

Year Group: 9	Subject: Science	Term: Summer 2022
Topic	Key Learning points	Assessment
Biology: Key concepts in Biology	<p><i>End Point: To describe the structure of living organisms at the cellular level and the how substance transport systems that are necessary for life function</i></p> <ul style="list-style-type: none"> • Know the sub-cellular structure of animal, plant and bacterial cells. • Know that specialised cells have different structures and variations in their sub-cellular structures in order to perform a specific function including sperm, egg and ciliated epithelial cells. • Know how to operate a microscope and create a slide to view specimens clearly. • Know how to calculate the magnification of an image if given its image size and actual size. • Know that stains are used to create contrast between organelles in the cell therefore making them more visible. • Know how substances are transported passively down a concentration gradient in diffusion and osmosis. • Know how substances can be actively transported against a concentration gradient. • Know that active transport and osmosis occur across a partially permeable membrane. 	<p>Students are formatively assessed during each topic by in-class assessment tasks which are self-marked.</p> <ul style="list-style-type: none"> • Recall starters focus on prior knowledge. • Key takeaway plenaries focus on consolidating knowledge from that lesson. • Structured exam-style question homework is set weekly which is assessed at the start of lessons.
Chemistry: Key concepts in Chemistry	<p><i>End Point: To know the structure of an atom, the features of different states of matter and how to separate substances.</i></p> <ul style="list-style-type: none"> • Know the three states of matter: solid, liquid and gas and how their properties are linked with their structure. • Know that a mixture is two or more elements not chemically joined. • Know how filtration can be used to separate insoluble solids from a liquid. • Know how crystallisation can be used to separate a solute from a solution. • Know that paper chromatography can be used to separate a mixture of liquids. • Know that distillation involves evaporation and condensation of a mixture of liquids and separates them according to their boiling points. • Know how to purify water using separating techniques such as distillation, sedimentation and chlorination. • Know the structure of an atom including the subatomic particles (proton, neutron and electron), their relative mass, charge and position in the atom. • Know the mass number of an element to be the total number of protons and neutrons in an atom. • Know the atomic number of an element to be the total number of protons in an atom. • Know that an isotope is a form of an element with more or less neutrons making it unstable. 	<p>At the end of each half-term students will have a summative assessment. This will be a 60-mark exam paper (20 marks from each topic). This is peer-assessed in the following lesson and feedforward tasks completed.</p>
Physics: Key concepts in Physics	<p><i>End Point: To understand how energy can be stored and transferred in relation to the particle model and forces.</i></p> <ul style="list-style-type: none"> • Know how particles are arranged in a solid, liquid and gas. • Know that density and pressure are dependent on the arrangement and temperature of particles. • Know that thermal energy is the internal heat energy of an object. • Know that thermal energy can be transferred by conduction, convection and radiation. • Know the different stores of energy including: chemical, kinetic, thermal, elastic potential, gravitational potential and nuclear. • Know the ways energy is transferred: by mechanical work, electrical work, heating and radiation. • Know that in energy transfers, energy is dissipated so that it is stored in less useful ways and that you can increase the efficiency of a transfer by reducing wasteful stores of energy developing. • Know how calculations of work done and power can describe energy stores and transfers. 	