Science – Y8

MAGHULL HIGH SCHOOL – CURRICULUM MAP

	Lessons Sequence		
TOPIC (S) **Forces and Motion**	1. Forces 2. Friction 3. Air and Water Resistance 4. Stretching Forces	5. Turning Forces 6. Balanced and Unbalanced Forces 7. Speed 8. Force, Mass and Acceleration	9. Distance-Time Graphs 10. Magnets and Magnetic Fields 11. Electromagnets 12. Uses of Electromagnets
Knowledge & Skills development	- Explain what forces do. - Identify contact and non-contact forces in a range of situations - Explain how solid surfaces provide a support force (normal reaction force) - Make predictions about forces in familiar situations. - Describe the effect of friction. - Explain why friction arises. - Explain why friction can be useful - Suggest ways to reduce friction - Describe the effect of drag forces. - Explain why drag forces arise. - Explain the benefit of streamlining - Plan and carry out an experiment to investigate air or liquid resistance, selecting suitable equipment. - Describe how forces deform objects. - Use Hooke's Law. - Present data on a graph, and identify a quantitative relationship in the pattern. - Describe what is meant by a 'moment'. - Calculate the moment of a force. - Describe the difference between balanced and unbalanced forces.		- Calculate the resultant force on an object in a linear situation - Describe situations that are in equilibrium. - Explain why the speed or direction of motion of objects can change. - Calculate speed using the speed equation - Choose equipment to make appropriate measurements for time and distance to calculate speed. - Predict how changing an objects mass will affect its acceleration. - Predict how changing the force on an object will affect its acceleration. - Analyse given data and draw conclusions - Interpret distance–time graphs. - Calculate speed from a distance-time graph. - Plot data on a distance-time graph accurately. - Describe how magnets interact. - Describe how to represent magnetic fields. - Describe the Earth's magnetic field. - Draw field lines round a magnet in detail. - Describe how to make an electromagnet. - Describe how to change the strength of an electromagnet. - Predict and test the effect of changes to an electromagnet. - Describe some uses of electromagnets.

Assessment / Feedback Opportunities	Targeted questioning throughout topic	Teacher assessment of practical skills during investigation - verbal	AWOL assessment – formative teacher assessment in students books	Mid topic assessment – formative assessment	Homework topic quiz – formative assessment	End of topic assessment – teacher summative assessment

Cultural Capital	• <u>POSSIBLE</u> BAE/RAF Roadshow • <u>POSSIBLE</u> Energy quests – Tomorrow's engineers • Use of potato cannon
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	• Linking to car safety • Working in groups during practicals or research tasks • Students will consider and recognise legal boundaries and subsequently develop an understanding of the civil and criminal law of England.
Recommended Reading	• Horrible Sciences- Fatal Forces • Horrible Sciences – The fight for flight

	• Bird builds a nest – a science story about forces. • Zoom!: Wile E. Coyote Experiments with Speed and Velocity (Andrew Weakland) • Various reading and comprehension activities embedded within scheme of work
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Forces, mass, weight, gravity, air resistance, friction, reaction, force diagram, speed, distance, time, moment, pivot, up thrust, resultant force, balanced, unbalanced, magnetic, deformation, elastic potential, Hooke's law, equilibrium, contact, non-contact, support.
Digital Literacy	SharePoint resources including topic quiz Possible use of excel to plot graphs and analyse data, powerpoint,word, etc to present information, internet for research
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators. Engineering
Careers	Engineers, skydivers, divers, parachute designers, mechanics, teachers