SW9 PARTNERSHIP

SW9 Partnership SCIENCE Medium Term Plan: Year Group: 3 Term: Teacher:

TOPIC	NATIONAL CURRICULUM	KEY VOCABULARY	POSSIBLE TRIP
FORCES & MAGNETS	• Compare how things move on different surfaces. • Notice that some forces need contact between 2 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 on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having 2 poles; predict whether 2 magnets will attract or repel each other, depending on which poles are facing.	**TIER 2 (Academic): Compare**, notice, observe, predict, attract, repel, exert, variable. **TIER 3 (Topic Specific):** Force, air resistance, water resistance, friction, gravity, pull, push, motion, surface, magnetism, magnets, repel, poles, attract, north pole, south pole, magnetic field, metal, compass.	**Science Museum:** Interactive gallery space featuring hands-on stations for testing friction on different surfaces, exploring magnetic fields, manipulating light beams, and creating shadow patterns.
PRIOR LEARNING	**Y2:** Changing the shape of solid objects through physical forces (squashing, bending, twisting, stretching).		

	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
ENQUIRY QUESTION	How does surface friction affect how far a toy car rolls?	Are all forces contact forces?	Which materials are attracted to magnets?	What happens when two magnetic poles meet?	How far away can a magnet attract a steel paperclip?	Does the size and shape of a magnet determine its strength?
LEARNING OBJECTIVES	To investigate and compare friction across different surfaces.	To distinguish between contact forces (push/pull) and non-contact forces.	To test, classify, and identify magnetic vs non-magnetic materials.	To observe magnetic poles and predict attraction or repulsion.	To investigate how magnetic force strength acts across distances and barriers.	To execute a pattern-seeking investigation on magnet physical properties vs force.
ACTIVITY **WORKING SCIENTIFICALLY SKILLS**	**COMPARATIVE TESTING:** Roll toy cars down ramps onto carpet, wood, sandpaper, bubble wrap; measure distance traveled.	**CLASSIFYING:** Sort everyday toy movements into physical contact forces (pushes, pulls, friction) vs magnetic non-contact forces.	**CLASSIFYING:** Test classroom objects/metals (copper, aluminium, iron, steel, brass); classify as magnetic or non-magnetic.	**OBSERVING & PREDICTING:** Pair bar magnets (N-N, S-S, N-S); predict and test magnetic field behaviours (attract/repel).	**COMPARATIVE TESTING:** Move magnet toward paperclip along a ruler; measure exact distance force pulls paperclip across paper/cardboard/glass.	**PATTERN SEEKING:** Test bar, horseshoe, button, and ring magnets using paperclip chains to rank strength against size.

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ASSESSMENT	Identify high-friction vs low-friction surfaces accurately using measurement data.	Define contact vs non-contact forces with working examples.	Identify that not all metals are magnetic (only magnetic metals like iron/steel).	Predict whether poles attract or repel based on orientation (like poles repel, opposites attract).	Record distance limit (in mm/cm) where non-contact magnetic force acts.	State whether magnet size correlates directly to magnetic strength based on findings.
END POINT ASSESSMENT	Pupils can compare surface friction, differentiate contact forces from magnetic non-contact forces, identify magnetic metals (iron/steel), and predict magnet attraction/repulsion based on pole orientation.					
HIGHER ORDER QUESTIONS	Why do car tires need deep tread patterns when driving on wet roads?	Why doesn't gravity need contact to pull an apple down from a tree?	Why is a aluminium soda can non-magnetic while a steel tin can is magnetic?	What would happen to a magnetic compass if you brought a strong magnet near it?	Why can a magnetic force travel through non-magnetic materials like paper or wood?	Why might a small neodymium magnet attract more paperclips than a large horseshoe magnet?
FURTHER OPTIONAL QUESTIONS/BIG QUESTIONS FOR DISPLAY	Can a force work on an object without touching it? Why do ice skates slide smoothly while sneakers grip the floor? How does a magnetic compass always find North?					
INCLUSION & ADAPTATION	Pre-measured distance ramps with color-coded surface strips (Green=Smooth, Red=Rough).	Visual sorting circles labelled "Touching Force" (Contact) vs "Magic Force" (Non-Contact).	Magnet wand testing with pre-sorted trays of wood, plastic, iron, and brass objects.	Color-coded magnet poles (Red=North, Blue=South) with visual Push Away / Pull Together arrows.	Ruler taped to desk with magnetic paperclip guide slider.	Visual paperclip chain counting sheet for recording strength scores.
GREATER DEPTH	Measure frictional pull force in Newtons using spring balances across varied textures.	Investigate magnetic fields by mapping field lines using iron filings and clear plates.	Research commercial metal sorting in recycling plants using industrial electromagnets.	Apply pole principles to explain Maglev train levitation technology.	Graph the relationship between distance (mm) and magnetic force attraction through layers.	Evaluate variables affecting electromagnet strength (coil turns vs voltage).