



Medium Term Planning - Topic: C

Curriculum Intent	<p>In addition to working further on objectives from Year __, pupils will be taught, following National Curriculum guidelines, the following this topic:</p>
Skills/National Curriculum Links	<ul style="list-style-type: none"> - forces as pushes or pulls, arising from the interaction between two objects - using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces - moment as the turning effect of a force forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; - resistance to motion of air and water forces measured in newtons, measurements of stretch or compression as force is changed force-extension linear relation; - Hooke's Law as a special case work done and energy changes on deformation non-contact forces: Forces and motion forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) change depending on direction of force and its size.
Spiritual, moral, social, and cultural development	<p>SMSC: Safe working and using the forces model. The importance of forces in real life. 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:</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	<p>Use of equations, calculating, units, reading and interpreting graphs</p>
Literacy	<p>Vocabulary Tier 2: quantitative, unfamiliar,</p> <p>Vocabulary Tier 3: force, drag, friction, resultant force, deforming, linear relationship, line graph, moments,</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"> - Engineer - Mechanic - Pilot
Adaptation	<p>Throughout this topic, quality first teaching will provide differentiation:</p>
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 blue if 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	<p>To be able to:</p> <div> <p><i>Know</i></p> <ul style="list-style-type: none"> - Identify examples of drag forces and friction. - Describe how drag forces and friction arise. - Write down two things an object can do when the resultant force on it is zero. - Carry out an experiment to test a prediction of friction caused by different surfaces. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe the effect of drag forces and friction. - Explain why drag forces and friction arise. - Describe what happens to a moving object when the resultant force acting on it is zero. - Plan and carry out an experiment to investigate friction, selecting suitable equipment. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Explain the effect of drag forces and friction in terms of forces. - Explain why drag forces and friction slow things down in terms of forces. - Interpret the motion of objects subject to drag forces and friction. - Plan and carry out an experiment, stating the independent, dependent, and control variables. </div>	
Learning Outcomes (Core Knowledge)	<div> <p><i>Know</i></p> <ul style="list-style-type: none"> - State an example of a force deforming an object. - Recognise a support force. - Use Hooke's Law to identify proportional stretching. - State how you know from a graph that a relationship is linear, present data in a line graph, and identify a pattern. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe how forces deform objects. - Explain how solid surfaces provide a support force. - Use Hooke's Law to predict the extension of a spring. - Present data in a graph and identify a quantitative relationship in the pattern. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Explain how forces deform objects in a range of situations. - Explain how solid surfaces provide a support force, using scientific terminology and bonding. - Apply Hooke's Law to make quantitative predictions with unfamiliar materials. - Present data in a graph and recognise quantitative patterns and errors. </div>	
	<div> <p><i>Know</i></p> <ul style="list-style-type: none"> - State the law of moments. - State the equation to calculate a turning force. - Identify questions from results with help. <p><i>Apply</i></p> <ul style="list-style-type: none"> - Describe what is meant by a moment. - Calculate the moment of a force. - Independently identify scientific questions from results. <p><i>Extend</i></p> <ul style="list-style-type: none"> - Apply the concept of moments to everyday situations. - Use calculations to explain situations involving moments. - Suggest relevant, testable questions. </div>	
Current learning to be developed in the future within:	<p>Before: At KS2 you should understand what a force is and compare how things move on different surfaces → notice that some forces need contact between two objects, but magnetic forces can act at a distance</p>	<p>Future: At GCSE you will learn a force is a push or pull that acts on an object due to the interaction with another object. All forces between objects are either:</p> <ul style="list-style-type: none"> •• contact forces – the objects are physically touching •• non-contact forces – the objects are physically separated.
Assessment	Refer to assessment maps for formative and summative assessment opportunities.	

