**Subject: Science**

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|  | **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
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| **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
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| **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
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