SCIENTIFIC ENQUIRY OVERVIEW

Forces

YEAR 5 | SPRING 1 | 6 LESSONS

LESSON	OBJECTIVES	SCIENTIFIC ENQUIRY	EQUIPMENT
L1 **What happens when friction is low?**	• Define friction. • Predict the effect of low friction. • Plan a fair comparison of surfaces.	**COMPARATIVE AND FAIR TESTING** Pupils slide an object down a ramp covered in different smooth surfaces, measuring distance travelled while keeping ramp angle constant.	• Ramp (1 per group) • Toy car or block (1 per group) • Smooth surfaces (laminate, plastic) • Ruler or tape measure (1 per pair) • Recording sheet (1 per child)
L2 **What happens when friction is high?**	• Identify high-friction surfaces. • Compare friction across surfaces. • Conclude how surface affects movement.	**COMPARATIVE AND FAIR TESTING** Pupils repeat the ramp test with rougher surfaces (carpet, sandpaper, towel) and compare distances travelled to draw conclusions.	• Ramp (1 per group) • Toy car (1 per group) • Rough surfaces (carpet, sandpaper, towel) • Ruler (1 per pair) • Recording sheet (1 per child)
L3 **What is air resistance?**	• Define air resistance. • Plan a fair test of falling objects. • Conclude how shape and area affect air resistance.	**COMPARATIVE AND FAIR TESTING** Pupils drop paper parachutes of different sizes from the same height and time how long each takes to fall, varying only canopy size.	• Tissue paper or thin plastic • String • Paper clips • Stopwatch (1 per pair) • Recording sheet (1 per child)

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L4 **What is water resistance?**	• Define water resistance. • Plan a fair test of objects in water. • Conclude how shape affects water resistance.	**COMPARATIVE AND FAIR TESTING** Pupils drop different-shaped plasticine objects through water and time descent, varying only the shape.	• Tall water-filled container • Plasticine • Stopwatch (1 per pair) • Recording sheet (1 per child)
L5 **What does gravity do?**	• Define gravity. • Distinguish mass from weight. • Use a Newton meter.	**COMPARATIVE AND FAIR TESTING** Pupils measure the weight of various classroom objects with a Newton meter and compare with mass on a balance.	• Newton meters (1 per group) • Balance scales (1 per group) • Various classroom objects • Recording sheet (1 per child)
L6 **What are some simple machines?**	• Identify levers, pulleys and gears. • Explain how each reduces effort. • Build a simple machine.	**COMPARATIVE AND FAIR TESTING** Pupils lift the same weight using a lever at different fulcrum positions and compare the effort needed.	• Wooden ruler or strip (1 per pair) • Pivot block • Weights • Newton meter (1 per group) • Recording sheet (1 per child)