





The curriculum for this stage of students' education has been designed to build upon their prior knowledge of Working Scientifically including: using a range of scientific equipment, recording data and results, presenting findings and drawing conclusions, explaining, evaluating and communicating their methods and findings which students need to demonstrate competence in at GCSE and underpin the content. Students will explore 10 Big Ideas: 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.

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

#### STUDENTS MUST KNOW:

- Forces-Speed: Understand how to find the speed of an object, describe and analyse distance-time graphs.
- Matter-Particle model: Use particle models to understand the differences in solids, liquids and gases, understand the effects of changing conditions.
- Organisms-Movement: Identify muscles, joints and how they cause movement.
- Electromagnets-Voltage and Resistance: Be able to construct circuits, explain resistance and understand potential difference.

**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-Gravity: Understand gravitational field and how to use formula to calculate this.
- Matter-Separating Mixtures: Explain solubility and the processes of distillation and chromatography.
- Organisms- Cells: Describe the functions of cells and how organ systems work, observe cells.
- Electromagnets-Current: Comparing series and parallel circuits, looking at patterns between current, voltage and resistance.

**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-Energy Costs: Understand the ways of generating electricity, exploring ideas of reducing home energy bills.
- Reactions-Metals and Non-metals: Be able to classify metals and non-metals, understand oxidation and displacement reactions.
- Ecosystems-Interdependence: Understand food webs and predator prey relationships.

**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-Energy Transfer: Describe what is meant by energy transfer and identify the rate at which appliances transfer energy.
- Reactions-Acids and Alkalis: Understand how indicators change with acids and alkalis, understand neutralisation and how indigestion remedies work.
- Ecosystems-Plant Reproduction: Understand pollination, fertilisation and seed dispersal.

**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-Sound: Understand how and why we hear sound in longitudinal waves, explain amplitude, wavelength and frequency.
- The Earth-Earth Structure: Describing tectonic movement, describing different types of rock, understanding weathering and erosion.
- Genes-Variation: Explain how variation is determined by genes and the environment.

**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-Light: Understand the difference between reflection and refraction, explain how convex and concave lenses work and how white light is split.
- The Earth-The Universe: Understand how length of day and year and seasons are caused.
- Genes-Human Reproduction: Know the reproductive systems, understand how a foetus develops.

**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>.