





The curriculum for this stage of students' education has been designed to build upon their prior knowledge of the 10 Big Ideas. Students will explore the 10 Big Ideas in further detail: Forces, Electromagnetism, Energy, Waves, Matter, Reactions, Earth, Organisms, Ecosystems and Genes. Each idea contains four smaller topics: the building blocks for the Big Ideas. Each term, students will focus on three or four areas of Science in a spiral curriculum, to develop an understanding of a big idea by multiple interactions with the concepts within it. By connecting smaller ideas to more abstract ideas, students will be better prepared to apply these concepts when approaching an unfamiliar topic. Underpinning the content, are processes and Working Scientifically skills that students need to demonstrate competence in at GCSE, these include using a range of scientific equipment, recording data and results, presenting findings and drawing conclusions, explaining, evaluating and communicating their methods and findings.

**HALF TERM 1** Forces, Matter, Organisms and Electromagnets

**STUDENTS MUST KNOW:**

- Forces-Contact Forces: Understand the impact of forces on the motion or structure of objects.
- Matter-Periodic Table: Understand how elements are organised in the periodic table and how it relates to properties and reactivity.
- Organisms-Breathing: Understand the principle of gas exchange and how the respiratory system support it.
- Electromagnets-Electromagnets: Understand that current travelling through a conductor generate a magnetic field.

**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by a full assessment at the end of the topic.

**HALF TERM 2** Forces, Matter, Organisms and Electromagnets

**STUDENTS MUST KNOW:**

- Forces-Pressure: Understand that pressure works in all direction in fluids.
- Matter-Elements: Understand different combination of elements give rise to different properties.
- Organisms- Digestion: Understand the importance of a balanced diet and how the digestive system breaks down food.
- Electromagnets-Magnetism: Understand that magnetic materials, electromagnets and the Earth create magnetic fields exerting a force.

**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by a full assessment at the end of the topic.

**HALF TERM 3** Energy, Reactions, Ecosystems

**STUDENTS MUST KNOW:**

- Energy-Work: Understand that work is where energy is transferred when forces move objects.
- Reactions-Chemical Energy: Understand how changes in chemical bonds gives exothermic and endothermic reactions.
- Ecosystems-Respiration: Understand the importance of anaerobic and aerobic respiration in cells and organisms.

**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by a full assessment at the end of the topic.

**HALF TERM 4** Energy, Reactions, Ecosystems

**STUDENTS MUST KNOW:**

- Energy-Heating and Cooling: Understand that the factors that determine the thermal energy of an object and how energy transfers affect this.
- Reactions-Types of Reaction: To understand the principle of conservation of mass and how it relates to combustion and thermal decomposition.
- Ecosystems-Photosynthesis: Understand how plants photosynthesise and how it is essential for life.

**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by a full assessment at the end of the topic.

**HALF TERM 5** Waves, The Earth, Genes

**STUDENTS MUST KNOW:**

- Waves-Wave Effects: Understand that when waves move through a medium, energy is transferred in the direction of the wave movement.
- The Earth-Climate: Understand the role of the carbon cycle in maintaining climate and how people are affecting it.
- Genes-Evolution: Understand the process of natural selection and the importance of biodiversity in ecosystems.

**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by a full assessment at the end of the topic.

**HALF TERM 6** Waves, The Earth, Genes

**STUDENTS MUST KNOW:**

- Waves-Wave Properties: Understand the model of a transverse wave and the properties of speed, wavelength and reflection.
- The Earth-Earth Resources: Understand the importance of finite resources such as metals and how they are extracted from their ores.
- Genes-Inheritance: Understand the importance of DNA in the inheritance of characteristics.

**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by a full assessment at the end of the topic.

**Embedding this knowledge can be supported at home by** using the AQA website and typing in the key phrase for each lesson to consolidate learning that has taken place in class, attempting questions which can be found online at [www.educationquizzes.com/ks3/science/](http://www.educationquizzes.com/ks3/science/) and reading newspapers looking for the latest news in science. Completing the glossary of key words to understand their meaning and how to use them in the appropriate context by using <https://www.bbc.co.uk/bitesize/levels/z4kw2hv>.