Thomas Mills
High School & Sixth Form

KS3 Physics Curriculum Intent Statement
At Thomas Mills High School our Key Stage 3 Physics curriculum is designed to provide all pupils with a strong foundation in the fundamental principles of physics, enabling them to understand and explain the physical world around them. The curriculum follows the National Curriculum requirements, ensuring pupils acquire a deep understanding of scientific concepts and develop the skills necessary to become curious, confident, and capable scientists.

Our intent is to:

Develop Scientific Knowledge and Understanding: We aim to ensure that pupils build a strong understanding of the key concepts in physics, including forces, energy, waves, electricity, and the structure of matter. These concepts are taught progressively, starting with core ideas and expanding to more complex topics.

Curiosity, Inquiry and Skills Development: Through practical experiments, demonstrations, and inquiry-based learning, we aim to ignite pupils' curiosity and encourage them to question, investigate, and explore the world of physics. As they engage in hands-on activities, pupils will not only develop an understanding of the scientific method and its role in discoveries but also build essential practical skills, such as working safely in a lab, designing experiments, making accurate observations, and analysing data.

Prepare for Future Learning: We ensure that pupils are well-prepared for their future learning in physics, whether they choose to pursue further study in the subject or simply wish to understand the world better. By emphasizing the relevance of physics to everyday life, current technology, and the natural world, we aim to foster a lifelong interest in science.

Note: Due to the carousel-based teaching schedule within science in year 8 pupils will complete a total of 6 science units, 2 from Biology, Chemistry and Physics during their first year.

Year 8

Thomas Mills
High School & Sixth Form

CURRICULUM OVERVIEW: Physics Department

Unit	Topic	Knowledge and Skills	Useful Links
1	**P3: Forces & Motion**	**Knowledge:** Our Key Stage 3 Physics curriculum on forces and motion unit introduces pupils to fundamental concepts that explain how objects interact and move. Pupils explore various types of forces, including gravitational, frictional, and applied forces, and learn how these forces can cause changes in an object's speed or direction. They study the concepts of balanced and unbalanced forces, understanding how the net force acting on an object determines its motion. The curriculum also covers the principles of speed and acceleration, enabling pupils to describe and predict the motion of objects. Additionally, pupils examine the effects of mass and force on acceleration, delving into Newton's laws of motion to explain these relationships. **Skills:** Through practical investigations, pupils develop essential skills in measuring forces and motion. They engage in experiments to calculate speed by measuring distances and times and use force meters to quantify forces acting on objects. Pupils interpret motion graphs, such as distance-time and velocity-time graphs, to analyse patterns and relationships. They also apply mathematical formulas to solve problems related to force, mass, and acceleration, enhancing their numeracy skills. We aim to foster critical thinking and problem-solving abilities, as pupils design experiments, control variables, and draw evidence-based conclusions about the principles governing forces and motion.	Introduction to forces - Forces and movement - KS3 Physics - BBC Bitesize Representing journeys - Forces and movement - KS3 Physics - BBC Bitesize Motion and speed - Forces and movement - KS3 Physics - BBC Bitesize Science, secondary, Year 8 - Lesson listing | Oak National Academy
Assessments		**Standardised assessments:** Topic Summary Check Lists – Pupils use these to review progress and self-reflect on content taught Mid Unit Assessment – An extended project task on the theme of Forces End of Unit Test – Formal, in class assessment on content covered in the unit	

2	**P4: Waves, Electricity & Magnetism**	**Knowledge:** This unit in Key Stage 3 Physics encompasses fundamental concepts in waves, electricity, and magnetism. Pupils explore the nature and properties of waves, including sound and light, understanding how they transfer energy and information. They examine the behaviour of waves during reflection and refraction and colour, studying various types. In electricity, learners investigate electric circuits, differentiating between series and parallel configurations, and comprehend the principles of current, voltage, and resistance. The curriculum also introduces magnetism, covering magnetic fields, the Earth's magnetism, and the relationship between electricity and magnetism, such as electromagnetism and its applications. **Skills:** Throughout these topics, pupils develop practical skills by constructing and analysing electric circuits, measuring electrical quantities, and observing the behaviour of magnets and electromagnets. They engage in experiments to investigate wave properties and observe their effects in controlled conditions. The activities enhance their abilities to use specialist apparatus and understand the practical applications of waves, electricity, and magnetism in everyday life.	Science, secondary, Year 8 - Lesson listing | Oak National Academy Science, secondary, Year 8 - Lesson listing | Oak National Academy Magnetism guide for KS3 physics pupils - BBC Bitesize Electromagnetism guide for KS3 physics pupils - BBC Bitesize
Assessments		**Standardised assessments:** Topic Summary Check Lists – Pupils use these to review progress and self-reflect on content taught Mid Unit Assessment – An extended research project task on the theme of light and colour End of Unit Test – Formal, in class assessment on content covered in the unit	