



Physics Unit: Forces & Magnets

What does progression of knowledge look like at St Leonard's?

Year	Progression of knowledge.
EYFS	<ul style="list-style-type: none"> ● Explore how things work ● Explore and talk about different forces they can feel ● Talk about the differences between materials and changes they notice ● Explore the natural world around them ● Describe what they see, hear, and feel whilst outside
1	<ul style="list-style-type: none"> ● Observe and describe different ways of moving ● Identify similarities and differences between movement of different objects ● Make suggestions about how objects can be made to move ● Explore contact forces (push and pull) ● Explore how objects sink or float ● Know that it is not only ourselves that make things move and ask questions about what is causing movement
3	<ul style="list-style-type: none"> ● Compare how things move on different surfaces ● Notice that some forces need contact between two objects, but magnetic forces can act at a distance ● Describe magnets as having two poles ● Observe how magnets attract or repel each other and attract some materials and not others ● Predict whether two magnets will attract and repel each other, depending on which poles are facing ● Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
5	<ul style="list-style-type: none"> ● Know the work of Isaac Newton and know that force is measured in Newtons by a Newton Meter ● 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 ● Identify the effects of water resistance ● Identify the effects of friction acting between moving surfaces ● Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater affect
KS3 (NC)	<ul style="list-style-type: none"> ● Forces as pushes or pulls, arising from the interaction between two objects ● Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces ● Forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water ● Forces measured in newtons, measurements of stretch or compression as force is changed ● Force-extension linear relation; Hooke's Law as a special case ● Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) ● Change depending on direction of force and its size. ● Speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time) ● The representation of a journey on a distance-time graph ● Relative motion: trains and cars passing one another. ● Moment as the turning effect of a force ● Work done and energy changes on deformation ● Opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface. ● Magnetic poles, attraction and repulsion ● Magnetic fields by plotting with compass, representation by field lines ● Earth's magnetism, compass and navigation ● The magnetic effect of a current, electromagnets, D.C. motors (principles only)