

<p>Year 10.2</p>	<p>Casualty B6</p> <ul style="list-style-type: none"> • Understand the importance of maintaining the supply of oxygen to the body. • Know that the heart is made of muscle. • Know that the heart pumps to force blood out to the lungs or around the body. • Know that the heart acts as a double pump. • Know that arteries carry blood away from the heart, and veins to the heart. • Be able to recognise the difference between an artery and a vein. • Know why the heart muscles need a good blood supply. • Understand that during exercise muscles need to be supplied with more oxygen and be able to relate this to an increase in heart rate. • Know the equation for respiration. • Understand that a cut to a major blood vessel is more serious than a cut to a capillary. • Know that heart disease often happens when arteries supplying the heart with blood become blocked. • Know that the risk of 	<p>You only have one life B7</p> <ul style="list-style-type: none"> • Know that being overweight or underweight is linked to increased health risks. • Understand that exercise is important for a healthy lifestyle. • Know that regular exercise reduces the risk of heart disease. • Know that different people have different lifestyles and therefore dietary requirements. • Understand, in simple terms, the processes of digestion and absorption and where these events occur. • Know that enzymes speed up reactions in humans. • Understand that enzymes speed up digestion to produce smaller soluble chemicals (which can pass into the blood by diffusion). • Know that there are different enzymes in the mouth, stomach and intestines, each of which digests a different type of food. • Know that drugs can be beneficial or harmful. • Know that a drug is a chemical that has an effect on the mind or the body. • Know that some 	<p>Body Wars B8</p> <ul style="list-style-type: none"> • Describe the relationship between health and disease. • Describe different types of diseases (including diseases that can be caught and those that cannot be caught). • Know that that if you are infected with two diseases it may make you feel worse. • Know that plants can get diseases too. • Recall that harmful microbes (pathogens) are bacteria, fungi, protists and viruses. • Describe a minimum of one common human infection plus a sexually transmitted infection in humans, including HIV/AIDS. • Understand that our bodies provide good conditions for microbes to reproduce rapidly. • Recall that the skin, chemicals in tears, sweat, and stomach acid stop microbes getting in. • Know that microbes can enter the body through natural openings, or cuts in the skin. • Know that white blood cells are part of the immune 	<p>Creepy Crawlies B9</p> <ul style="list-style-type: none"> • Know that animals get their food from eating plants or other animals. • Know that may different materials cycle through an ecosystem. • Explain the importance of the carbon cycle and the water cycle to living organisms. • Explain that microorganisms are involved in the cycling of materials through an ecosystem. • Understand how some animals are adapted as successful predators. • Understand the terms herbivore and carnivore. • Be able to construct a simple food chain with a plant, a herbivore and a carnivore. • Understand how a change affecting one species in a food web can affect another species in the same food web. • Be able to use simple keys to name plants and animals. • Describe that DNA is now used to help classify organisms. • Know the meaning of the term habitat. • Understand that organisms are 	<p>B10 Extinction</p> <ul style="list-style-type: none"> • Know that fossils provide evidence of living organisms from long ago to include fossil formation. • Know that living things have been changing through evolution. • Understand the term species. • Know that some species have changed very little over thousands of years. E.g. crocodiles. • Be able to identify variations in animals or plants of the same species. • Know that all variations in a species arise from mutations. • Understand that living things compete for shelter, food and mates in order to survive. • Know that the better adapted individuals will survive and can breed and pass on their features to the next generation. • Understand the term habitat. • Understand that a species may become extinct if their habitat changes or another species is better adapted to survive. • Understand how human beings have 	<p>Key Skills: Working scientifically skills:</p> <ol style="list-style-type: none"> a) Planning to collect data. b) Processing the data. c) Identify patterns/ trends in data. d) Interpret data. e) Review the method.
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	<p>heart disease is increased by some factors including high-fat diet and smoking and understand that these factors increase the risk of heart disease.</p>	<p>drugs are addictive.</p> <ul style="list-style-type: none">• Know how the effect of caffeine on heart rate can be measured.• Know that alcohol abuse accounts for more deaths and crime than any other drug.• Know the short term effects of alcohol (limited to blurred vision, slurred speech, poor balance and slower reactions).• Know the dangers of drink driving.• Know the long term effects of alcohol (limited to liver damage).	<p>system.</p> <ul style="list-style-type: none">• Know that antibiotics are chemicals that kill bacteria and fungi, but not viruses.• Know that some bacteria have evolved which are not killed by some antibiotics.• Know that vaccines can make people immune to a disease.• Know that a vaccine usually contains a safe form of a disease-causing microorganism.• Know that once you are immune you are protected from a particular disease.	<p>adapted to live in their habitat.</p>	<p>caused some species to become endangered or extinct, habitat destruction, hunting, pollution.</p>	
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	<p>Sorting out C6</p> <ul style="list-style-type: none"> • Explain what is meant by the purity of a substance, distinguishing between the scientific and everyday use of the term 'pure'. • Know that a mixture contains two or more uncombined substances. • Know that mixtures contain substances that can be separated from each other. • Know how chromatography is used to separate mixtures into their constituents. • Suggest how chromatography can be used to test pure from impure substances. • Following a chromatography experiment measure the distance moved by the solvent and the spots. • Calculate the <i>R_f</i> value from the spots by dividing the distance moved by the spot by the distance moved by the solvent. • Understand that distillation is used to separate liquids with different boiling points. 	<p>Let's get together C7</p> <ul style="list-style-type: none"> • Using sodium and chlorine show how atoms can donate electrons. • Know that when sodium loses an electron it becomes positive and when chlorine gains an electron it becomes negative and that these charges hold the two together as salt (sodium chloride). • Know that after reacting the mass of salt produced should be the same as the mass of sodium and chlorine gas. • Calculate masses of the product of a simple chemical reaction when given the reactants in a balanced chemical equation. • Use chemical symbols to write the formulae of elements and simple compounds limited to sodium chloride, magnesium oxide, sodium hydroxide, hydrochloric acid, hydrogen and carbon dioxide. • From a model or a diagram work out the proportion of sodium and chlorine atoms in a molecule of sodium chloride. • Use the names and symbols of the first 20 elements from a 	<p>Heavy Metals C8</p> <ul style="list-style-type: none"> • Describe the properties of metals on the basis of their characteristic physical and chemical properties. • Position carbon in the reactivity series of metals. • Know how that some metals (e.g. iron and copper) can be extracted by heating its ore with carbon. • Know that rusting needs iron, water and oxygen. • Explain reduction and oxidation in terms of loss or gain of oxygen, identifying if iron is being reduced or oxidised when rusting. • Know that paints are used to decorate or protect surfaces. • Know that salt water speeds up rusting. • Recall one advantage and one disadvantage of making cars from aluminium. • Understand why metals are worth recycling (metals are a finite resource and recycling metal is cheaper than making it from the ore and that it saves resources and energy). 	<p>Fuels C9</p> <ul style="list-style-type: none"> • Know that crude oil is a toxic, dark, sticky liquid. • Know that crude oil is made mainly of hydrocarbons in chains of varying length. • Know that hydrocarbons are composed of hydrogen and carbon. • Recognise that the formula of hydrocarbons will contain carbons, hydrogens and numbers. • Know that you can calculate the number of hydrogens on a simple hydrocarbon by counting the carbons multiplying this number by 2 and adding two to the answer. • Know that modern life is crucially dependent upon hydrocarbons from crude oil and recognise that crude oil is a finite resource. • Know that crude oil a good source of hydrocarbons that are used to make many products we enjoy and rely on. • Know that crude oil can be separated into more useful parts at an oil refinery. 	<p>C10 Let's get together</p> <ul style="list-style-type: none"> • Using sodium and chlorine show how atoms can donate electrons. • Know that when sodium loses an electron it becomes positive and when chlorine gains an electron it becomes negative. • Construct dot and cross diagrams for sodium chloride. • Know that after reacting the mass of salt produced should be the same as the mass of sodium and chlorine gas. • Calculate masses of the product of a simple chemical reaction when given the reactants in a balanced equation. • Recognise representations of atomic models limited to dot and cross diagrams. • Use chemical symbols to write the formulae of elements and simple compounds. • From a model or a diagram work out the proportion of sodium and chlorine atoms in a molecule of sodium chloride. • Use the names and symbols of the first 20 elements. • Describe how to get 	
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		<p>supplied Periodic Table to write the product names of some chemical reactions limited to chloride, fluoride and oxide.</p> <ul style="list-style-type: none"> • Know the names of other chemical bonds limited to covalent and metallic bonds. • Describe what electrolysis is. 		<ul style="list-style-type: none"> • Know that in an oil refinery crude oil is separated into fractions based on the boiling point of the hydrocarbon. • Know that petroleum gases, petrol, kerosene and diesel are all hydrocarbons that come from crude oil. • Know the uses of these fuels: petroleum gases, such as propane, in portable gas cylinders; petrol in cars; kerosene in airplanes; diesel in lorries, buses, trains and cars. • Know that burning fuels produces energy for heating, transport and making electricity in power stations. 	<p>the sodium and chlorine back by electrolysis with the positive sodium being attracted to the negative electrode.</p> <ul style="list-style-type: none"> • Know that sodium metal is formed at the negative electrode (cathode) and chlorine (non metal) is formed at the anode. • Know that after electrolysis the theoretical mass of sodium and chlorine gas should be the same as the starting mass. • Know that as the cathode electrons are added to the positively charged sodium to remake sodium metal. • Predict which electrode magnesium metal will be made during electrolysis of magnesium chloride. • Know the names of other chemical bonds limited to covalent and metallic bonds. 	
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	<p>Nuclear Power P6</p> <ul style="list-style-type: none"> • Describe the atom as a nucleus surrounded by electrons. • Know the relative size of atoms and small molecules. • Recall that atomic nuclei are composed of both protons and neutrons. • Explain that isotopes are different forms of the same atom. • Know that changes in an atoms nucleus can generate radiation. • Explain the concept of half-life and how this is related to the random nature of radioactive decay. • Know that uranium is a non-renewable resource. • Know that in a nuclear power station, the uranium provides the source of energy. • Know that a lot of energy is released by the splitting of uranium atoms. • Know that a nuclear power station produces harmful radioactive waste. • Know the differences between contamination and irradiation effects and compare the hazards associated with these two. • Recall one risk and one benefit of 	<p>Our electricity supply P7</p> <ul style="list-style-type: none"> • Explain the difference between direct and alternating voltage. • Know that batteries produce d.c. electricity from chemical reactions. • Know that the domestic supply in the UK is a.c. (at 50 Hz and about 230 volts). • Know the main stages in the production of electricity: heat from the energy source changes water into steam, the steam is used to rotate turbines, turbines turn a generator, and the generator produces electricity. • Understand the terms <i>insulator</i> and <i>conductor</i>. • Know that electricity is transferred from a power station through a grid of high voltage transmission lines. • Understand that transformers are required at either end of the transmission lines to increase or decrease voltage. • Know that a transformer is two coils of wire wound onto a core of iron. • Know that electricity in the home is 	<p>Attractive Forces P8</p> <ul style="list-style-type: none"> • Know that iron and steel are magnetic. • Know how to induce magnetism in a pin. • Know that magnets attract magnetic materials: limited to iron and steel. • Know that like poles repel and unlike poles attract. • Know how iron filings or a compass can be used to show up a magnetic field. • Know that a freely swinging magnet comes to rest in a N-S direction. • Know that the Earth has a magnetic field around it. • Understand how a compass works and why it is so useful. • Know that the Earth's magnetic field protects us from cosmic rays. • Know that a current-carrying wire behaves like a magnet. • Know how to construct an electromagnet. • Understand that the core of an electromagnet is made of iron because iron is a temporary magnet. • Know that the strength of the field depends on the current and the distance from the 	<p>Pushes and Pulls P9</p> <ul style="list-style-type: none"> • Know that forces can be pulls, pushes, twists or bends. • Know that forces are measured in Newtons. • Understand that unbalanced forces change the motion of an object. • Know that gravity is a force pulling things towards the Earth. • Understand that weight is due to the force of gravity. • Know that an objects gravitational potential energy is composed of its mass, height and gravity. • Know that falling objects are acted on by gravity and drag. • Understand the effect of air resistance on falling objects. • Know that falling objects can reach a maximum speed. • Know that an increased force increases the length of an elastic material. • Know that elastic materials return to their original shape unless the force becomes too big. • Apply the relationship between work done = force × distance moved. • Be able to interpret 	<p>P10 Medical rays</p> <ul style="list-style-type: none"> • Understand the difference between the diagnosis of an illness and it's treatment. • Recall some benefits of a doctor being able to see inside a patients body. • Know that all surgical procedures have risks. • Recall some medical uses of UV radiation. • Know that exposure to UV radiation can cause suntan, sunburn and skin cancer. • Understand that the use of UV radiation involves balancing benefits against risk. • Recall some ways of reducing the risk of exposure to UV radiation. • Interpret data on the use of sunscreens. • Understand that the use of X-rays and so produces shadow pictures. • Know that too much exposure to X-rays is dangerous. • Understand that the use of X-rays involves balancing benefits against risk. • Know that gamma radiation is very penetrating. • Know that a gamma 	
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	<p>nuclear power.</p> <ul style="list-style-type: none"> • Compare the processes of aerobic and anaerobic respiration to include the products of both reactions and their effects. • Interpret simple data on breathing and pulse rates during exercise [no recall expected]. • Suggest suitable separation techniques given information about the substances. • Be able to plan how to obtain a soluble substance (e.g. salt, copper sulphate or sugar) from an aqueous solution by crystallisation. • Be able to plan how to separate an insoluble substance from water by filtration e.g. sand. • Interpret simple chromatograms. • Use melting point data to distinguish pure from impure substances. • Know that scientist' ideas of what an atom look likes (called the atomic model) has changed over time. 	<p>conducted by wires.</p> <ul style="list-style-type: none"> • Know the differences in function between the live, neutral and earth mains wires, and the potential differences between these wires; hence explain that a live wire may be dangerous even when a switch in a mains circuit is open, and explain the dangers of providing any connection between the live wire and earth. • Describe the difference between series and parallel circuits, explain why, if two resistors are in series the net resistance is increased, whereas with two in parallel the net resistance is decreased (qualitative explanation only). • Know that some appliances use more electricity than others. • Know ways of reducing energy loss from the home. • Recognise representations of atomic models limited to dot and cross diagrams, ball and stick models and two- and three-dimensional representations. Interpret data for different energy saving strategies 	<p>conductor, and explain how solenoid arrangements can enhance the magnetic effect.</p> <ul style="list-style-type: none"> • Be able to label the magnet, core and cone in a loudspeaker. • Understand different viewpoints that parents may have about giving their child a vaccination. • Understand that media reports of health studies are not always accurate. • Be able to describe similarities and differences between the properties of iron and aluminium, limited to: iron is more dense than aluminium; iron is magnetic; aluminium is not; iron corrodes (rusts) easily and aluminium does not. • Interpret simple information about metals used to make cars [no recall expected]. • Interpret information on the recycling of materials [no recall expected]. • Understand how the strength of an electromagnet depends on: the number of turns on the coil, the current 	<p>a simple food web (limited to 3 organisms at any level).</p> <ul style="list-style-type: none"> • Be able to describe and carry out simple sampling methods: limited to pooters, nets, pitfall traps and quadrat surveys. • Be able to estimate the number of plants in an area using results of a quadrat survey. • Interpret data to decide which fuel gives out most energy when the same amount burns. • Give a simple description of the relationship between force and extension in stretching a spring. 	<p>camera can detect gamma radiation and that a computer linked to it can make pictures.</p> <ul style="list-style-type: none"> • Know that exposure to gamma rays is dangerous. • Understand that the use of gamma rays involves balancing benefits against risk. • Know that UV radiation, X-rays and gamma rays are part of a family called the electromagnetic spectrum. • Know that UV radiation, X-rays and gamma rays can damage living cells. 	
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		focusing on the choice of energy saving appliances [no recall expected].	in the coil.			
Assessment Outcome	Assessment outcomes: Completion of end of item tests at the end of each unit.	Assessment outcome: Completion of end of item tests at the end of each unit.	Assessment outcomes: Completion of end of item tests at the end of each unit.	Assessment outcome: Completion of end of item tests at the end of each unit.	Assessment outcome: Completion of end of item tests at the end of each unit.	Assessment outcome: Completion of 'Craters' coursework.
Career Link	Use icould/ UCAS video to links careers as part of a starter ONE lesson per week.	Use icould/ UCAS video to links careers as part of a starter ONE lesson per week.	Use icould/ UCAS video to links careers as part of a starter ONE lesson per week.	Use icould/ UCAS video to links careers as part of a starter ONE lesson per week.	Use icould/ UCAS video to links careers as part of a starter ONE lesson per week.	Use icould/ UCAS video to links careers as part of a starter ONE lesson per week.
	STEM linked careers trip/ visitor - AM		STEM linked careers trip/ visitor - AM		STEM linked careers trip/ visitor - AM	