

KEY VOCABULARY

force

a push or pull that can change an object's motion or shape

gravity

a non-contact force that attracts masses towards each other

friction

a contact force that opposes movement between surfaces

air resistance

a drag force from air that opposes motion

water resistance

a drag force from water that opposes motion

mass

the amount of matter in an object, measured in kilograms (kg)

weight

the force of gravity on an object, measured in newtons (N)

mechanism

parts working together to change a force or movement

Forces change motion — they can start, stop, speed up, slow down or change direction.

GRAVITY

unsupported object



Gravity pulls objects towards the centre of Earth.

RESISTANCE

movement →

FRICTION ← opposes sliding

Air and water resistance are drag forces. Friction acts where surfaces touch.

MECHANISMS

LEVER



PULLEY



GEARS



Mechanisms can change the size or direction of a force, making work easier.

MASS AND WEIGHT ARE DIFFERENT

MASS

stays the same wherever you are

Measured in kilograms (kg)

WEIGHT

changes when gravitational pull changes

Measured in newtons (N)

Sir Isaac Newton (1643–1727) explained laws of motion and universal gravitation. The unit of force is named after him.

Shared learning, with deeper Year 5 outcomes

EVERYONE BUILDS THE FOUNDATION

- Identify pushes, pulls and contact forces
- Describe how forces affect movement
- Compare how objects move on different surfaces
- Use arrows to show force direction
- Make careful observations and record results

YEAR 5 DEEPENS AND EXPLAINS

- Explain that gravity pulls objects towards Earth
- Identify effects of friction, air resistance and water resistance
- Explain how shape and surface area affect resistance
- Recognise how levers, pulleys and gears change a force
- Use evidence to support or challenge explanations

WORKING SCIENTIFICALLY

1 PLAN

Ask a testable question. Decide what to change, measure and keep the same.

Example: How does parachute size affect falling time?

2 TEST & RECORD

Measure carefully, repeat readings and record results in a suitable table or chart.

Example: test surfaces using the same ramp and object.

3 EXPLAIN

Look for patterns. Use evidence to explain what happened and evaluate the test.

Year 5: discuss causal relationships and reliability.

CHECK YOUR THINKING

Does a heavier object always fall faster? • How can a mechanism make lifting easier? • Which evidence supports your conclusion?