



Physics Curriculum Overview - Year 10 - Combined Higher

	Unit	Details
Oct - Feb	Forces	<p>Pupils will define scalar and vector quantities and be able to represent vectors using scale diagrams. They will further develop their understanding of balanced and unbalanced forces from KS3 and start to incorporate free body diagrams and trigonometry. Pupils will recall the relationship between mass and weight from KS3, defining the centre of mass for an object and its relationship to stability. They will also investigate the effect of forces on stretching different materials, applying Hooke's law where appropriate for objects extending and compressing.</p> <p>Pupils will be able to further progress their KS3 understanding of pressure, both qualitatively and quantitatively. They will do this by referencing particle behaviour. They will be able to calculate pressure and explain upthrust, which was introduced in KS3, and apply the concept to understand why only some objects float.</p> <p>Pupils will continue to analyse the motion of objects, with the speed-distance-time relation as a base. They will be able to understand and represent motion graphically, with the quantities given by the gradient and area understood for particular situations. They will gain an understanding of acceleration via calculations and practical investigations.</p> <p>Pupils will be introduced to Newton's Three Laws of Motion, understanding their relevance to an object's motion. The concept of terminal velocity will be explained for objects falling through fluids.</p> <p>Pupils will be able to state and explain the safety features in a car. They will also analyse the forces and factors involved in stopping a car. They will be introduced to thinking distance, braking distance, and the summation of these to make the stopping distance. Pupils will understand momentum and its conservation, along with the range of typical human reaction times.</p>
Mar - May	Waves	<p>Pupils will observe and describe the properties of mechanical and electromagnetic waves in terms of energy transfer and the relevance of mediums as a method of transmission. They have compared transverse waves and longitudinal waves by examining the relationship between the direction of energy transfer and the direction of the oscillations.</p> <p>Reflection, refraction, absorption and transmission have been investigated and described. Pupils will showcase an understanding of the transmission of sound waves through a medium in terms of the vibration of particles in the medium.</p> <p>Pupils have described the electromagnetic spectrum in terms of different regions related to wavelength. Both the speed of EM waves in a vacuum, along with each region of the EM spectrum, are known; including potential dangers and applications. They will be able to state why objects are certain colours and describe their appearance in the presence of different coloured light.</p>