SCIENCE FRAMEWORK – KS4

Grade		Knowledge and Understanding	Application of knowledge and understanding	Analyse, Interpret and evaluate Scientific ideas to make judgements and conclusions
11 (9)	A**	Recall, select and communicate complex knowledge and detailed understanding, e.g. Bio – describe how new species are formed through speciation. Chem - moles	Produces highly detailed descriptions and explanations of complex processes e.g. Recalls, uses and rearranges complex formulae to carry out calculations. Bio – I can describe and explain how meiosis can lead to variation. Chem - Using molar concentrations of solutions Explain the relationship between solutes, solvents, and solutions Phys – can draw ray diagrams for a variety of lenses	Analyses, interprets and critically evaluates a broad range of quantitative and qualitative evidence and use this to develop arguments and explanations. They can take into account the limitations of the evidence. Skilfully uses a wide range of methods to present evidence. Bio – I can plan and carry out an osmosis investigation, display the result effectively. I can measure and observe the changes to the potato. I can comment on which recording method is more suitable. I can improve the test and repeat it to assess the improvements. Chem - Amount of substance in relation to volumes of gases Phys – Can offer different theories for the origin of the universe.
10 (8)	A/A*	Recall, select and communicate complex knowledge and detailed understanding, e.g. Bio – describe how natural selection works. Chem - pH	Produces detailed descriptions and explanations of complex processes e.g. Recalls, uses and rearranges complex formulae to carry out calculations. Bio – I can describe and explain how meiosis works. Chem - Explain how the position of an element can be used to suggest properties of elements Phys – Can describe in detail the process of nuclear fission and fusion	Analyses, interprets and evaluates a range of quantitative and qualitative evidence and use this to develop arguments and explanations. They can take into account the limitations of the evidence. Skilfully uses a wide range of methods to present evidence. Bio – I can plan and carry out an osmosis investigation, display the result effectively. I can measure and observe the changes to the potato. I can comment on which recording method is more suitable. Chem - Empirical formula via practical results Phys – Can investigate he electrical properties of different devices
9 (7)	A	Recall, select and communicate knowledge and detailed understanding, e.g. Bio – describe how evolution works. Chem - balanced equations	Produces detailed descriptions and explanations of scientific processes e.g. Recalls, uses and rearranges complex formulae to carry out calculations. Bio – I can describe explain how a leaf is well adapted for gas exchange and photosynthesis. Chem - What happens to particles in a chemical reaction Phys – Can calculate pressure and explain its effects.	Analyses, interprets and evaluates a range of quantitative and qualitative evidence and use this to develop arguments and explanations. Use a range of methods to present data and evidence. Bio – I can plan and carry out an osmosis investigation, display the result effectively Chem - Apply group 1/7 reactivity practical's Phys – Can measure angles of reflection / refraction
8 (6)	BH	Can recall and correctly use complex scientific terms e.g. Bio – natural selection Chem - combustion reactions	Can apply knowledge and understanding of science in specific contexts, Can produce detailed descriptions and explanations. Can recall and use formulae to carry out calculations. Bio – I can describe how photosynthesis works and explain why it is important to a food chain. Phys - Can calculate resistance in a circuit	Analyses, interprets and evaluates a range of quantitative and qualitative evidence and use this to develop simple arguments and explanations. Use a range of methods to present data and evidence. Bio – Can carry out initial food tests and then suggest how to improve the test. Can link test results to theory about balanced diet. Chem - Calorimetry of fuels Phys – Can interpret oscilloscope readings to describe a sound wave
7 (5)	CH/BL	Can recall and correctly use complex scientific terms e.g. Bio – respiration Chem - particle model	Can apply knowledge and understanding of science, Can produce detailed descriptions and simple explanations. Can recall and use formulae to carry out calculations. Bio – I can describe photosynthesis and explain why it is important to a food chain. Chem - write and interpret chemical formulae	Analyse, interpret and evaluate quantitative and qualitative evidence. Draws conclusions consistent with the evidence and can use simple explanations for this evidence. Can design appropriate tables and graphs. Bio – Can carry out initial food tests and then suggest how to improve the test.

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			Phys – can describe the events depicted in d-t graphs	Chem – Distillation Phys – Can use data to demonstrate moments in balance
6 (4)	**C**	Can recall and correctly use scientific terms e.g. Bio – vacuole Chem - saturated solution	Can apply knowledge and understanding of science in general contexts, e.g. energy, particles, cells. Can produce detailed descriptions and simple explanations. Can select and use formulae to carry out calculations. Bio – I can describe photosynthesis and explain why it is important to plants. Chem - Characteristics of exothermic and endothermic changes	Analyse, interpret and evaluate quantitative and qualitative evidence. Draws conclusions consistent with the evidence and can use simple explanations for this evidence. Can design appropriate tables and graphs. Bio – Can use results from food tests to identify which food is 'healthier'. Chem - Metal extraction
5 (3)	**D**	Can recall and correctly use scientific terms e.g. Bio – mitochondria Chem - evaporation	Can describe scientific processes and is able to offer simple explanations, with guidance. Is able to select the correct units when measuring quantities. Bio – I can describe and explain what contributes and a healthy and diet and why it is important. Chem - Explain why global warming happens Phys – Can describe energy transfers of different devices	Interpret and evaluate limited quantitative and qualitative evidence from a narrow range of sources. Draws conclusions consistent with the evidence. Can design appropriate graphs and tables with support. Bio – Can carry out food tests to identify nutrients and describe a positive result. Chem - Trends in metal + acid reactions Phys – Can make measurements of voltage and current from circuits
4 (2)	**E**	Can recall and correctly use scientific terms e.g. Bio – cell wall Chem - neutralisation	Can describe scientific processes and is able to offer simple explanations, with guidance. Is able to select the correct units when measuring quantities. Bio - I can describe photosynthesis and give the word equation. Chem - How to filter a mixture Phys – Can calculate speeds of different objects	Interpret and evaluate limited, simple quantitative and qualitative evidence from a narrow range of sources. Draws simple conclusions from graphs and tables. Bio - Can use a microscope and identify key parts. Can make and label simple drawings of observations. Chem - Displacement practical's Phys – Can build simple circuits
3 (1)	**F/G**	Can recall and use simple scientific terms e.g. Bio - stomach Chem - diffusion.	Can describe scientific processes and is able to offer simple explanations, with guidance. Is able to select the correct units when measuring quantities. Bio – I can describe simple diffusion and explain why it happens. Chem - What happens in endothermic and exothermic changes. Phys – can describe the effect of changing current in a circuit	Interpret and evaluate limited, simple quantitative and qualitative evidence from a narrow range of sources. Draws simple conclusions with guidance. Bio – Can use a microscope and identify key parts. Can make simple drawings of observations. Chem - Use universal indictor to find pH Phys – Can set up experiments to show reflection / refraction
2		Can recall and use simple scientific terms e.g. Bio – cell Chem - chemical reaction	Can describe scientific processes. Is able to select the correct units when measuring quantities. Bio – I can describe simple diffusion Chem -Decomposition reaction Phys – Can describe effect of balanced / unbalanced forces	Uses simple data and evidence to draw conclusions with prompts. Uses tables and graphs to identify patterns and trends. Bio – Can use a microscope and identify key parts. Chem - Use the correct size measuring cylinder Phys – Can identify planet positions from simple data
1		Can correctly use key words from a list to complete sentences / label diagrams. Bio – nucleus, stomach Chem - solid, liquid, gas Phys – Particles, heat, light	Can identify and describe a simple scientific process, e.g. Bio – identify diffusion taking place. Chem - Materials are made up of particles Phys – Can identify solids, liquids, gases	Can follow simple instructions. Can select correct equipment. Can fill in a results table. Able to identify simple patterns. Bio – Can use a microscope. Chem - Use a Bunsen burner safely Phys – uses a newton meter to measure the size of forces