



Subject: Y9 SCIENCE

<u>Autumn 1</u>		<u>Autumn 2</u>		<u>Spring 1</u>
1B- Cells	2P- Energy	3C- Atoms & the periodic table	4B- Movement in cells & Digestion	5P-Electricity
Eukaryotes & prokaryotes	Energy stores & systems	Atoms, elements & compounds	Diffusion	Charge, P.D and resistance $Q= It$
Culturing microorganisms	KE	Mixtures & separation (filtration & crystallisation)	SA:Volume	Current, resistance & P.D.
Animal & plant cells	EPE	Mixtures and separation (simple distillation, fractional distillation & chromatography)	Osmosis RP 3	Length of wire & resistance RP 3
Sizes & cells.	GPE	Development of the model of the atom	Osmosis	Combinations of resistors RP 3
Microscopes & magnification RP 1	Specific heat capacity	Development of the model of the atom	Active transport	Resistance in LDRs, filament lamp, diode, thermistors
Cell specialisation	SHC RP 1	Mid topic assessment	Mid topic assessment	LDRs
Cell differentiation	Power $P=E/t$ $P=W/t$	Structure of the atom	ORGANISATION. Cells, tissues, organs	Current & P.D. in filament lamp, diode & resistor RP 4
Investigating antiseptics on bacterial growth RP2	Conservation & dissipation of energy	Size of atoms & Isotopes	Digestive system	Series & parallel circuits- current & p.d
Microscopy & $I=AM$	Effectiveness of different thermal insulators RP 2	Relative atomic mass	Enzymes, lock & key, pH & temperature	Resistance in series & parallel circuits
Mid topic assessment	Efficiency	Electronic structure	Enzymes in digestion	Mid topic assessment
The cell cycle	National & global energy resources	Mid topic assessment	pH and effect on amylase RP 5	Domestic uses of electricity & safety
Mitosis	Revise	Structure of the periodic table	Bile & food tests RP4	Power $P=IV$ $P=I^2R$
Stem cells	CHECKPOINT ASSESSMENT 2	Mendeleev's periodic table	Food tests RP4	Energy transfer in everyday appliances $E=Pt$
Cloning	DIRT	Metals and non-metals	Revise	Energy transfer in everyday appliances $E=QV$
Revision	Intent: Energy is a fundamental unit of the universe that was first described scientifically in the 19 th century. These early concepts allowed the development of steam engines which went on to change the face of the Earth.	Group 0	CHECKPOINT ASSESSMENT 4	National grid
CHECKPOINT ASSESSMENT 1		Group 1	DIRT	Static electricity
DIRT		Group 7	Intent: In this section we will learn about the human digestive system which provides the body with nutrients and the respiratory system that provides it with oxygen and removes carbon dioxide. This topic also looks at food molecules in detail and how to test for different food molecules.	Electric fields
		Comparing transition metals to Group 1		Revise
		Typical metals of transition metals		CHECKPOINT ASSESSMENT 5
		Revise		DIRT
		CHECKPOINT ASSESSMENT 3		Intent: Our society today could not function without electricity. Knowing how it moves around the country and the different ways it can be used in our homes enables us to appreciate the impact on our everyday lives.
		DIRT		
		Intent: 3C- Understanding the building blocks of all matter and how knowledge evolves as theories are attempted to be proved or disproved using evidence.		



Spring 1	Spring 2	Summer 1	Summer 1/2	Summer 2
6c- Rate of reaction Calculating rate- amount of reactant Calculating rate- amount of product Factors affecting rate of reaction Investigating how concentration affects RoR- 2 methods RP 5 Investigating how concentration affects RoR- 2 methods RP 5 Collision theory & activation energy Investigating how surface area:volume affect RoR Catalysts Mid topic assessment Reversible reactions & dynamic equilibrium Energy change and reversible reaction Effect of changing conditions on equilibrium (HT) Effect of changing concentration on equilibrium (HT) Effect of changing temperature on equilibrium (HT) Effect of changing pressure on equilibrium (HT) Revise CHECKPOINT ASSESSMENT 6 DIRT Intent: 6C- All living things and most useful products come about from chemical reactions. Understanding how we can manipulate these enables us to create more useful products (or destroy harmful ones)	7B- Circulation in animals & plants Heart & lungs basic structure Blood vessels Blood Blood vessels and anatomy of heart (inc. pacemaker) CHD Links between health & disease Disease & risk factor analysis Risk factors & disease Cancer Mid topic assessment Plant tissues, organs & systems Transpiration & translocation (xylem & phloem) Root hair cells & Guard cells/stomata Factors affecting rate of transpiration Revise CHECKPOINT ASSESSMENT 7 DIRT Intent: Dissolved materials need to be moved quickly around the body in the blood by the circulatory system. Is this the same in plants? Damage to any of these systems can be debilitating if not fatal. Although there has been huge progress in surgical techniques, many interventions would not be necessary if individuals reduced their risks through improved diet and lifestyle.	8P- Particle model Solids, liquids & gases & densities Density regular solid object RP 5 Density irregular object RP5 Change of state Mid topic assessment Internal energy Temperature change & SHC RP? Change of heat and specific latent heat Particle motion in gas Pressure in gases Increasing pressure of a gas Revise CHECKPOINT ASSESSMENT 8 DIRT Intent: The particle model is widely used to predict the behaviour solids, liquids and gases and this has many applications in everyday life. It helps us to explain a wide range of observations and engineers use these principles when designing vessels to withstand high pressures and temperatures.	9C- Quantitative Chemistry Conservation of mass and balancing equations Relative formula mass Mass changes with gas products Uncertainty in measurements Mid topic assessment Moles (HT) Mass of reactants & products (HT) Moles to balance equations (HT) Limiting reactants (HT) Concentration of solutions Titrations % Yield Atom economy Calculating concentrations (HT) Calculating amount of substance (volume) Revise CHECKPOINT ASSESSMENT 9 DIRT Intent: 9C- In a world of finite resources, using chemical calculations can ensure we don't unnecessarily waste them.	10 B- Infection & response Communicable disease spread & effects on body Viral disease- Measles, TMV, HIV Bacterial disease- Salmonella, gonorrhoea Fungal & protist disease- rose black spot & malaria Human defence systems (non-specific & immune system) Mid topic assessment Vaccination Antibiotics & painkillers Discovery and development of drugs Monoclonal antibodies- how to make (HT) Uses of monoclonal antibodies (HT) Plant disease (HT) Plant ion deficiency & defences (physical, chemical & mechanical) Revise CHECKPOINT ASSESSMENT 10 DIRT Intent: Pathogens cause infectious diseases in animals and plants. They produce toxins that damage tissues and make us feel ill. How we can avoid diseases? How does our immune system destroy the pathogen and prevent disease. What part do antibiotics and vaccination play? And why is the overuse of antibiotics leading to big problems?



Assessment:

Mid topic assessment:

- These will be completed approximately midway through the topic (each is approximately 16 lessons).
- These will be peer or self-assessed to ensure immediate feedback
- An indicative grade will be provided
- The intent is to assess how well students have understood the first half of the new topic
- This informs both the teacher and student of areas for improvement for revision prior to the Checkpoint Assessment.

Checkpoint Assessment:

- These will be completed at the end of the topic (each is approximately 16 lessons).
- These will be teacher marked with feedback **within 3 days**
- A DIRT lesson focusing on individuals' areas of weakness
- An indicative grade will be provided
- The intent is to assess how well students have understood the topic and to identify strengths and weaknesses across the year group. This will inform RAG meetings
- This informs both the teacher and student of areas for improvement before their end of Year Exams/mocks.