MOOR PARK HIGH SCHOOL: CURRICULUM

Long Term Planning

Year 9

Curriculum Area: Physics

Year 10	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Syllabus	AQA Physics Physics 3.1 Acceleration		AQA Physics Physics 3.2 Heating		AQA Physics Physics 3.3 Sound and Waves	
Connections to prior KS3 learning	Forces have size and direction, Forces are represented on free-body force diagram, Balanced, unbalanced forces and resultant forces The difference between Mass and weight Speed = distance / time Describe an object's motion from a graph. Acceleration describes how quickly a speed is changing (speeding up or slowing down). The gradient of the distance-time graph is the object's speed.		Pupils should have a secure understanding of the arrangement of particles and movement of particles in each state and be able to explain these in terms of forces of attraction Energy cannot be created or destroyed, only transferred between different energy stores Energy stores and transfers Energy is measured in joules (J) Thermal energy and Temperature conductors and insulators		Energy cannot be created or destroyed, only transferred between different energy stores Energy stores and transfers When light reaches a different medium, some light can be reflected and some is refracted. Light can be represented by ray diagrams. White light contains all the colours of the visible spectrum. Transparent, Translucent and opaque materials Identify how sounds are made, associating some of them with something vibrating Energy can be transferred from one store to another - Waves are one way of doing this. Speed = distance / time KS2 links recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it	

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Knowledge	Scalars and Vectors Resultant Vectors Resolving Vectors Newton's Third Law Newton's First Law Acceleration Acceleration Investigation Linear Graphs Velocity-Time Graphs Velocity-Time Graphs 2 Acceleration Problems	Rearranging Equations Internal Energy Thermal Transfers Thermal Transfers 2 Specific Heat Capacity Specific Heat Capacity Investigation Specific Latent Heat	Types of Wave Properties of Waves Derived Quantities Velocity of Waves Reflection and Refraction Investigating Reflection and Refraction Investigating Waves Using Waves
Skills	Required Practical Activity 7 (Taking it Further) and 19 (Trilogy): Investigate the effect of varying the force on the acceleration of an object of constant mass and the effect of varying the mass of an object on the acceleration produced by a constant force." Measure time accurately	Demo: Grapes floating on salty water and oil; not in water. Demo: Heating ice in beaker Metal conduction experiment Effectiveness of insulators practical convection currents demonstration" Required practical activity 1 An investigation to determine the specific heat capacity of one or more materials.	Use models to explain transverse and longitudinal waves (e.g. slinky or mexican wave). Waves on a string can be used to model varying amplitude, frequency and wavelength. Know the difference between a scientific question and a non-scientific question Define and understand the term hypothesis. Draw ray diagrams to represent reflection and refraction Required Practical Activity 9 Investigate the reflection of light by different types of surface and the refraction of light by different substances. Making observations of waves in fluids and solids to identify the suitability of apparatus to measure speed, frequency and wavelength. Required Practical Activity 8: make observations to identify the suitability of apparatus to measure the

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			frequency, wavelength and speed of waves in a ripple tank and waves in a solid and take appropriate measurements.
Assessment	End of unit test	End of unit test	End of unit test
Homework	GCSE past paper exam questions Analysis / Evaluation of investigations Extended answer questions	GCSE past paper exam questions Analysis / Evaluation of investigations Extended answer questions	GCSE past paper exam questions Analysis / Evaluation of investigations Extended answer questions
Cultural enrichment including Trips, Visits, Experiences, Extra-curricular	**School and University Network**	**School and University Network** Y9 – Engineering workshop and Business workshop combined with a HE info and insights sessions	**School and University Network**
Literacy	Keywords that students may find difficult: Force, contact, non-contact, resultant, friction, scalar, vector, speed, velocity, displacement, distance, resultant, component, action, reaction balanced, unbalanced, resultant, stationary, constant velocity, acceleration, deceleration, velocity, initial velocity, final velocity, force, mass, acceleration, initial velocity, final velocity, velocity, acceleration, gradient, slope, area, curve, gradient, tangent, vertical, gravity, weight, resultant, acceleration	Keywords that students may find difficult: Density, pressure, work,Internal, kinetic, potential, energy, temperature,Conduction, convection, radiation, insulation, thermal, Specific, capacity specific, latent, internal, kinetic, potential, state, temperature, boiling, melting	Keywords that students may find difficult: energy, store, waves, reflection, refraction, longitudinal, transverse, compression, rarefaction, oscillation, wavelength, amplitude, pitch, frequency, period, "SI units, base units, derived units, prefix, velocity, Frequency, wavelength, displacement, time period, "reflection, Refraction, medium, wavelength, frequency, speed, reflection, Refraction, normal, medium, Perspex, velocity, Frequency, wavelength, ripple tank, oscillator, ultrasound, Frequency, vibrate, longitudinal, transverse
Numeracy	Recognise the importance of scientific quantities and understand how they are determined. Change the subject of an equation Measure motion, including determination of speed and rate of change of speed (acceleration/deceleration)	Any anomalous values should be examined to try to identify the cause and, if a product of a poor measurement, ignored. Change the subject of an equation	Relate derived quantities with the formulae to calculate those quantities Draw ray diagrams to represent reflection and refraction"

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	Any anomalous values should be examined to try to identify the cause and, if a product of a poor measurement, ignored. Understand that y=mx + c represents a linear relationship Determine the slope and intercept of a linear graph Plot two variables from experimental or other data.		
CIAG	What workplace skills does physics develop? Critical thinking: The ability to scrutinise information you're presented with is important not only for scientists but for lawyers, police, medics, journalists and more. Data analysis: From actuaries and financial advisors to social media specialists and market researchers, data analysis is one of the most sought after skills. Problem solving: Complex problem solving is vital for engineers, researchers, marketers, social workers, designers, and even customer service workers. Attention to detail: From nurses and scientists to accountants and writers, attention to detail is vital to carrying out many roles safely and effectively.		