

Topic	Non-contact forces Weight and mass	Level	GCSE (or any course for students aged 11-16)
Outcomes	<ol style="list-style-type: none"> 1. To understand the difference between contact and non-contact forces 2. To understand the difference between weight and mass <p>This demonstration was contributed by Katharine Barber</p>		

A demonstration for teaching students about non-contact forces, weight and mass

You will need:

A sensitive balance (to 3dp works well)

2 bar magnets

Instructions for the demonstration:

Set up the equipment so that one of the bar magnets stands vertically on the balance. Either note down the mass of the magnet or tare the balance.

1. Ask the class to **predict** what they think will happen if you bring the other magnet towards the magnet on the balance.
2. With the other magnet, slowly approach from above to either attract or repel and watch the balance.
3. Ask students to then **observe** the balance and **explain** what they think is happening.

Questions you can pose:

Why don't I need to touch the magnet to change the reading? Is the mass of the magnet changing? Why is the weight changing? What does weight depend on? Can you calculate the weight of the magnet? Get them to predict what will happen if you turn the moving magnet up the other way (so it's doing the opposite).

This demonstration works nicely if you tare the balance so that you can see the negative/positive numbers. This can also give a sense of vector quantities for forces.

Progress: further resources on forces are available here:

<http://thescienceteacher.co.uk/forces/>