

Year 5 Knowledge Organiser: How can forces be used to move an object?

Skills

Why do unsupported objects fall towards the Earth?

To create a comparative or fair test on the effects of gravity.

How can you increase or decrease the speed of an object that moves over a surface?

To create a fair test to measure friction, water resistance or air resistance.

How do levers, pulleys and gears work?

To explore or research how mechanisms including levers/pulleys and gears function (e.g. trebuchet, sling shot, milk carton pulley).

Knowledge

- To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- To identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect

Year 5 Science Knowledge Organiser: Forces

Essential vocabulary	
Force	is the push or pull on an object with mass that causes it to accelerate.
Gravity	is a force which tries to pull two objects toward each other. Anything which has mass also has a gravitational pull. The more massive an object is, the stronger its gravitational pull is.
Earth	the planet on which we live.
Friction	is the resistance of motion when one object rubs against another. Friction works against the motion and acts in the opposite direction.
Water resistance	is a type of friction which acts upon an object moving through water.
Air resistance	is a type of friction between air and an object.
Mechanisms	is a system of parts working together in a machine. A piece of machinery.
Simple machines	Is any of the basic mechanical devices for applying a force such as levers, pulleys and gears.
Levers	Is a bar resting on a pivot, used to move a heavy load with one end when a force is applied to the other.



Bridging backwards:
Year 3 – Forces

Question/Vocabulary	Essential Knowledge
1. How can forces affect an object?	Forces can cause an object to: To start or stop moving. To change direction. To move faster or slower. To change shape.
2. Who developed the theory of gravity?	Isaac Newton developed the theory of gravity.
3. What is the Earth's gravitational pull?	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's gravitational pull which keeps us on the ground.
4. Why is the gravitational pull stronger on other planets?	Jupiter has a greater mass than Earth so the gravitational pull on Jupiter is stronger than on Earth.
5. What is friction and can you name two forms of friction?	A force that acts between two surfaces or objects that are moving, or trying to move, across each other. Water resistance and air resistance are forms of friction.
6. What is a pulley?	Pulleys can be used to make a small force lift a heavier load. The more wheels in a pulley, the less force is needed to lift a weight.
7. What is a gear?	Gears or cogs can be used to change the speed, force or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.
8. What is a lever?	Levers can be used to make a small force lift a heavier load. A lever always rests on a pivot.



Bridging forwards:
Year 7 – Physics