



Curriculum Overview: Year 8 Science

What your child will learn each half term

This overview shows the key topics, skills, and knowledge your child will be learning in Year 8 in Science. It helps families understand what's being taught, how it builds on previous learning, and how you can support your child at home.

- **What we are learning:** The topic or focus for the half term.
- **Key knowledge & skills:** What students should understand and be able to do.
- **How we assess learning:** knowledge checks, practical tasks, written responses and formal assessments.
- **Key words to know:** Vocabulary students will learn and use.

Half term	What we are learning	Key knowledge/skills	How we will assess learning in this unit	Homework
HT1	Atoms Light	Atoms • Understand that all substances are made of atoms. • Learn about elements, compounds and mixtures. • Use the Periodic Table and chemical symbols. • Write and interpret simple chemical formulae. • Describe simple chemical reactions. • Understand that mass is conserved during reactions. • Compare pure substances and mixtures. • Learn about the structure of atoms. • Use scientific models and diagrams to explain ideas. • Develop practical and analytical scientific skills, and use scientific models to explain ideas. Light • Know that light travels in straight lines and understand how reflection, refraction, and absorption occur. • Understand how we see objects, the difference between luminous and non-luminous sources, and how colour and filters work. • Use scientific skills to draw accurate ray diagrams showing reflection and refraction. • Apply key vocabulary such as incident ray, normal, angle of reflection, refraction, spectrum, and opaque/translucent/transparent.	Multiple-choice knowledge checks will take place before, during and after each topic. These assessments help students develop and demonstrate their knowledge, understanding and application of scientific concepts. Results are used alongside a Personal Learning Checklist (PLC) to help students recognise their strengths and identify areas for further improvement. Extended writing task – a 6-mark question on a particular aspect of the topic. Requiring pupils to provide more detailed and structured responses, assessing a pupil's ability to organise their ideas clearly, apply scientific vocabulary accurately and encourage a deeper understanding. An end of unit feedback task – composed of a variety of tasks. Assessing pupils understanding of key concepts and skills covered throughout the topic; testing both recall and application of scientific knowledge. Helping to identify strengths and topics that may need further reinforcement or focus for pupils.	Homework is set weekly through the online platform Educake. Tasks reinforce current learning and revisit previous topics to support long-term retention of key scientific knowledge. Homework includes a mixture of multiple-choice and extended response questions. Teachers monitor completion and provide feedback where appropriate. Parents will be contacted if there are ongoing concerns regarding the completion of homework.
Key Vocabulary Atoms, Elements and Compounds Element Compound Molecule Atom Proton Neutron Electron Nucleus Periodic table Chemical symbol Light Reflection Refraction Light ray Normal Angle of incidence Angle of reflection Transparent Translucent Opaque Lens				

HT2	Heat transfer Periodic table	Heat transfer • The three methods of heat transfer. • How materials act as thermal conductors or insulators • Real-life applications of heat transfer in design and safety • Conducting and observing experiments on heat transfer • Measuring temperature changes accurately Periodic table • How elements are arranged in order of increasing atomic number • The significance of groups (vertical columns) and periods (horizontal rows) • Shared chemical properties within element groups • The difference between metals and non-metals • Interpreting and using the periodic table to find information • Predicting properties of elements based on their group and period	Multiple choice knowledge check Extended writing task An end of unit feedback task	Homework is set weekly via Educake and is designed to reinforce current learning while revisiting prior topics to support long-term retention. Tasks include a range of question types, with completion monitored by teachers. Parents will be contacted if there are ongoing concerns about homework completion.
Key Vocabulary Periodic Table Periodic table Element Atom Chemical symbol Group Period Alkali metals Transition metals Halogens Noble gases Heat Transfer Temperature Heat Thermal energy Conduction Convection Radiation Insulator Conductor Thermal insulator Thermal conductor				

HT3	Rocks Movement and breathing	Rocks • Know the three types of rocks—igneous, sedimentary, metamorphic—and how they form. • Understand the rock cycle, weathering, erosion, and formation of fossils. • Use practical skills to test rock properties (hardness, permeability) and classify samples. • Apply scientific vocabulary such as magma, lava, sediment, crystals, fossilisation, and compaction. Movement and breathing • The structure and function of muscles, bones, joints, and tendons • How these systems work together to allow movement • The structure and role of the lungs, diaphragm, and airways • The process of gas exchange in the lungs	Multiple choice knowledge check Extended writing task An end of unit feedback task	Homework is set weekly via Educake and is designed to reinforce current learning while revisiting prior topics to support long-term retention. Tasks include a range of question types, with completion monitored by teachers. Parents will be contacted if there are ongoing concerns about homework completion.
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Key Vocabulary

Rocks

Rock | Igneous | Sedimentary | Metamorphic | Weathering | Erosion | Fossil | Permeable | Impermeable | Mineral

Movement and Breathing

Muscle | Bone | Joint | Skeleton | Tendon | Ligament | Lungs | Trachea | Diaphragm | Oxygen

HT4	Electricity Digestion	Electricity • Know the components of electrical circuits and understand current, voltage, and resistance. • Understand the difference between series and parallel circuits and how they affect current and voltage. • Use scientific skills to build circuits, draw circuit diagrams with correct symbols, and take accurate meter readings. • Apply key vocabulary such as ammeter, voltmeter, resistance, potential difference, conductor, and insulator. Digestion • Know the organs of the human digestive system and their functions. • Understand the roles of enzymes, mechanical and chemical digestion, and the importance of nutrients for health. • Use practical skills to test for nutrients (e.g., starch, sugar, protein, fats) and interpret results. • Apply scientific skills by explaining food breakdown, absorption, and transport using correct vocabulary (enzyme, substrate, villi).	Multiple choice knowledge check Extended writing task An end of unit feedback task	Homework is set weekly via Educake and is designed to reinforce current learning while revisiting prior topics to support long-term retention. Tasks include a range of question types, with completion monitored by teachers. Parents will be contacted if there are ongoing concerns about homework completion.
Key Vocabulary Electricity Electricity Circuit Cell Battery Switch Bulb Wire Conductor Insulator Current Digestion Digestion Nutrient Enzyme Mouth Oesophagus Stomach Small intestine Large intestine Absorption Faeces				

HT 5	Electromagnets Respiration	Electromagnets • Understand that electricity flowing through a wire creates a magnetic field. • Investigate how electromagnets can be made using a coil of wire and an iron core. • Explain how the strength of an electromagnet can be increased. • Compare permanent magnets and electromagnets. • Describe everyday uses of electromagnets, including scrapyard cranes and electric bells. • Plan and carry out practical investigations safely. • Record, analyse and interpret results from experiments. Respiration • Understand that respiration is a chemical reaction that releases energy from food. • Describe aerobic respiration and the role of oxygen. • Explain why living organisms need energy. • Investigate the effects of exercise on breathing and heart rate. • Interpret scientific data linked to respiration. • Present findings using tables, graphs and scientific explanations. • Apply scientific vocabulary accurately when describing processes.	Multiple choice knowledge check Extended writing task An end of unit feedback task	Homework is set weekly via Educake and is designed to reinforce current learning while revisiting prior topics to support long-term retention. Tasks include a range of question types, with completion monitored by teachers. Parents will be contacted if there are ongoing concerns about homework completion.
Key Vocabulary Electromagnets Magnet, Magnetic field, Electromagnet, Coil, Core, Current, Solenoid, Attract, Repel, Circuit Respiration Respiration, Aerobic, Anaerobic, Oxygen, Glucose, Energy, Carbon dioxide, Mitochondria, Exercise, Lactic acid				

HT 6	Photosynthesis Metal reactions	Photosynthesis - Understand that photosynthesis is the process plants use to make food. - Describe the role of carbon dioxide, water and light in photosynthesis. - Explain why photosynthesis is important for life on Earth. - Understand the role of chlorophyll in absorbing light energy. - Investigate factors that affect the rate of photosynthesis. - Interpret results and identify patterns in data. - Use scientific diagrams to represent plant structures and processes. Metal Reactions - Investigate how metals react with oxygen, water and acids. - Identify patterns in the reactivity of different metals. - Use observations to compare chemical reactions. - Understand the reactivity series and how it can be used to make predictions. - Recognise evidence that a chemical reaction has taken place. - Carry out practical work safely and accurately. - Analyse results and draw conclusions using scientific evidence.	Multiple choice knowledge check Extended writing task An end of unit feedback task	Homework is set weekly via Educake and is designed to reinforce current learning while revisiting prior topics to support long-term retention. Tasks include a range of question types, with completion monitored by teachers. Parents will be contacted if there are ongoing concerns about homework completion.
Key Vocabulary Photosynthesis Photosynthesis, Chlorophyll, Glucose, Oxygen, Carbon dioxide, Water, Light, Leaf, Chloroplast, Producer Metal Reactions Metal, Reactivity, Oxidation, Corrosion, Displacement, Acid, Alkali, Reaction, Reactant, Product				

