Year 5 – Forces – Feel The Force

What it looked like last year (Year 3)	***What it looks like next year (KS3)***
• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • To 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other.	• Magnetic fields by plotting with compass. • Earth's magnetism, compass and navigation • 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. • Moment as the turning effect of a force. • 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 water and air. • Forces measured in Newtons, measurements of stretch or compression as force is changed.
Vocabulary (definitions) **force** - a push or pull upon an object, that can cause it to change its shape, direction of movement or shape **friction** - the resistance of motion when one object rubs against another. **mechanisms** – the parts that make something work. **air resistance** - a force that acts in the opposite direction of moving objects in air. water resistance - a force that tries to slow things down that are moving through water. gravity earth levers pulleys gears	***Sequence of Learning*** 1. Understand friction by measuring forces using a Newton meter. 2. Explore gravity as a non-contact force. 3. Carry out a fair test investigation into air resistance. 4. Learn that water resistance is a form of friction that opposes movement in water. 5. Investigate levers for moving things and increasing/decreasing a force and pulleys to lift objects. 6. Investigate gears and how they are used in everyday life.

Cultural Capital

- To 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 be able to identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
- To be able to recognise that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect.
- The real life knowledge that links is: grouping and classifying and carrying out comparative and fair tests.
- The jobs it can be used in are: Engineering, Aeronautics, Physicist.

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Principles of Teaching Science.

Exploring – when we look at how things work in the world
Questioning – when we question what will happen
Understanding – when we use scientific language to explain
Investigating – when we can explore and are hands on
Predicting – when we use our previous knowledge to say what we think will happen.