**Curriculum Overview for Science**

**Year 9**

|  |  |  |
| --- | --- | --- |
| **Half Term 1: Biology, Chemistry and Physics Big Ideas** **Substantive Knowledge:**What classifies something as living; structure and organelles of simple plant/animal cells and bacterial cells; Functions of organelles; Differences between prokaryotes and eukaryotes; Hierarchical system of organisation; Structure of the digestive system and function; Structure of the respiratory system and function; How the respiratory and digestive system work together.; Structure and function of the reproductive systemsDefinitions of element, atom, ions, compound, mixture, molecule and isotopes; Identify how early and modern periodic tables are organised; Interpret the periodic table; Structure of the atom; The charge and mass of subatomic particles.Energy stores; Energy transfers; Useful and wasteful energy; Efficiency equationStandard units and power of ten; variables; understand accuracy, precision, resolution, repeatability, reproducibility**Disciplinary Knowledge:**Practical use of microscopesHow to calculate subatomic particlesDraw atomsDraw ionsIdentify useful and wasteful energiesCalculate efficiencyProduction and use of flash cards, revision cards and mind maps.How to convert unitsDrawing a table How to calculate a mean | Books | Skim readingDecoding – modelledEtymology of key terms |
| Speech | Cell, prokaryotic, eukaryotic, organelle, plant, animal, bacteria, tissue, organ, organ system, organism, organ system, neurone, impulse, reproductive, Element, Atomic weight, Atomic proton number, Atom, Nucleus, Subatomic particle, Proton, Electron, Neutron, Isotope, Relative atomic mass, Shell, Ion, Energy, Store, Transfer, system, System, chain, Sankey diagram, Insulation, heating, Line of best fit, scale, control |
| Checklist RTL | Recall – one for each science |
| Home | Preparation of revision cards for every lessonMemorising of revision cards for recall quiz – one for each science |
| **Half Term 2: Biology, Chemistry and Physics Big Ideas****Substantive Knowledge:**Structure and function of the reproductive systems; The relationships between genes, chromosomes and DNA; Theory of evolution in the context of plants and animalsDefinitions of element, atom, ions, compound, mixture, molecule and isotopes; Properties of mixtures; What reactants and products areContact and noncontact forcesunderstand what an anomaly is; understand what a line of best fit is; Non-linear, proportional, directly proportional graphs; understand what a trend is; understand what a gradient is**Disciplinary Knowledge:**How scientists work together to develop ideas.How to calculate subatomic particles; Draw atoms; Draw ionsDrawing force diagrams; Calculating resultant forces; Writing methods; Plotting data; Scaling an axis; Drawing a line of best fit; Calculating a gradient | Books | Skim readingDecoding – modelledEtymology of key terms |
| Speech | Gamete, haploid, DNA, double helix, adaptation, evolution, mixture, compound, properties, effervescence, observation, reactants products, equation, Useful, wasteful, efficiency, Variables, efficiency, accurate, Work, energy, transfer, Power, work, method, Power, Force, Resultant force, Balanced and unbalanced force, terminal velocity |
| Checklist RTL | Review sheet – one for each scienceEnd of unit assessment – one for each science |
| Home | Preparation of revision cards for every lessonReview sheet – for each scienceRevision for end of unit assessment – for each science |