

Year 9 Programme of Study			
WK	Date	Topics	KNOWLEDGE AND SKILLS
1	07/09/20 20	<p>Forces in action: Calculate speed using the speed equation Describe relative motion including that of passing trains and cars. Choose equipment to make appropriate measurements for time and distance to calculate speed . Describe how atmospheric pressure changes with height. Describe how liquid pressure changes with depth. Be able to draw distance-time graphs. Predict quantitatively the effect of changing area and/or force on pressure Explain what is meant by a turning forces.</p>	<p>Physics: be able to calculate speed using the equation. Be able to draw and interpret distance-time graphs.</p> <p>Cell structure and transport Microscopes, plant and animal cells, diffusion, osmosis, active transport Cell division: Cell division, growth and differentiation, stem cells Atomic structure: the atom, separation techniques, history of the atom electronic structures Energy: Energy stores and conservation, types of energy, efficiency and appliances, energy and power.</p>
2	14/09/20 20		
3	21/09/20 20	<p>Cells: Cells are the basic unit of all forms of life. Undersanding of new technology. Describe different transport methods within animals and plants</p>	
4	28/09/20 20		

5	05-Oct	Atomic structure: A simple model of the atom, symbols, relative atomic mass, electronic structure and isotopes. Including transition elements .Describe different separation techniques.	
6	12-Oct		
7	19/10/20 20	Energy: Energy changes in a system. Idea of stores of energy rather than types. Changes in energy (elastic, kinetic, gpe and thermal). Link between power and energy Cells, atoms and energy assessment	
HALF TERM			
		Assessment 30% Forces in Action 30% Cells 30% Atomic Structure 10% Energy	

8	02-Nov	<p>Energy: Energy changes in a system. Idea of stores of energy rather than types. Changes in energy (elastic, kinetic, gpe and thermal). Link between power and energy</p>	<p>Energy: Energy stores and conservation, types of energy, efficiency and appliances, energy and power. Atomic structure: the atom, separation techniques, history of the atom electronic structures The periodic table: Development of the periodic table, Group 1, group 2 and transition elements Energy transfer conduction, radiation, specific heat capacity, heating and insulating buildings. (Energy transfer test)</p>
9	09-Nov	<p>Organisation: Principals of organisation, Animal tissues, organs and organ systems Cell division Growth and differentiation Stem cells Stem cells dilemma</p>	
10	16-Nov		
11	23-Nov	<p>The periodic table: Students should understand how each stage in the development of the periodic table was facilitated by new evidence becoming available. They should also be able to identify the importance of an inherent pattern to the elements and how this guided Mendeleev's thinking. Students should also develop their understanding of electronic structures from the previous unit Atomic structure, and apply this to the arrangement of the periodic table and the chemical properties of Group 0, Group 1, and Group 7 elements.</p>	

12	30-Nov		
13	07-Dec	<p>Energy transfers: Students will develop their understanding of the heating and cooling processes, which transfer energy within a material or from one object to another. They will investigate thermal conductivity and the differences in the processes of thermal conduction in metals and non-metals. Be able to define specific heat capacity.</p>	
14	14-Dec	<p>Assessment 10% Energy 30% Cells and Atomic Structure 20% Organisation 20% The Periodic Table 20% Energy Transfer</p>	
CHRISTMAS			

15	04-Jan	Tissue and Organs , The Human Digestive System, The Chemistry of Food Catalysts and Enzymes, Factors affecting enzyme action, How the Digestive System Works Making digestion efficient	Organisation and the digestive system: Tissues, organs the digestive system, catalysts and enzymes, making digestion efficient Structure and bonding: States of matter, bonding, giant structures and nanoparticles Energy resources: Energy demands and energy from; sun, wind, Earth, energy issues
16	11-Jan		
17	18-Jan	Chemical bonds , Bonding, structure, and the properties of matter: ionic, covalent and metallic. How bonding and structure are related to the properties of substances. Structure of carbon.	
18	25-Jan		

19	01-Feb	<p>Energy sources: Students will examine the different sources of energy that are used to generate electricity or provide heating for homes. The different sources of energy including renewable and non-renewable.</p> <p>They will consider the effect of the production and use of biofuels on the environment along with the concept of carbon-neutrality</p>	
20	08-Feb	<p>Assessment</p> <p>20% Cells, Atomic Structure and Energy</p> <p>20% Organisation, The Periodic Table and Energy Transfer</p> <p>20% Tissues and Organs</p> <p>20% Chemical Bonds</p> <p>20% Energy Sources</p>	
HALF TERM			
21	22-Feb	<p>Use this time to ensure that everyone is at the same point in the PoS. If you are up to date re-teach key concepts from tissues and organs and chemical bonds topics</p>	
22	01-Mar		
23	08-Mar		
24	15-Mar		
25	22-Mar		

26	12-Apr	<p>The Human Body Students should know the structure and functioning of the human heart and lungs, including how lungs are adapted for gaseous exchange.</p> <p>Explain how the structures of plant tissue(s and components are related to their functions-Transpiration).</p>	<p>The human body, blood, heart, breathing and gs exchange, tissues and transport in plants</p> <p>Chemical calculations: relative masses and moles, equations and calculations, from masses to balanced equation, atom economy, titrations, volumes of gases</p> <p>Electric circuits: Charges and fields, current, charge, p.d and resistance, component characteristics, series and parallel circuits</p> <p>Communicable diseases: Pathogens viruses, bacteria, fungi.</p>
27	19-Apr		
28	26-Apr	<p>Quantitative chemistry Students should have a firm understanding of how to carry out calculations for Science, using the appropriate mathematical method. conservation of mass and the quantative interpretation of chemical equations.</p> <p>Use of amount of substance in relation to measses of pure substances.</p> <p>They should also be able to explain in detail why a reaction does not yield 100%, and how this can be improved.</p>	
29	03-May		
30	10-May		

31	17-May	Electricity , focusing on the relationship between current, charge and resistance. Students define differences between series and parallel circuits.	
32	24-May	Electricity , focusing on the relationship between current, charge and resistance. Students define differences between series and parallel circuits.	
		Assessment 10% Electricity part 1 10% Cells, Atomic Structure and Energy 10% Organisation, The Periodic Table and Energy Transfer 10% Tissues and Organs, Chemical Bonds and Energy Sources 20% The Human Body and Quantitative Chemistry 15% Communicable Diseases 15% Reactivity 15% Electricity part 2	
HALF TERM			
33	07-Jun	Communicable Diseases, Describe what pathogens are, and explain differences between bacteria and virus, Describe and explain specific examples of diseases such as measles, HIV and tobacco mosaic virus	Chemical changes: Reactivity series, metals, salts, neutralisation, strong and weak acids
34	14-Jun		Electric circuits: Charges and fields, current, charge, p.d

35	21-Jun	<p>Reactivity, Understand a wide range of reactions with metals including: reactions with oxygen, acid, and their extraction. Other reactions include: neutralisation and salt production linked to the pH scale</p> <p>Electricity 2 Describe how the mains electricity is set up, safety within electricity. Describe the function of the national grid</p>	<p>and resistance, component characteristics, series and parallel circuits</p> <p>Electricity in the home: alternating currents, cables, plugs, power and pd, current and energy transfer, appliances and efficiency (</p> <p>Protecting the body vaccinations, medicinal drugs, developing drugs, monoclonal antibodies (Protecting the body test) Non-communicable diseases: Non-communicable diseases, cancer, smoking, alcohol, diet and exercise</p> <p>Electrolysis: Electrodes, extraction of aluminium, electrolysis of aqueous solutions</p> <p>Molecules and Matter: Density, states of matter, Internal energy, specific latent heat, gas pressure and volume/temperature</p>
36	28-Jun	<p>Protecting the body Describe how vaccinations work, and the step by step method of the development of drugs</p> <p>Electrolysis Students understand the process of electrolysis (molten and aqueous), write half-equations; and be able to explain how electrolysis is used for extraction</p>	
37	05-Jul	<p>States of Matter- Link structure and bonding to different states of matter, explain the differences in density between the different states of matter in terms of the arrangement of atoms or molecules.</p>	
38	12-Jul		

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