

Year 5 – Autumn 1 – Forces

To kick off our science lessons in year 5, we have been learning all about forces! The aim of our science lessons were to explore air/water resistance, discover how we measure force and to delve deep into levers, pulleys and gears as forms of mechanisms.

In our first lesson, we explored how objects fall. We settled the debate between Galileo and Aristotle by investigating the effects of air resistance and the mass of an object. We learnt that gravity allows objects to fall through the air and that air resistance is what slows those objects down.

Paper	Time taken in seconds				
A4	1.4	0.83	1.42	1.49	1.5
	1.01	0.74	0.71	0.65	0.99
	0.48	0.84	0.66	0.4	0.3
	0.5	0.58	0.49	0.58	0.45

Galileo was correct because I know that air resistance helps the objects to slow down when travelling through the air. ✓

Gravity pushes down and long objects go faster than round objects. ✓

What is key:

If air resistance did not exist then you would hit the floor really hard. ✓

In our next lesson, we measured the effects of water resistance. We learnt that similar to air resistance, water resistance allows objects to slow down when travelling through the water. To test this theory, we made shapes out of clay and tested which one would be best to allow a speedboat to travel quickly through water.

Next Step
Everything would sink in water because ^{water} resistance pushes us up.

Conclusion
Square, Rectangle, sphere, Oval, ✓

In our investigation, we found out that ^{boat} both was the quickest to sink is because the water resistance (just like air resistance) of the object with a long, thin shape more faster. ✓

In our third lesson, we began to explore mechanisms. We started by exploring levers. We set up an investigation to demonstrate how levers work and then wrote up our conclusions and instructions.

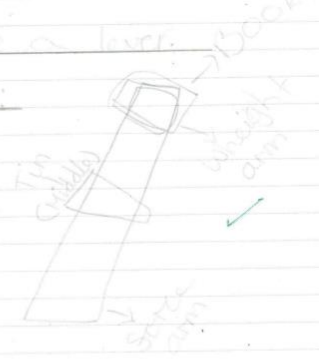
Conclusion

SP In our experiment we found that levers work by force. Like a seesaw the force on the force arm lifts the weight arm. The fulcrum needs to be directly in the middle of the board for it to work accurately. In everyday life loads, as people at work or even in general use loads or pulley, pushy and loads more mechanisms.

How to create a lever:

You will need:

- Any cylinder tin.
- Any board.
- Weights.



Instructions:

- First, lay your tin horizontally on the table.
- Next, put your board down on the tin.
- Then, lay some weights/books on the weight arm.
- Next, put some more books on the opposite side (force arm) and see how many books it takes to lift the weight arm up.
- Then do the experiment again but move the tin more to the weight arm and do the same thing.
- Next do it one more time but this time put the tin more to the force arm and do the same thing.
- After that, record your results.
- Then, write a conclusion.

In our final lesson, we explored pulleys and gears to end our forces unit. We learnt that gears make some things easier to do by changing the force needed to make something move. We created our own gears to test this theory.

