Subject: Year 8 Science

	Year 8 - Emerging	Year 8 - Secure	Year 8 - Exceeding
Term 1	**Students should be able to:** • Describe some examples of different types of chemical reaction • Use an indicator to identify solutions as acid, alkali or neutral • Use observations from chemical reactions to place metals in an order of reactivity • Use appropriate scientific language to communicate ideas • Identify the variable being investigated • Describe the purpose of photosynthesis • Describe how to test a leaf for starch • Recall the components of a healthy diet and give examples • Describe the function of the components of a healthy diet and consequences of an unhealthy diet • Name the organs of the digestive system and the pathway food takes • Identify evidence for a specific claim • Identify when repeat readings are different	**Students should be able to:** • Describe known chemical reactions using word equations and apply the principle of conservation of mass • Explain the use of neutralisation reactions in everyday life • Place an unfamiliar metal into the reactivity series based on information about its reactions. • Use scientific and mathematical symbols to communicate ideas • Identify variables using technical language (independent/dependent/control) • Recall the word equation for photosynthesis • Describe ways in which plants obtain resources for photosynthesis • Describe the function of the organs of the digestive system • Define digestion • Explain the health problems cause by unhealthy diets, including obesity, diabetes. • Describe the function of enzymes, including enzymes involved in digestion. • Distinguish between evidence for a claim and opinion • Given reasons for differences in repeat readings	**Students should be able to:** • Given chemical formulae, name the elements present and their relative proportions. • Describe known chemical reactions using balanced symbol equations and applying the principle of conservation of mass • Predict the products of a chemical reaction • Use particle diagrams to show what happens in a chemical reaction • Present abstract ideas or arguments using diagrams or data to clearly communicate • Suggest better ways to control variables • Suggest conditions that could alter the rate of photosynthesis and plant growth • Explain adaptations of the leaves and roots for photosynthesis • Link diffusion and respiration to the digestive system • Explain how the structures of the digestive system are adapted to their function, including enzyme production and how diffusion is involved • Evaluate claims for a food product or diet by analysing nutritional information • Evaluate evidence for or against a specific claim • Suggest ways to change a method to improve the repeatability of the results
Term 2	**Students should be able to:** • Recall the three rock layers inside the Earth, the crust, mantle and the core • Describe the formation of the three types of rock, sedimentary, metamorphic and igneous • Describe the structure of the solar system to include the order of the planets • Recall some properties of light e.g. travels through a vacuum, can be reflected, refracted, absorbed, transmitted • Draw an accurate ray diagram of reflection • Describe some properties of sound waves e.g. speed, travel through different mediums • Draw a simple conclusion from data • Draw a bar chart or line graph	**Students should be able to:** • Describe the difference between weathering and erosion • Explain how sedimentary, igneous and metamorphic rocks can be inter converted over millions of years through weathering and erosion, heat and pressure, and melting and cooling through the rock cycle • Apply ideas about the Earth's position and movement to explain daylength, years, seasons and visibility. • Draw an accurate ray diagram of refraction • Use ray diagrams to describe how colours are seen • Describe properties of sound waves to include frequency, wavelength and amplitude • Explain how sound waves travel using the ideas of longitudinal waves • Compare the properties of light and sound waves • Draw conclusions based on more than one piece of evidence • Draw a line graph with appropriate scales and accurately plotted points	**Students should be able to:** • Explain why a rock has a particular property based on how it was formed • Describe similarities and differences between the rock cycle and everyday physical and chemical processes • Explain the relevance of solar system in our galaxy and the Universe. • Explain the law of refraction in terms of the density of the material light passes through • Explain observations where coloured lights are mixed or objects are viewed in different coloured light • Explain how lenses can be used to correct vision • Use diagrams to compare waveforms of different instruments playing different pitches or volumes • Explain observations of how sound waves are transmitted or absorbed by materials • Suggest scientific explanations for conclusions drawn from evidence • Draw a line graph with a correct line/curve of best fit
Term 3	**Students should be able to:** • Describe how species are adapted to a particular environment • Describe the effects of global warming • Identify characteristics as being inherited or environmental, continuous or discontinuous • Describe the functions of the main organs and tissues within the male and female reproductive system • Identify key events on a diagram of the menstrual cycle • Describe methods of pollination and seed dispersal • Identify the parts of a flower involved in plant reproduction • Draw a simple conclusion from data • Draw a bar chart or line graph	**Students should be able to:** • Explain the adaptions of plants and animals and why one species may adapt better to environmental change • Explain how global warming can lead to the extinction of species • Describe the structure of DNA and how it was discovered • Explain the adaptations of the sperm, egg and ciliated cells • Use a diagram to show the stages in development of a foetus from the production of sex cells to birth • Explain how a plants adaptation for seed dispersal link to its method of seed dispersal • Describe the function of the tissues of a plant involved in plant reproduction • Draw conclusions based on more than one piece of evidence • Draw a line graph with appropriate scales and accurately plotted points	**Students should be able to:** • Predict the implications of a change in the environment on a population • Predict the effects of cigarettes, alcohol or drugs on the developing foetus • Make deductions about how contraception and fertility treatments work • Explain the similarities and differences between wind and insect pollinated plants • Suggest how plant breeder use knowledge of plant reproduction to carry out selective breeding • Suggest scientific explanations for conclusions drawn from evidence • Draw a line graph with a correct line/curve of best fit