**Subject: Science**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Year 8 - Novice** | **Year 8 - Capable** | **Year 8 - Expert** |
| **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 |