Topic	National Curriculum	Knowledge Musts	Skills
Year 4/5 Science Forces	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	- To know and be able to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - To understand and identify the effects of air resistance, water resistance and friction, that these forces act between moving surfaces - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. - To be able to apply the theory to practical, investigative work including formulating questions for lines of enquiry.	Identifying scientific evidence that has been used to support or refute ideas or arguments. Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Using test results to make predictions to set up further comparative and fair tests Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Key vocabulary	Links to local, regional, national and global science	Linked reading	Cross curricular	Assessment opportunities
Air resistance **Water resistance** **Gravity** **Friction** **Surface** **Force** **Affect** **Move** **Accelerate** **Decelerate** **Stop / halt** **Change direction** **Pulley** **Gear** **Spring** **Newtons**	Link to Archimedes' work on levers. Introduce this using his famous quote. Investigate if his hypothesis still holds true. Apply using simple equipment and practise. How do hovercrafts work? Look into other amphibious forms of travel and those used by the military. Why do they need to be versatile? Watch, apply and explain the theory of how hand gliding as a sport works. Which conditions are necessary for the activity to take place? Find out in which locations someone can pay to take part- link to habitats and weather. How do aeroplanes fly (talk about other forces eg thrust) Link to Greek myths- Icarus and Daedalus why did the tragedy	Science Bug Class set: Year 5 Forces CGP- Forces KS2 year 5 Roald Dahl's George's Marvellous Experiments Incredible robots series of books	History- Greek scientists and philosophers DT- vehicles (year 4)	Start of each lesson: mini quiz (4 questions on past knowledge) key knowledge gained. Cold task or quiz: assess understanding Diagnostic assessment against learning from the unit.

Theory of Gravitation **Galileo Galilei** **inertia** **Working scientifically-based vocabulary** plan variables measurements accuracy precision repeat repeats record data scientific diagrams predictions further comparative and fair tests report and present conclusions explanations degree of trust oral and written display evidence support refute ideas arguments systematic	occur? Link to Amelia Earhart and the Wright Brothers' story. Discuss the fascination and love of flight. Link with current KLM tv advert. What messages are they trying to get across? Link this also to World War 1 and roles of women to present day. What are the dangers of deep sea diving? Why do they happen? What are the dangers of speeding. Research into the technology being input into modern day to day vehicles to reduce the negative impact of harsh braking and other situations where danger is posed.			
Links to previous learning		Links to future learning		
Forces unit in year 3				