

Year 10 Parent guide to Science

GCSE Science

Term	Topic taught	External exams
Autumn	B1,C1, P1, B2,C2,P2	January - Paper 1 B1,C1, P1 January - Paper 2 B2,C2,P2
Spring	B3, C3,P3 Pre-release	
Summer	B3, C3,P3 P4 , C4, B4 / Case Study coursework	June - Pre release Paper 4 June - Paper 3 - B3, C3,P3

Separate Science: - GCSE Biology, GCSE Chemistry, GCSE Physics

Term	Topic taught	External exams
Autumn	Biology:- B1,B2,B3 Chemistry:- C1,C2,C3 Physics:- P1,P2,P3	Jan - Biology Paper 1 :- B1,B2,B3 Jan - Chemistry Paper 1 :- C1,C2,C3
Spring	Biology – Data analysis and Case Study coursework. Chemistry – C6 Physics:- P3 and P5	
Summer	Biology unit B4. Chemistry: - Investigation coursework. Physics: - Investigation coursework.	June - Physics Paper 1:- P1,P2,P3

Topic	Learning objectives	Homework/ Assessment tasks
<p>B1 You and Your Genes</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Biology Topic</p>	<p>How do my genes affect my appearance, my body, and my health?</p> <p>What are genes and how do they affect the way that living organisms develop?</p> <p>Why can people look like their parents, brothers or sisters, but not be identical to them?</p> <p>How and why do people find out about their genes? What decisions do people make with this information?</p> <p>How can and should genetic information be used?</p> <p>Can we change our genes, and should this be allowed?</p> <p>How can we use our knowledge of genes to prevent disease?</p> <p>What is cloning, and should it be allowed? What are stem cells, and why could they be useful in treating some diseases?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>B2 Keeping Healthy</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Biology Topic</p>	<p>Why do I catch some diseases but not others? How do our bodies resist infection?</p> <p>Why are we encouraged to have vaccinations? What are vaccines, and how do they work?</p> <p>Why won't the doctor give me an antibiotic when I catch a cold?</p> <p>What are 'superbugs'? What are antibiotics, and why can they become less effective?</p> <p>How do drug companies make sure a new drug is as safe as possible?</p> <p>How are new drugs developed and tested?</p> <p>How can my lifestyle affect my health? What factors increase</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

	the risk of heart disease?	
Topic	Learning objectives	Homework/ Assessment tasks
<p>B3 Life on Earth</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Biology Topic</p>	<p>Where did life on Earth come from? How did life on Earth begin and evolve?</p> <p>Is evolution ‘just a theory’? How have scientists developed explanations of evolution?</p> <p>How do some species survive?</p> <p>Why do some species become extinct, and does it matter?</p> <p>How did humans evolve?</p> <p>How are our nervous systems organised?</p> <p>What is the importance of biodiversity?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>C1 Air Quality</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Chemistry Topic</p>	<p>How do I make sense of data about air pollution?</p> <p>What chemicals make up air, and which ones are pollutants?</p> <p>Where do pollutants come from? What chemical reactions produce air pollutants?</p> <p>Is air pollution harmful to me or my environment?</p> <p>What happens to pollutants in the atmosphere?</p> <p>How can we improve air quality? What choices can we make personally, locally, nationally or globally to improve air quality?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>C2 Material Choices</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Chemistry Topic</p>	<p>How can we pick a suitable material for a particular product or task?</p> <p>What different properties do different materials have?</p> <p>Why is crude oil important as a source of new materials such as plastics and fibres?</p> <p>Why does it help to know about the molecular structure of materials such as plastics and fibres?</p> <p>When buying a product, what else should we consider besides its cost and how well is does its job?</p> <p>How should we manage the wastes that arise from our use of materials?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>C3 Food Matters</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Chemistry Topic</p>	<p>Is organic food better for us? What is the difference between intensive and organic farming?</p> <p>What are food additives, and why are they used?</p> <p>Why are chemicals deliberately added to food?</p> <p>Are food additives safe to eat? How can we make sure that our food does not contain chemicals that may be harmful to health?</p> <p>Why can it be harmful to eat too much sugary food?</p> <p>Why does what we eat affect our health?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>P1 The Earth in the Universe</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Physics Topic</p>	<p>Is there life elsewhere in the Universe?</p> <p>What do we know about the Earth and space?</p> <p>Why do mountains come in chains, in particular places?</p> <p>Can we predict earthquakes, especially those that are likely to cause most damage?</p> <p>How have the Earth's continents moved, and with what consequences?</p> <p>Could the human race be destroyed by an asteroid colliding with the Earth?</p> <p>What will happen to the Earth and the Sun?</p> <p>What is known about stars and galaxies?</p> <p>What do we know about the Universe?</p> <p>Where do the elements of life come from?</p> <p>How do scientists develop explanations of the Earth and space?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>P2 Radiation and Life</p> <p>12 lessons</p> <p>GCSE science topic and GCSE Physics Topic</p>	<p>What is radiation? What types of electromagnetic radiation are there? What can happen when radiation hits an object?</p> <p>Is it safe to use mobile 'phones? Is it safe to sunbathe?</p> <p>Which types of electromagnetic radiation harm living tissues and why? What ideas about risk do citizens and scientists use?</p> <p>Are there any benefits from radiation? How does electromagnetic radiation make life on Earth possible?</p> <p>What is global warming, and what can be done to prevent or reduce it? What is the evidence for global warming, why might it be occurring, and how serious a threat is it?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>P3 Radioactive materials 12 lessons</p> <p>GCSE science topic and GCSE Physics Topic</p>	<p>What does 'radioactive' mean? Why are some materials radioactive?</p> <p>If radiation from radioactive materials is dangerous, how can it help to cure cancer?</p> <p>What are the health risks from radioactive materials?</p> <p>How can radioactive materials be used and handled safely, including wastes?</p> <p>Do we need nuclear power? How can electricity be generated?</p> <p>What can be done with nuclear waste?</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>B4 Homeostasis 12 lessons</p> <p>GCSE additional science topic and GCSE Biology Topic</p>	<p>B4.1 What is homeostasis?</p> <p>Modelling of homeostasis mechanisms by an artificial system. Principle of negative feedback.</p> <p>B4.2 Why is homeostasis important for a cell?</p> <p>Transport into and out of cells. Enzyme function.</p> <p>B4.3 How is our body temperature kept constant?</p> <p>Detection of temperature change;</p> <p>Co-ordination by the brain;</p> <p>Responses to fall or rise in body temperature.</p> <p>B4.4 How does the body control water balance?</p> <p>Kidney function for excretion and water balance.</p>	<p>AfL task</p> <p>Other homework-question from text book and work book</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>C4 Chemical Patterns</p> <p>12 lessons</p> <p>GCSE additional science topic and GCSE Chemistry Topic</p>	<p>C4.1 What are the patterns in the properties of elements?</p> <p>Classifying elements by their position in the Periodic Table; patterns in Group 1; patterns in Group 7; using symbols and equations to represent chemical reactions</p> <p>C4.2 How do chemists explain the patterns in the properties of elements?</p> <p>Flame tests and spectra and their use for identifying elements and studying atomic structure. Classifying elements by their atomic structure; linking atomic structure to chemical properties.</p> <p>C4.3 How do chemists explain the properties of compounds of Group 1 and Group 7 elements?</p> <p>Ions; linking ion formation to atomic structure; properties of ionic compounds of alkali metals and halogens.</p>	<p>AfL task</p> <p>Other homework-question from text book.</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>C6 Chemical Synthesis</p> <p>12 lessons</p> <p>GCSE</p>	<p>C6.1 Chemicals and why we need them</p> <p>The scale and importance of the chemical industry. Acids, alkalis and their reactions.</p> <p>Neutralisation explained in terms of ions.</p> <p>C6.2 Planning, carrying out and controlling chemical synthesis</p>	<p>AfL task</p> <p>Other homework-question from text book.</p>

<p>additional science topic and GCSE Chemistry Topic</p>	<p>Planning chemical syntheses. Procedures for making pure inorganic products safely. Comparing alternative routes to the same product.</p> <p>Calculating reacting quantities and yields.</p> <p>Measuring purity by simple titration. Controlling the rate of change.</p>	<p>End of topic test</p>
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Topic	Learning objectives	Homework/ Assessment tasks
<p>P4 Explaining motion</p> <p>12 hours</p> <p>GCSE additional science topic and GCSE Physics Topic</p>	<p>P4.1 How can we describe motion?</p> <p>Calculation of speed; velocity; graphical representations of speed and velocity.</p> <p>P4.2 What are forces?</p> <p>The identification of forces and ‘partner’ forces.</p> <p>P4.3 What is the connection between forces and motion?</p> <p>Resultant forces and change in momentum; relating momentum to road safety measures.</p> <p>P4.4 How can we describe motion in terms of energy changes?</p> <p>Work done; changes in energy; GPE; KE; losses due to air resistance and friction.</p>	<p>AfL task</p> <p>Falling objects as fast as you can</p> <p>Other homework-question from text book and work book</p> <p>End of topic test</p>

Topic	Learning objectives	Homework/ Assessment tasks
<p>P5 Electric Circuits</p>	<p>P5.1 Electric current – a flow of what?</p> <p>Electric current as a flow of charge; how the charge</p>	<p>AfL task</p>

<p>12 hours</p> <p>GCSE additional science topic and GCSE Physics Topic</p>	<p>moves.</p> <p>P5.2 What determines the size of the current in an electric circuit? Voltage; current and resistance; series and parallel circuit; working out resistance.</p> <p>P5.3 How do parallel and series circuits work?</p> <p>Voltage and how it behaves in a series circuit; current and how it behaves in a parallel circuit.</p> <p>P5.4 How is mains electricity produced?</p> <p>Including voltages and currents; how generators work; ac and dc.</p> <p>P5.5 How much electrical energy do we use at home?</p> <p>The relationship between power,</p>	<p>Other homework-question from text book.</p> <p>End of topic test</p>
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