

# TMS Science Launchpad- Year 2023/2024

## Year 5 - Physics: Forces

### Substantive knowledge:

Unsupported objects fall towards the Earth because of the force of **gravity** acting between the Earth and the falling object.



Air resistance and water resistance are forces against motion caused by objects having to move air and water out of their way.



Forces make things begin to **move**, get faster or slow down.



**Friction** is a force that slows or stops moving objects and is caused by two surfaces rubbing against each other.



Some objects require **large forces** to make them move; **gears, pulley and levers** can **reduce the force** needed to make things move.

They allow a smaller force to have a greater effect.



### Vocabulary:

air resistance, water resistance, friction, gravity, Newton, gears, pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley.

### Disciplinary knowledge

Comparative tests



Pattern seeking



Pattern seeking



Comparative tests



Identify and classify



Observation over time



How does the surface of an object affect the speed of a toy car? (to gather and record results)

How does the surface of an object affect the speed of a toy car? (plan an enquiry)

Do all objects fall through water the same way? (to ask scientific questions)

How does a lever, pulley or gear affect the force needed to lift a heavy object? (interpret results and draw conclusions)

Can you label and name all the forces acting on the objects in each of these situations? (observe closely)

How long does a pendulum swing before it stops? (evaluate an enquiry)

Research



How do submarines sink if they are full of air?