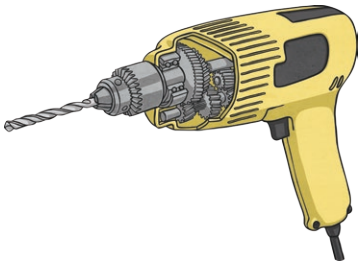
Lever, Gear or Pulley?

drill  _____	tweezers  _____
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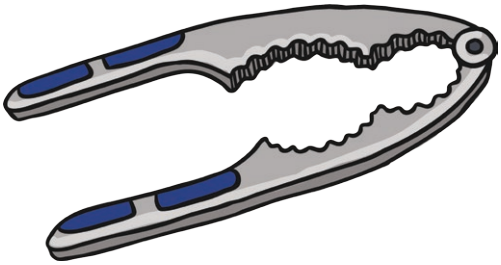
hammer  _____	nut cracker  _____
bicycle  _____	spirograph  _____


Levers, Gears
and Pulleys

Aim

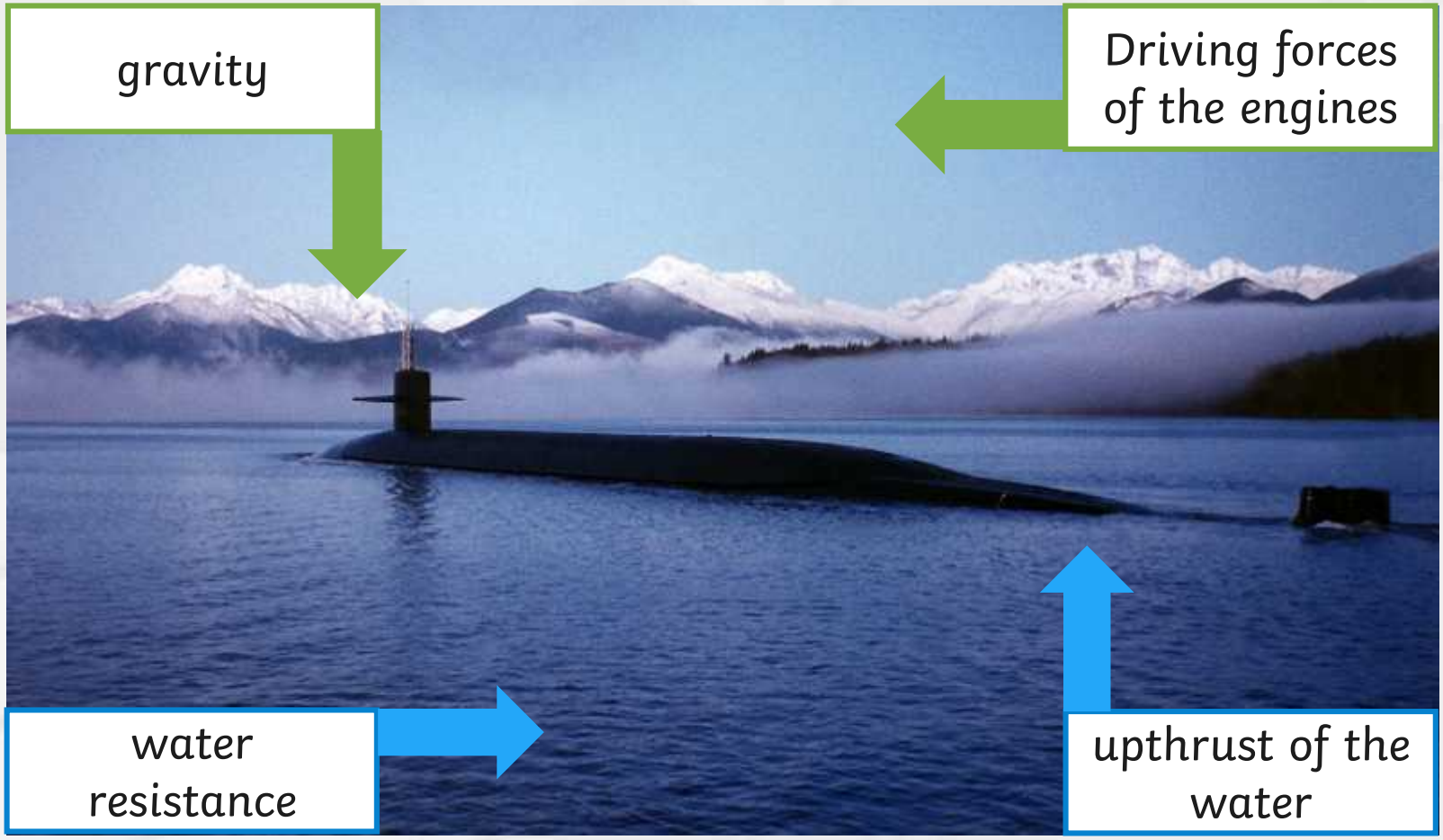
- To recognise levers, gears and pulleys.
- To build a lever, gear and pulley.

Recap

These sky divers have jumped out of an aeroplane and are falling quickly towards earth.

What forces are affecting them?

This submarine is diving downwards and forwards into the sea.
What forces are affecting it?



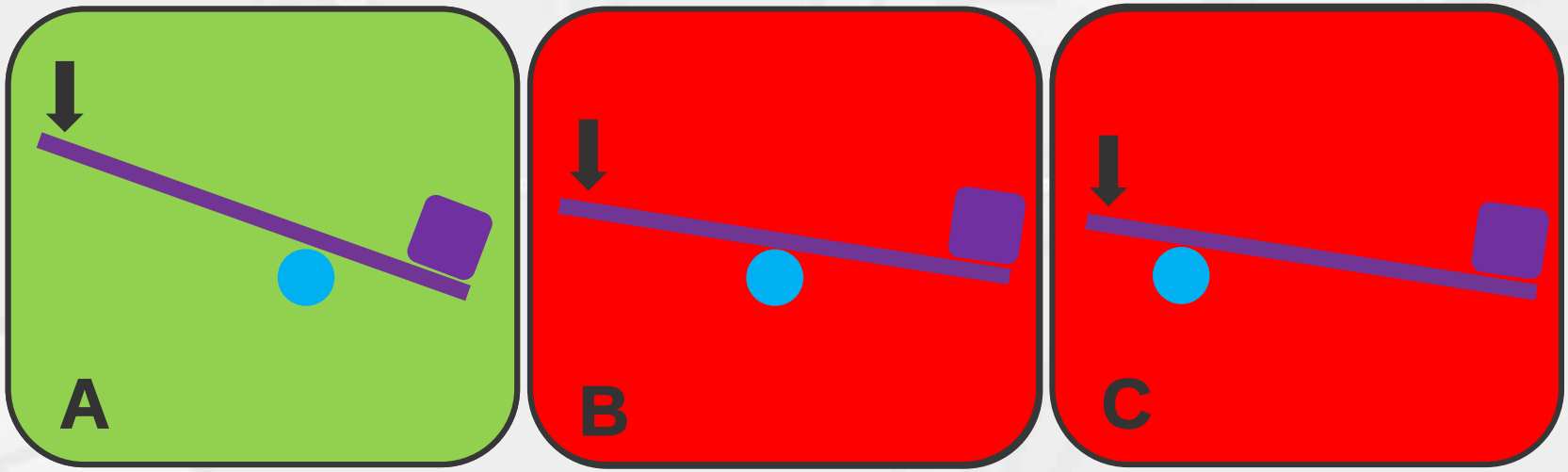
Introduction

Levers, gears and pulleys are all mechanisms that make jobs easier to do.

Or sometimes just for fun!

Levers

Levers are the simplest type of mechanism. They are really good at lifting objects and can be used to make objects easier to lift.



Here are three levers. Which lever will make lifting the block easiest?

Let's find out ... Answer

Gears

Gears are toothed wheels that lock together and turn one another.

The wheels are usually different sizes so that one gear speeds up to slow down the next gear. Gears are also used to change the direction of movement.

How will turning a small gear wheel affect the speed of a larger gear wheel?

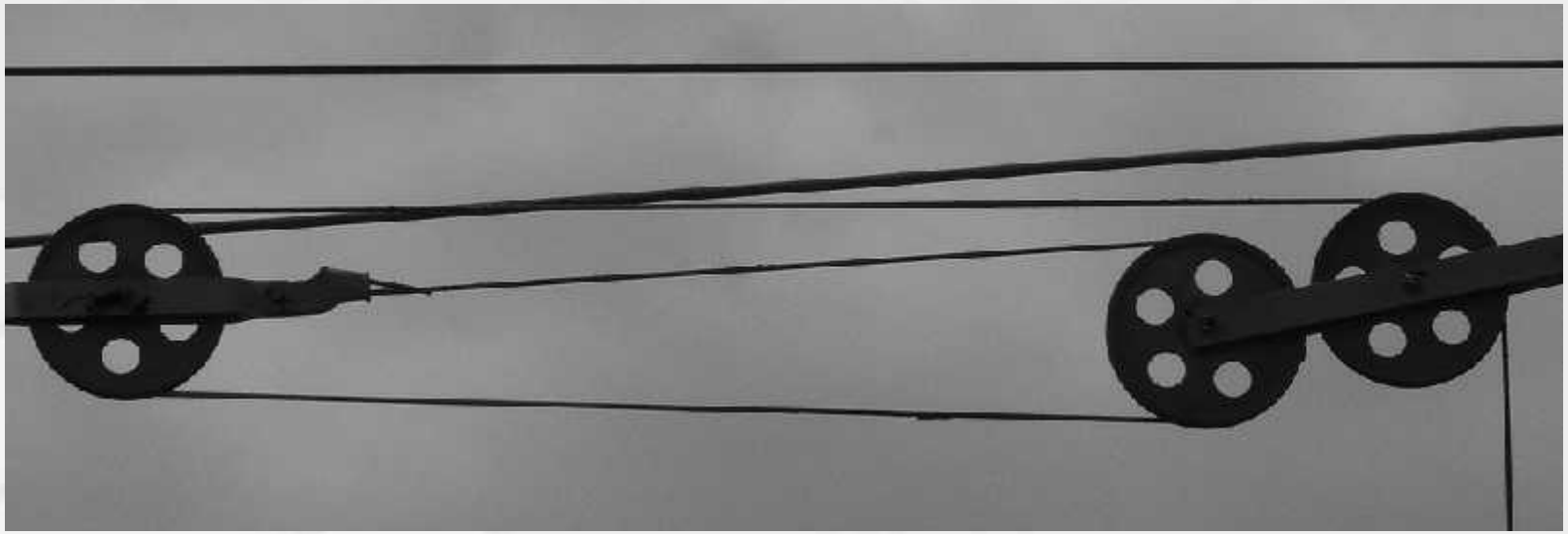
Let's find out...

If the first gear wheel is smaller (and has fewer teeth) than the second one, then the second (bigger) gear doesn't have to move as quickly to keep up with the smaller gear. So the second gear wheel turns more slowly than the first.

Pulleys

Pulleys are like gears but the two wheels do not lock together.

Instead the wheels are joined by a belt. Pulleys can be used to change the speed, direction or force of a movement.



Lever, Gear or Pulley?

On the tables are a selection of objects that use levels, gears and pulleys to work.

Can you work out which mechanism each object uses? Label the object on your sheet with the name of the mechanism.

Activity

1) Can you make a pulley to carry an object between 2 tables?
2) Can you make an object that uses 1 gear wheel to spin 5 other gear wheels even faster?
3) Can you make a lever to pick something up without using your hands?

Plenary

Which mechanism would be most suited to these jobs?

A

Hoisting a flag up a flagpole

A pulley.

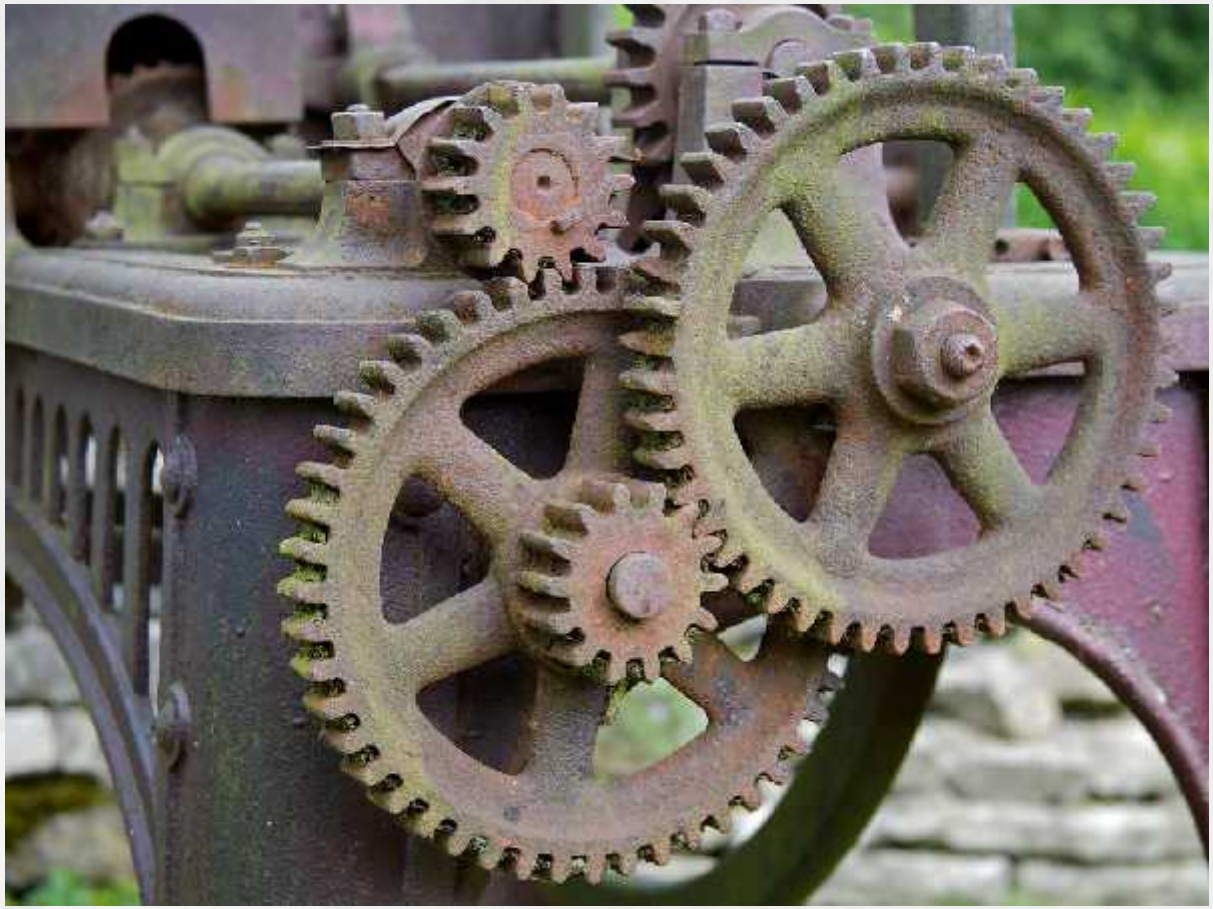
Plenary

Which mechanism would be most suited to these jobs?

B

Making one wheel turn faster than another.

A gear.



Plenary

Which mechanism would be most suited to these jobs?

C

Making a heavy sack easier to lift.

A lever.