Subject: *Science*

Department Staff – Mr B Joshua, Mrs M Anthony, Mrs C Bahl, Ms P Burns, Miss B Desir, Mr A Hope, Mr A Kutten, Miss C O'Brien, Miss A Patel

Year 8 - Autumn Term 2010

Contents : what you will study

Food & digestion

An introduction to food and digestion: the seven food types and they use in the human body, diets around the world, a balanced diet and healthy eating. The digestive process in humans and an introduction to enzymes.

Building blocks

Atoms as the building blocks of chemical compounds. What atoms are and the periodic table. The use of symbols to represent atoms. The differences between metals and non-metal's. Chemical changes, word equations and symbols.

Energy transfers

The different types of energy and how one type can be converted into one or more other types of energy. How heat is transferred through materials: contraction, convection, radiation, and evaporation.

Respiration

How cells use respiration to get energy. The raw materials, glucose and oxygen, and the products, water and carbon dioxide. How these materials are transported to and from the cells by the circulatory system. The structure of the lungs and gas exchange.

Reactions and mixtures

How to represent atoms in molecules using balls of different colours as models. The difference between a chemical change and a physical one. In a chemical change new molecules are made. The difference between a mixture and a compound. Using word (and symbol) equations to represent chemical reactions.

Forces and Transport

Understand what drag is and how to reduce it. Know how to calculate pressure and understand how pressure depends on the size of a force and the area it is pushing on. Know how to make an electromagnetic and understand what variables affect its strength. Explain what a lever is and give some examples.

National Curriculum levels at which you will work

Level 4 to 6:

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Skills which you will develop this term:

Explain how different foods are broken down in the body and the role of enzymes in this.
Understand the structure of atoms and the use of symbols to represent them.
Molecules: how to represent them by models and how to explain chemical reactions using word and symbol equations.
Measure energy and energy transfers.
Explain how and where respiration takes place in the body and the reactants and products of respiration, how these materials are taken in, transported around the body and how the products are removed.
How to model different molecules.
How to write word and symbol equations to represent chemical reactions.
How to show magnetic lines of force and make an electromagnet.

Assessment: how you will be tested this term

End of module test (internal – during lessons)
Home works and practice modular exams.

Equipment which you will need for this terms work

Classroom materials – pen, pencil, ruler, calculator etc.

Key words which you will need to learn for this term's work

Food & digestion

Amino acid, balanced diet, carbohydrate, cholesterol, colon, digestion, digestive system, enzyme, fat, fatty acid, fibre, glucose, glycerol, ileum, intestine, junk food, mineral, obesity, oesophagus, pancreas, protein, rickets, roughage, scurvy, starch, vitamin.

Building blocks

Atom, boiling point, compound, conduct electricity, conduct heat, ductile, electrons, element, filament, inert, malleable, mass, melting point, metal, molecule, neutrons, non-metal, pressure, protons, pure, sonorous, substance.

Energy transfers

Conduction, convection, energy, evaporation, expand, global climate change, insulation, insulator, radiation, temperature, temperature difference.

Respiration

Aerobic, alveolus (plural alveoli), anaerobic, artery, asthma, bronchitis, bronchioles, bronchus (plural bronchi), capillary, cellular respiration, defuse, emphysema, energy, glucose, haemoglobin, lactic acid, plasma, respiration, trachea, vein.

Reactions and mixtures

Atom, combustion, composition, compound, decomposition, distillation, ductile, element, enzyme, formula, malleable, metal, mixture, non-metal, oxidation, precipitate, portion, pure. AND the names of common elements in the periodic table plus: bromide, carbonate, chloride, dioxide, hydroxide, iodide, nitrate, sulphate, sulphite.

Forces and Transport

Pivot, fulcrum, electromagnet, lever, compass, magnet, repel, attract, Pascals, pressure, drag, streamlined, air resistance.

Key words are explained in the glossary at the back of the text book.

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Year 8 - Spring Term 2011

Contents: what you will study

Micro-organisms and disease

The structure and methods of reproduction in viruses and bacteria and how these can be compared to 'living things' using MRS GREN. How micro-organisms enter our bodies and affect us. How our bodies defend us against infection by preventing the micro-organisms entering and killing, removing or fighting them if they do get in. How we use vaccination to help our bodies defend themselves.

Water

Recall the words used to describe mixtures and solutions. Describe and explain how filtering works. Use ideas about particles to explain what happens when a solid dissolves. Explain what a saturated solution is. Describe how salt can be obtained from water or from mines. Describe chromatography. Explain distillation.

Light

We see things because light is reflected from objects into our eyes. What happens to light when it passes through some materials and when it is reflected from materials. How light travels in straight lines and why this produces shadows.

National Curriculum levels at which you will work

Level 4 to 6

Skills which you will develop this term:

Relate diseases to their causes. Understand how to reduce infection by micro-organisms. Be able to tell the difference (scientifically) between living and non-living things. Be able to explain how the body protects itself from micro-organisms.
Explain how rocks are formed and the nature of the "Rock cycle".
Plan and carry out practical work. Draw the results of light experiments and measure the angles involved. Predict light paths.

Assessment: how you will be tested this term

End of term tests (Autumn and Spring)
Home works and classwork.
APP tasks.

Equipment which you will need for this term's work

Classroom materials – pen, pencil, ruler, calculator etc.

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Micro-organisms and disease
Antibiotic, antibodies, bacterium (plural - bacteria), bone marrow, DNA (Deoxyribonucleic acid), fungus, inflammation, infection, lymph system, micro-organisms, penicillin, platelets, smallpox, sphygmomanometer, thymus gland, variolation, virus, white blood cells, yeast.

Water
Distillation, solvent, solution, solute, dissolve, particles, chromatography, substances, mixture, salt, evaporate, solubility, filtering, saturated, soluble, insoluble.

Light
Absorption, angle of incidence, angle of reflection, dispersion, filter, image, input variable, law of reflection, lens, normal line, opaque, output variable, photograph, prism, ray, reflection, refraction, scattering, source (light), spectrum, transparent, vibrations.

Key words are explained in the glossary at the back of the text book.

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Year 8 - Summer Term 2011

Contents: what you will study

Ecological relationships

How the human population has grown over the past 10,000 years and how population is determined by birth rate and death rate and the factors which affect these. Predator/prey relationships and how prey protect themselves from predators. Feeding relationships and how to use pyramids of number and biomass.

Driving the rock cycle

How to identify different rocks and types of rocks. The names and characteristics of some common rocks. How sedimentary, igneous and metamorphic rocks are formed and how this relates to the Rock Cycle.

Sound & music

Sound passes through gases, solids and liquids as vibrations. How sounds are produced and heard. The structure and function of the ear. Looking at sound and vibrations using oscilloscopes and characterising types of sound with their oscilloscope shapes.

National Curriculum levels at which you will work

Level 4 to 6:

Skills which you will develop this term:

Describing and comparing the relationships between animals and plants in food webs.
Learning to identify the characteristics of rocks and rock types.
Using oscilloscopes to represent the pattern of sounds and how to characterise the sound using frequency, amplitude and wavelength.

Assessment: how you will be tested this term

End of module test (internal – during lessons)
Home works and practice modular exams.
End of Year Examination.

Equipment which you will need for this term's work

Classroom materials – pen, pencil, ruler, calculator etc.

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Key words which you will need to learn for this term's work

Ecological relationships

Adapt, adaptations, camouflage, food chain, food web, habitat, insecticide, population, predator, prey, pyramid of biomass, pyramid of number, toxic.

Driving the rock cycle

Basalt, cementation, compression, continental crust, dyke, earthquake, erupt, fossil, fragmentation, granite, igneous, lava, limestone, magma, mantle, metamorphic, oceanic crust, plume, sedimentary, sedimentation, sill, strata, tectonic plate, volcanoes.

Sound & music

Amplitude, audible frequency range, cochlea, decibel, eardrum, frequency, hertz, kilohertz, loudness, medium, megahertz, oscilloscope, pitch, reflection, retina, small bones, ultrasound, vacuum, vibration, wave.

Key words are explained in the glossary at the back of the text book.