



Lessons Sequence	
TOPIC (S) FORCES	1. Scalars and vectors, contact and non-contact 2. Gravity 3. Resultant forces 4. Work done 5. Forces and elasticity (including required practical) 6. Moments, Levers and Gears 7. Pressure in fluids 8. Atmospheric Pressure
Knowledge & Skills development	<ul style="list-style-type: none"> Identify scalars and vectors and describe the difference between them Identify contact and non-contact forces and describe the difference between them Recall, use and rearrange the equation to calculate weight Calculate the resultant of two forces that act in a straight line Use free body diagrams to describe qualitatively examples where several forces lead to a resultant force on an object, including balanced forces when the resultant force is zero Use vector diagrams to illustrate resolution of forces, equilibrium situations and determine the resultant of two forces, to include both magnitude and direction Recall, use and rearrange the equation to calculate work done Describe the difference between elastic deformation and inelastic deformation caused by stretching forces Recall, use and rearrange the equations for spring constant and elastic energy Describe the difference between a linear and non-linear relationship between force and extension Describe examples in which forces cause rotation Calculate the size of a force, or its distance from a pivot, acting on an object that is balanced Explain how levers and gears transmit the rotational effects of forces Recall, use and rearrange the equation to calculate pressure Explain why, in a fluid, pressure at a point increases with the height of the column of fluid above that point and with the density of the liquid Explain why atmospheric pressure varies with height above a surface
Assessment / Feedback Opportunities	Targeted questioning throughout topic Teacher assessment of practical skills during investigation - verbal Knowledge Recall Quizzes Deep marking of written task in students books Topic Test Targeted exam questions – teacher or self-assessed
Cultural Capital	<ul style="list-style-type: none"> Encourage students to visit Science Museum in Manchester
SMSC / Promoting British Values <small>(Democracy, Liberty, Rule of Law, Tolerance & Respect)</small>	<ul style="list-style-type: none"> Listening to others during presentations Working in groups during practicals or research tasks
Reading opportunities	<ul style="list-style-type: none"> Recommended Read: All About Physics (Richard Hammond) Recommended Read: Storm in a Teacup: The Physics of Everyday Life (Helen Czerski)
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest

	Scalar, Vector, Contact, Gravity, Weight, Mass, Resultant, Work, Elastic, Inelastic, Magnitude, Direction, Deformation, Linear, Rotation, Moment, Gears, Levers, Pressure, Atmospheric, Fluid
Digital Literacy	SharePoint resources including topic quizzes 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
Careers	Engineering, Sports scientists, Pilots, Aerospace Engineers