



Medium Term Planning - Topic: Maths in Physics

Curriculum Intent	
Skills/National Curriculum Links	<p>In addition to working further on objectives from Year __, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <ul style="list-style-type: none">- Applying mathematical concepts to science and physics<ul style="list-style-type: none">- Use standard form- Use prefixes- Use scale diagrams- Learn how to use a scientific calculator
Spiritual, moral, social, and cultural development	<p>SMSC: Safe working and using the forces model. Students will reflect on their experiences and apply their understanding to a range of issues. Students will be encouraged to be reflective about their own beliefs and those of others and compare different people's faiths, feelings and values in order to develop their own perspective on life. Students will explore how Science influences the next stage of their education and/or employment.</p> <p>PSHE/British Values: learn how to apply mathematical skills to every day working</p> <p>Skills Builder: Listening (Receiving, retaining and processing info), Speaking (The oral transmission of info and ideas), Problem solving (Find a solution to a situation or challenge), Creativity (imagination and generation of new ideas), Staying positive (The ability to use tactics and strategies to overcome setbacks), aiming high (Set clear and tangible goals), Leadership and teamwork</p>
Numeracy	Standard form prefixes, units, calculator use, calculations, using formula
Literacy	<p>Vocabulary Tier 2: calculator, data,</p> <p>Vocabulary Tier 3: forces, standard form, prefixes, scale drawing, motion, balanced forces, unbalanced forces, line graph, bar chart, line of best fit, gradient, mass, weight, directly proportional, kinetic energy, gravitational potential energy, significant figures, means, precision of an instrument</p> <p>Reading: Following a written method and read risk assessments. Students may be directed to the textbook; this could be in lesson or at home on Kerboodle.</p> <p>Writing: Describing and explaining scientific phenomenon, free response writing for describing precautions taken, use of word mat to promote sentence formation.</p> <p>Oracy: inclusion of BEST resources which are research evidence on common misunderstandings in science, effective diagnostic questioning and formative assessment, constructivist approaches to building understanding, and effective sequencing of key concepts that promote metacognitive talk and dialogue.</p>
Becoming future ready	<p>Careers/Employability:</p> <ul style="list-style-type: none">- Physicist- Astrophysicists- Financial services
Adaptation	Throughout this topic, quality first teaching will provide differentiation:



QFT/SEND Provision	<p>By product: Linear assessments and differentiated practical work.</p> <p>By resource: Lessons are differentiated per class and students, worksheets are coloured to support and assessments are linear.</p> <p>By Intervention: by providing different levels of supervision and support</p> <p>By Progressive Questioning: exploring pupils’ understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference, preferred learning style.</p> <p>By Task: Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p> <p>This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p>	
Implementation Curriculum Delivery	To be able to:	
Learning Outcomes (Core Knowledge)	1. Know and understand forces.	
	2. Be able to use standard form	
	3. Be able to use prefixes	
	1. Use a calculator to do standard form calculations	
	2. Recall what different prefixes stand for	
	3. Convert between different prefixes	
	1. Create a scale drawing from given information	
	2. Calculate result forces using scale diagrams	
	3. Resolve force diagrams	
	1. I can describe the motion of an object when the forces are balanced	
2. I can describe the motion of an object when the forces are unbalanced		
1. Be able to draw a line graph and bar chart		
2. Be able to draw a line of best fit		
3. Be able to calculate a gradient		
1. Describe the difference between mass and weight		
2. Know how to calculate the weight of an object		
3. Recognise when data is directly proportional		
1. I can describe that energy is the ability to do work		
2. I can list 7 energy types		
3. I can recall what energy is measured in		
I can use and apply:		
Kinetic energy= $\frac{1}{2}mv^2$ Kinetic energy= $\frac{1}{2}mv^2$		
I can use and apply:		
GPE= $m \times g \times h$ GPE= $m \times g \times h$		
Current learning to be developed in the future within:	<p>Before:</p> <p>Students have had a rich and varied mathematical education so far at CHS. The maths department follow a maths mastery approach.</p>	<p>Future: 30% of the physics GCSE gained from mathematical content. This topic is intrinsic to all KS4 physics. It will also support the mathematical aspects of GCSE chemistry and biology.</p>
Assessment	Refer to assessment maps for formative and summative assessment opportunities.	
Impact	Attainment and Progress – Refer to assessment results / data review documentation.	