





Term	Rotation through Year 7							
Topic	HSW	Earth Structure & The Universe	Speed & Gravity	Movement & Cells	Particle Model & Separating Mixtures	Variation & Human Reproduction	Energy Costs & Energy Transfers	Heating & Cooling
Big Question	How do we construct a scientifically valid investigation?	In what ways are we affecting the earth and how can this be reduced?	What effect can forces have on an object's motion?	How do cells group to form an organism?	How do the particles in solids, liquids and gases behave and interact?	How can we develop our ideas of cells?	How much does energy cost (electrical) and how can we convert from one store to another?	How is heat transferred and how can it be reduced?
Content	<ul style="list-style-type: none"> evaluate risks. pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience make predictions using scientific knowledge and understanding select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate 	<ul style="list-style-type: none"> the structure of the Earth the rock cycle and the formation of igneous, sedimentary and metamorphic rocks gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only) our Sun as a star, other stars in our galaxy, other galaxies the seasons and the Earth's tilt, day length at different times of year, in different hemispheres the light year as a unit of astronomical distance. 	<ul style="list-style-type: none"> forces as pushes or pulls, arising from the interaction between two objects using force arrows in diagrams non-contact forces opposing forces and equilibrium atmospheric pressure, pressure in liquids floating and sinking speed = distance ÷ time distance-time graphs relative motion: trains and cars passing one another. 	<ul style="list-style-type: none"> using a light microscope the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts Comparing plant and animal cells diffusion in the movement of materials in and between cells structural adaptations of some unicellular organisms the hierarchical organisation of multicellular organisms the structure and functions of the human skeleton biomechanics – the interaction between skeleton and muscles, the function of muscles and examples of antagonistic muscles. 	<ul style="list-style-type: none"> the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure changes of state in terms of the particle model. the concept of a pure substance mixtures, including dissolving diffusion in terms of the particle model simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography the identification of pure substances. 	<ul style="list-style-type: none"> Reproduction in humans (as an example of a mammal) Structure and function of the male and female reproductive systems, Menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth reproduction in humans (as an example of a mammal) structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth the effect of maternal lifestyle on the foetus through the placenta What are some genetic disorders and how do they come about? The effect of maternal lifestyle on the foetus through the placenta What is variation? How can variation be continuous or discontinuous? The importance of variation. 	<ul style="list-style-type: none"> Energy and energy from foods. Energy transfers and Sankey diagrams. Electrical Costs. Using energy efficiently. Power stations and the national grid. Energy stores Transferring energy between different stores How energy is transferred 	<ul style="list-style-type: none"> Arrangement of particles in solids, liquids and gases. Changes of state Heating and thermal equilibrium Temperature difference between two objects Energy transfer from the hotter to the cooler one, through conduction, convection and radiation. Reducing energy transfer from houses by insulation The effect of thermal energy on the volume of an object
Assessment	Pupils will be assessed through homework activities, lesson starter activities, end of Unit class tests and a range of required practicals aimed at assessing the pupils' practical abilities.							



Term	Rotation through Year 8							
Topic	Breathing & Digestion	Earth's Resources & Climate	Light & Sound	Interdependence	Work	Metals & Non-Metals, Elements & Periodic Table	Evolution	Contact Forces & Pressure
Big Question	How do humans generate energy?	How do humans exploit the planet at a detriment to the climate?	What are some of the uses of waves? How are sounds produced, altered and detected?	How is life organised and is it in harmony?	When is work done?	How is the periodic table arranged and what properties do different groups of the periodic table have?	Will we always evolve?	What causes pressure?
Content	<ul style="list-style-type: none"> •What gases do we breathe in and what do we breathe out •Terminology such as inhale, exhale, gaseous exchange and oxygen debt •Label the structure of the breathing system •Link breathing rate to exercise •How we digest our food •The structures of the digestive system •Food groups and what they are broken down into •Why we need each food group and our RDA •Linking diet to lifestyle and age •Use of enzymes in the process of digestion 	<ul style="list-style-type: none"> •How humans impact the atmosphere and environment •The effects that deforestation and peat bogs have on the environment •Global warming including effects that humans are having on atmospheric composition 	<ul style="list-style-type: none"> •How do we see light? • How is light reflected? •How is light refracted? •waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. •pressure waves transferring energy; use for cleaning and physiotherapy by ultrasound; waves transferring information for conversion to electrical signals by microphone. •How do we hear sound? •How is sound produced? •How does the amplitude of sound affect the volume? •How does the frequency of the sound affect the pitch? •How can sound be reflected? •What is ultrasound? •What is sonar? 	<ul style="list-style-type: none"> •some abiotic and biotic factors which affect communities; the importance of interactions between organisms in a community •organisms are interdependent and are adapted to their environment •the importance of biodiversity •What is the carbon cycle? •What is the water cycle? •What does biodiversity mean? •How do toxins affect the environment? •Some organisms live in environments that are very extreme, such as at high temperature, pressure, or salt concentration. These organisms are called extremophiles. Bacteria living in deep sea vents are extremophiles. 	<ul style="list-style-type: none"> •moment as the turning effect of a force •Using simple machines to give bigger force •stretching and squashing •measurements of stretch or compression (Hooke's Law) •work done and energy changes on deformation •Work is done when energy is transferred •Work = force x distance •The bigger the force or distance, the greater the amount of work done. 	<ul style="list-style-type: none"> • Elements and the Periodic Table. • Chemical Compounds • Group 1 Metals • Group 7 Halogens • Polymers, ceramics and composites. • Properties of metals and non-metals • Carry out simple tests to determine the differences • Justify the element as metal or non-metal from information 	<ul style="list-style-type: none"> •How can variation be continuous or discontinuous? •What is DNA? •What are chromosomes? •What evidence is there of evolution •Why do animals / plants evolve •What is 'survival of the fittest' •Who was Charles Darwin and what was documented in his book the origin of species? •What is extinction? •Why do species go extinct? •Preservation orders 	<ul style="list-style-type: none"> •forces as pushes or pulls, arising from the interaction between two objects •using force arrows in diagrams • adding forces in one dimension •non-contact forces •opposing forces and equilibrium •atmospheric pressure, •pressure in liquids •floating and sinking
Assessment	Pupils will be assessed through homework activities, lesson starter activities, end of Unit class tests and a range of required practicals aimed at assessing the pupils' practical abilities.							

John Taylor High School Home of the John Taylor Teaching School Hub		MAT		Subject Curriculum Map:	Biology	Year Group:	9
Term	Rotation through Y9				Summer 1	Summer 2	
Topic	Photosynthesis & Plant Reproduction	Human Reproduction & Inheritance	Sports Science		Cell Biology Digestion & Enzymes		
Big Question	Can we survive without insects ?	What's the probability of having a baby with green eyes?	How do cells get the energy they need and what factors affect this?		What are cells and what is their function within a living organism?		
Content	<ul style="list-style-type: none"> •What are the reproductive organs in plants? •How do plants reproduce? •What factors can help with plant reproduction? •the reactants in, and products of, photosynthesis • the dependence of almost all life on Earth on the ability of photosynthetic organisms • the adaptations of leaves for photosynthesis. •aerobic and anaerobic respiration in living organisms •Structure of the leaf •Transpiration stream •Guard cells, stomata and the control of reactants of photosynthesis in an out of a leaf. •Adaptations of leaf cells •Adaption of root hair cells 	<ul style="list-style-type: none"> •Reproduction in humans (as an example of a mammal) •Structure and function of the male and female reproductive systems, •Menstrual cycle, gametes, fertilisation, gestation and birth •The effect of maternal lifestyle on the foetus through the placenta •What is variation? •How can variation be continuous or discontinuous? •What is DNA? •What are chromosomes? •The importance of variation. •What are some genetic disorders and how do they come about? •Can we genetically modify humans to remove genetic disorders •Punnet squares 	<ul style="list-style-type: none"> •the structure and functions of the human skeleton •biomechanics – the interaction between skeleton and muscles, •the function of muscles and examples of antagonistic muscles. •compare the processes of aerobic and anaerobic respiration in plants, animals and micro-organisms with regard to the need for oxygen, the differing products and the relative amounts of energy transferred. •How the human body reacts to the increased demand for energy during exercise. •energy transferred by respiration in cells is used by the organism for the continual enzyme controlled processes of metabolism that synthesise new molecules. •the effects of recreational drugs (including substance misuse) on behaviour, health and life processes. 		<ul style="list-style-type: none"> •cells as the basic structural unit of all organisms; adaptations of cells related to their functions; the main sub-cellular structures of eukaryotic and prokaryotic cells •stem cells in animals and meristems in plants •enzymes •factors affecting the rate of enzymatic reactions •the importance of cellular respiration; the processes of aerobic and anaerobic respiration •carbohydrates, proteins, nucleic acids and lipids as key biological molecules. 		
Assessment	Pupils will be assessed through homework activities, lesson starter activities, end of Unit class tests and a range of required practicals aimed at assessing the pupils' practical abilities.						

John Taylor High School Home of the John Taylor Teaching School Hub		MAT		Subject Curriculum Map:		Chemistry		Year Group:		9	
Term		Rotation through Year 9						Summer 1		Summer 2	
Topic		Atomic structure		Acids & Alkalis		Chemical Reactions		Chemistry of the atmosphere			
Big Question		How is the periodic table arranged and what properties do different groups of the periodic table have?		What makes something acidic and is there a way to cancel it out?		How can I tell if a Chemical reaction has happened, and can I change the speed at which it happens?		Will knowledge of our atmosphere allow us to populate Mars in the future?			
Content		<ul style="list-style-type: none"> a simple model of the atom consisting of the nucleus and electrons, relative atomic mass, electronic charge and isotopes Electron configuration of the first 20 elements the number of particles in a given mass of a substance the modern Periodic Table, showing elements arranged in order of atomic number position of elements in the Periodic Table in relation to their atomic structure and arrangement of outer electrons properties and trends in properties of elements in the same group characteristic properties of metals and non-metals chemical reactivity of elements in relation to their position in the Periodic Table. Names of the groups on the periodic table Reactivity of the group 1 elements Reactivity of the group 7 elements Position and uses of the transition elements 		<ul style="list-style-type: none"> Can use simple checking of solutions with universal indicator to state if something is strong or weak acid Can give examples of strong and weak acids Can name 3 laboratory acids Can use simple checking of solutions with universal indicator to state if something is strong or weak alkali Can give examples of strong and weak alkalis Can name 3 laboratory alkalis Can neutralise an acid or alkali by using the opposite solution and checking against the pH of the resulting solution Can name some everyday examples of neutralisation Can recall the colours and values of the pH scale Can name salts formed by acid reactions Can write word equations for acid-based reactions Can select reactants to form a named salt Write a method for the formation of a soluble salt 		<ul style="list-style-type: none"> Recall a neutralisation reaction and name the products formed Identify a thermal decomposition reaction and write word and symbol equations Can carry out a test for Carbon Dioxide (with limewater) and identify the positive result of this test. Can formulate a reactivity series from results of displacement reactions Can write word equations (using reactivity series) for displacement reactions Metals are extracted from their ores using Carbon (Iron from Iron Oxide) Reactive metals are extracted from their ore using Electrolysis energy changes on changes of state (qualitative) exothermic and endothermic chemical reactions (qualitative). 		<ul style="list-style-type: none"> fractional distillation of crude oil cracking to make more useful materials extraction carbon compounds, both as fuels and feedstock, and the competing demands for limited resources evidence for composition and evolution of the Earth's atmosphere since its formation evidence, and uncertainties in evidence, for additional anthropogenic causes of climate change potential effects of, and mitigation of, increased levels of carbon dioxide and methane on the Earth's climate 			
Assessment		Pupils will be assessed through homework activities, lesson starter activities, end of Unit class tests and a range of required practicals aimed at assessing the pupils' practical abilities.									

 John Taylor High School Home of the John Taylor Teaching School Hub 		Subject Curriculum Map:		Physics		Year Group: 9	
Term	Rotation through Year 9					Summer 1	Summer 2
Topic	Magnets & Electromagnets	Current, Voltage & Resistance	Waves and Wave Properties		Energy Resources		
Big Question	How do magnets interact and why?	How is electricity used in the home?	What are some of the properties and uses of waves?		Why can't we have 100% efficiency		
Content	<ul style="list-style-type: none"> •magnetic poles, attraction and repulsion •magnetic fields by plotting with compass, representation by field lines •Magnetic field lines using iron filings •Earth's magnetism, compass and navigation •the magnetic effect of a current, electromagnets, D.C. motors (principles only) •Making an electromagnet •Altering the strength of an electromagnet •Uses of electromagnets •Reed switches, relay switches and an electric bell. 	<ul style="list-style-type: none"> •Drawing simple circuit symbols •Representing an electrical circuit with a circuit diagram •electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge •potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current differences in resistance between conducting and insulating components (quantitative). •Use of simulations to build circuits (Phet) •separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects •the idea of electric field, forces acting across the space between objects not in contact. 	<ul style="list-style-type: none"> •Properties of waves (amplitude, wavelength, frequency, time period) •Labelling a transverse wave •Labelling a longitudinal wave •Practically measuring the wavelength of a wave using a ripple tank •Measuring the speed of waves •Reflection and refraction of waves as they change medium •Regions of the EM spectrum •Properties and uses of electromagnetic waves •Using waves for communication 		<ul style="list-style-type: none"> •Name the 8 energy stores •Name the 4 ways to transfer energy •Recall and apply the formula for kinetic energy •Recall and apply the formula for gravitational potential energy •Calculate the efficiency of a system •Account for the losses in energy (thermal, vibrational) •Recall and apply the formula for elastic potential •Prove Hooke's law 		
Assessment	Pupils will be assessed through homework activities, lesson starter activities, end of Unit class tests and a range of required practicals aimed at assessing the pupils' practical abilities.						