



Lowerhouse Junior School

Science Overview Sheet



Year 3 – Forces and Magnets



Rationale: Teaching Forces and Magnets in Year 3 is crucial for developing foundational scientific understanding. It engages students with hands-on activities, fostering curiosity and critical thinking. This topic introduces key concepts like gravity, friction, and magnetic fields, helping children grasp the principles of physics in an accessible and enjoyable way.

Substantive Knowledge:

- 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
- Compare and group together a variety of everyday materials based on 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, depending on which poles are facing.

Disciplinary Knowledge:

- Classifying
- Comparative/Fair testing
- Research

Overview:

Lesson 1: How do surfaces affect movement?

Lesson 2: What is the difference between a contact and a non-contact force?

Lesson 3: Why do magnets attract only some materials?

Lesson 4: How can magnetic and non-magnetic materials be grouped and sorted?

Lesson 5: What are the poles of the magnet?

Lesson 6: How can you predict whether a material is magnetic?

Key Vocabulary:

Magnetic force: The force exerted by a magnet, attracting or repelling certain materials.

Magnet: An object that produces a magnetic field and attracts materials like iron.

Magnetic material: A substance that can be magnetized or attracted to a magnet (e.g., iron, nickel, cobalt).

Force: A push or pull that changes the motion or shape of an object.

Push: A force that moves an object away.

Pull: A force that moves an object closer.

Twist: A force that rotates an object.

Contact force: A force that requires physical touch to act, like friction or tension.

Non-contact force: A force that acts at a distance, like gravity or magnetism.

Bar magnet: A rectangular magnet with poles at each end.

Ring magnet: A circular magnet with a hole in the middle.

Button magnet: A small, round magnet used in various applications.

Horseshoe magnet: A magnet shaped like a horseshoe to concentrate magnetic force.

Strength: The measure of how much force an object can withstand or exert.

Attract: To pull towards; opposite poles of magnets attract.

Repel: To push away; like poles of magnets repel.

Poles: The two ends of a magnet where the magnetic force is strongest.

North pole: One end of a magnet that points towards Earth's north when freely suspended.

South pole: The opposite end of a magnet, pointing towards Earth's south.

Impact/Assessment

Most Children will be able to:

- give examples of forces in everyday life
- give examples of objects moving differently on different surfaces
- name a range of types of magnets and show how the poles attract and repel
- draw diagrams using arrows to show the attraction and repulsion between the poles of magnets
- use their results to describe how objects move on different surfaces
- use their results to make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun on that surface
- use classification evidence to identify that some metals, but not all, are magnetic
- Through their exploration, show how like poles repel and unlike poles attract, and name unmarked poles
- use test data to rank magnets