simple electric motor	
		I can build a simple bell	
		I can describe how a relay works	
			I can describe potential problems when building circuits

	Building electric circuits	I can test components and solve minor issues in using circuit equipment	
		I can draw accurate circuit diagrams using correct symbols	
		I can build series and parallel circuits from given diagrams	
	Resistance	I can say what we mean by resistance	
		I can calculate resistance from measurements of current and potential difference	
		I can investigate the effect of length and cross section on resistance of a wire	
	What causes resistance	I can calculate resistance from voltage and current measurements	
		I can describe the effect of placing two components in series	
		I can describe the effect of placing two components in parallel	
Physics: Forces in Action	Pressure	I can measure the area of contact between two objects;	
		I can measure the weight of an object;	
		I can calculate the pressure exerted by a force using the relationship $\text{pressure} = \text{force}/\text{area}$	
	Pressure in fluids	be able to state that the air pressure decreases the higher we climb up a mountain;	
		be able to state that the water pressure increases the deeper we dive into the sea;	
		be able to calculate the pressure throughout a hydraulic machine using $P=F/A$;	
		be able to calculate the load force in a hydraulic machine from the effort force and the areas of pistons	
		be able to calculate the distance a loaded piston moves in a hydraulic machine from the area of both pistons and the effort force.	
	Pivots and levers	I can identify pivot, load and effort in a range of simple machines;	
		I can state that spanners are force multipliers;	
		I can state that muscles are distance multipliers;	
	Moments	be able to calculate turning force (moment);	
		be able to calculate the resultant turning force;	
		be able to recognise that in a balanced beam the resultant turning force is zero	
	Springs	Is able to carry out an investigation to investigate Hooke's law	
		Is able to plot a graph of force applied v spring extension	
		Is able to state Hooke's law as 'The force (F) needed to stretch a spring over a set distance (D) is constant (K) (up to the failing point)' $F = -kD$	
		Is able to calculate the spring constant from the gradient of the graph	
		Is able to give examples of machines that rely on Hooke's law, or use springs	
	Work and energy	Is able to describe work as the application of force along a distance	
		Is able to describe work done as a process of transferring energy	
		Is able to calculate the work done in simple actions using $\text{work} = \text{force} \times \text{distance}$	
		Is able give examples of the energy transfers encountered in previous lessons	