

Subject: Science

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

Year 7 - Autumn Term 2010

During Year 7 you will study 12 Science topics, 4 Biology, 4 Chemistry and 4 Physics. Each class will cover the topics on rotation so you may not be studying the same topic as another Year 7 class at the same time.

Contents: what you will study

Introduction to Science

How to be safe in a Science lab. Recognising and naming the apparatus. How to plan an investigation and carry it out to achieve reliable results. How to analyse data and evaluate the results.

Topic 1 Tissues and transplants:

The basic building blocks of life. How plant and animal cells are different and how similar they are. What a tissue is and how cells divide. Organ transplants and how different organs are important to the body.

Topic 2 Acids and Alkalis

What acids and alkalis are. Acids can cause permanent changes in materials. Acids and alkalis can both be dangerous. They are measured on the pH scale, which tells us how strong they are. Indicators change colour in acids and alkalis. When acids react with alkalis (and bases) they form salts in neutral solutions (neutralisation) which have a pH of 7.

Topic 3 Energy and fuels

What are fossil fuels. How we can use less fossil fuels. What other energy resources are available such as nuclear power and renewable energy resources. Discuss the advantages and disadvantages of all the energy resources. What bio-diesel and bio-fuels are. How do we get our energy and how do plants get their energy.

Topic 4 Reproduction

What is internal and external fertilisation. The physical processes involved in human reproduction: The production of sex cells, the growth and development of the foetus, physical changes occurring in humans during growth and puberty.

National Curriculum levels at which you will work

Level 4 to 6:

Skills which you will develop this term:

How to look at cells and tissues.

How to recognise the hazards associated with chemicals and how to be safe when dealing with dangerous chemicals.

How to carry out a neutralisation reaction and use pH indicators.

How to evaluate the advantages and disadvantages of the different energy resources.

Understand the human reproductive cycle.

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Assessment: how you will be tested this term

End of topic tests completed during lessons

Classwork and homework

Equipment which you will need for this terms work

Classroom materials – pen, pencil, ruler, calculator, colouring pencils, eraser.

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

Introduction to Science

Prediction, variable, measuring cylinder, beaker, thermometer, conclusion, evaluation, analysis, data, independent, dependent, results, graph, test-tube, hazards.

Topic 1 Tissues and transplants:

Organ, tissue, function, intestine, liver, gullet, brain, stomach, microscope, specimen, magnification, nucleus, cytoplasm, membrane, chlorophyll, chloroplast, cellulose, vacuole, adapted, xylem, division, circulatory system, excretory system.

Topic 2 Acids and Alkalis

Irritant, harmful, alkalis, acid, sulphuric acid, nitric acid, hydrochloric acid, concentrated, corrosive, preserve, litmus, neutral, universal indicator, neutralisation, pH scale, chemical reaction, antacids, dilution,

Topic 3 Energy and fuels

Energy, fossil fuel, coal, oil, methane, natural gas, non-renewable, biomass, renewable, nuclear power, uranium, geothermal, solar, hydroelectric, bio-diesel, bio-fuel, joules, kilojoules, photosynthesis, waste, chemical, tidal power.

Topic 4 Reproduction

Egg cell, embryo, fertilisation, foetus, hormones, intercourse, menstruation, offspring, oviduct, fallopian tube, placenta, puberty, reproduction, sperm cell, testis, umbilical cord, uterus, vagina.

Key words are explained in the glossary at the back of the textbook.

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Year 7 - Spring Term 2011

Contents: what you will study

Topic 5 Chemical reaction:

How you know when a chemical reaction has happened. Explain the difference between a chemical and physical change. Name different types of chemical reactions. Describe how acids can react with metals. Test a gas to see if it is carbon dioxide, hydrogen or oxygen. Learn how to write word equations for simple chemical reactions.

Topic 6 Electrical Circuits

Recall the rules for using electricity safely. Explain what is needed to make an electric current flow. Explain what an insulator and a conductor are. Learn how to measure the current in a circuit. Explain what resistance is. Know what the parts of a plug are and their function. Describe what a series and parallel circuit are.

Topic 7 Environment

Recognise how organisms are adapted to their habitats. Explain how organisms are adapted to cope with seasonal and daily changes. Understand how animals are adapted to feeding. Learn how to draw and explain food chains and food webs.

Topic 8 The Particle Theory.

Name the three states of matter and classify substances as one of the three states of matter based on their properties. Understand what the particle theory is and use it to describe how materials have different properties depending on how their particles are arranged. Describe what diffusion is and why is it faster in gases than liquids. Explain how gases cause pressure.

Topic 9 Forces and their effects

Describe what forces do, explain how to measure forces. Explain the difference between mass and weight. Explain what friction is and to control it. Explain what upthrust. Learn how to calculate the density of a material. Understand what happens to an object that has balanced or unbalanced forces working on it. Learn how to interpret distance-time graphs and how to calculate speed.

National Curriculum levels at which you will work

Level 4 to 6:

Skills which you will develop this term:

How to carry out chemical reactions and how to recognise if a chemical reaction has taken place.

How to test a gas to identify it as hydrogen, oxygen or carbon dioxide.

How to use an ammeter.

How to set up series and parallel circuits.

How to wire a plug.

Be able to classify a substances based on it properties and how to explain the properties of the material based on its particle arrange.

Learn how to interpret a distance-time graph and calculate speed.

How to use a force meter.

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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, colouring pencils, eraser.

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

Topic 5 Chemical reaction:

Fizzing, decompose, observations, irreversible, physical, chemical, carbon dioxide, hydrogen, oxygen, product, reactant, oxides, equation, fire extinguishers, flammable, precipitation, carbonate, fuel, hydrocarbon.

Topic 6 Electrical Circuits

Series, parallel, ammeter, resistance, fuse, earth wire, neutral wire, live wire, electricity, appliance, voltage, amps, components, insulator, conductor, current, electron, power packs.

Topic 7 Environment

Carnivore, herbivore, food web, food chain, energy, ecology, microhabitat, adaptation, hibernation, migration, deciduous, evergreen, parasite, predator, prey, producer, decomposers, omnivores, competition, pooters.

Topic 8 The Particle Theory.

Particles, solids, liquids, gases, diffusion, density, volume, compress, flow, pressure, properties, vacuum, observations, random, arrangement, syringe, melting, expansion, condensing, theory, vibrate.

Topic 9 Forces and their effects

Accelerate, air resistance, speed, balanced forces, unbalanced, upthrust, weight, mass, friction, gravity, drag, density, flowing, sinking, distance, time, units, calculation, buoyancy.

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

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Year 7 - Summer Term 2011

Contents: what you will study

Topic 10 Classification and variation

Describe some differences between species and members of the same species. Understand what is continuous and discontinuous variation. Learn how inherited variation is caused and how the environment can effect variation. Learn how to classify organisms into groups based on variations in their features. Recall the main features of amphibians, fish, birds, mammals and reptiles.

Topic 11 Rocks and the Earth

Describe the properties of the three types of rocks, understand how to classify a rock into one of the three types. Learn how the three types of rocks are formed. Explain what chemical and physical weathering is and their effects on rocks.

Topic 12 The Solar System and beyond.

Recall the lengths of days, months and years. Describe a model which explains why we have days, nights and years. Describe what a satellite is. Explain why does the shape of the moon seem to change as it moves around the Earth. Explain that we have different seasons because the Earth is tilted. Explain the arrangement of the planets and asteroids in the Solar System. Describe what a star is and what a constellation, galaxy, Milky Way and Universe is,

National Curriculum levels at which you will work

Level 4 to 6:

Skills which you will develop this term:

How to classify organisms based on their features.

How to use a key to classify organisms.

How to measure variation between organisms.

How to classify rocks into one of the three types.

Recognise signs of weathering.

Understand the reason we have day and night, the different seasons and the different phase of the moon.

Assessment: how you will be tested this term

End of topic tests completed during lessons

Classwork and homework

End of year Examination

Equipment which you will need for this term's work

Classroom materials – pen, pencil, ruler, calculator, colouring pencils, eraser.

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

Topic 10 Classification and variation

Differences, species, continuous, discontinuous, variation, environment, inherited, classify, classification, organisms, features, amphibians, fish, birds, mammals and reptiles.

Topic 11 Rocks and the Earth

Properties, igneous, sedimentary, metamorphic, weathering, physics, chemical, pressure, melting, fossils, biological weathering, freeze-thaw, deposited, transported, cementation, cement, limestone, granite, chalk.

Topic 12 The Solar System and beyond.

Satellite, moon, gravity, planets, seasons, tilted, asteroids, Solar System, star, constellation, galaxy, Milky Way, Universe, temperature, atmosphere, comets, dwarf planets, hemisphere.

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