



YEAR 7

This term, your child will learn about reactions, energy and electromagnetism.

Reactions

Pupils will carry out practical activities to help them identify the signs of a chemical reaction. This will lead them into their lessons on acids and alkalis. Pupils will learn about indicators, pH and the strength of acids. During this unit they will also carry out a neutralisation practical in which they will react an acid and an alkali to make a salt and water. The reactions unit also teaches pupils about elements with a specific focus on metals and their reactions with acids, water and oxygen. Pupils are introduced to the concept of displacement reactions.

Energy

Energy makes the world go around and pupils are introduced to the idea of food as a fuel. They will deepen their knowledge of the resources that can be used to generate electricity and weigh the pros and cons of each of them. Pupils are also introduced to the law of conservation of energy. This tells us that energy is never really used up it just moves from one type of energy store to another.

Electromagnetism

The electromagnetism unit segues very nicely from the energy unit and pupils will learn about charge and current and their intrinsic link. While learning about potential difference and resistance our pupils will apply their knowledge to build series and parallel circuits and explain the observations that they make.

YEAR 8

This term, your child will study the breadth of the three sciences and will deepen their knowledge of electromagnetism, energy, reactions and genes. These units build from those studied in year 7.

Electromagnetism

In electromagnetism pupils will learn about magnets and their magnetic fields. They will plot the magnetic field of a bar magnet and be able to describe how the poles of magnets interact with each other. Electromagnets are also studied in this unit and pupils will build their own electromagnets and be able to describe how to make their magnet stronger. Pupils will apply their knowledge to explain the uses of electromagnets.



Energy

In their second unit on energy our year 8 pupils will learn about work and energy. Here they will study simple machines and be able to explain how simple levers are used to carry out tasks to reduce the amount of force that is needed to be applied. Pupils will be able to explain the difference between energy and temperature. They will study the ways in which heat is transferred through substances we hope that they remember that hot air rises not heat.

Reactions

Reactions develops the knowledge gained from the first reactions unit in year 7. Pupils will study varying chemical reactions such as combustion and thermal decomposition. In these reactions they will learn what happens to the atoms in a chemical reaction and apply the law of conservation of mass. We will look at the difference between exothermic and endothermic reactions and how to interpret energy level diagrams for these reactions. We also calculate the energy released in reactions by completing bond energy calculations.

Genes

We study evolution by natural selection, the work of Charles Darwin and the factors that lead to extinctions and what we can do to preserve the amazing biodiversity of our planet. Pupils will gain an appreciation that the evolution of a species is a very long process and an understanding of the myriad of evidence that support the theory. They will explore where common misconceptions can arise and articulate why these are not the case. The discovery of DNA and more so the continued study of this fascinating molecule has helped to bolster our understanding of evolution. Just as fascinating as evolution is the understanding of how we, as individuals, inherit the features and characteristics that we have. This units helps pupils to understand the inheritances of physical characteristics. Classify characteristics as inherited or environmental. T he importance of DNA in the process of inheriting characteristics and the benefits to society of a greater understanding of genes and genetic modification. We will also consider the ethics of such science and when it should not be used.



YEAR 9

This term, your child will have a huge focus on biology. Specifically, they focus on cell biology and transport in and out of cells.

Over the course of this term our pupils will acquire new knowledge and vocabulary to describe cells. They will revisit the difference between animal and plant cells. Prepare a plant cell slide and use a microscope to observe the cell at different magnifications and be able to calculate the length of that cell. They will be taught the difference between eukaryotic and prokaryotic cells.

There are numerous types of cells in plants and animals and our pupils will learn about cell specialisation. They will know the structure and function of specific specialised cells such as red blood cells, sperm cells and ova.

The movement of substances in biology is broken down into three areas: diffusion, osmosis and active transport. Our pupils will learn about all three of these before being able to compare and contrast them and give an example of where the process takes place.

The cell cycle and mitosis are studied in this term too. Pupils will use this knowledge to compare how plants and animals grow. This leads very nicely onto their study of stem cells. Pupils will learn what stem cells are, where they are found in the body and uses of stem cells including therapeutic cloning. The ethics of the use of stem cells is also taught to pupils.