

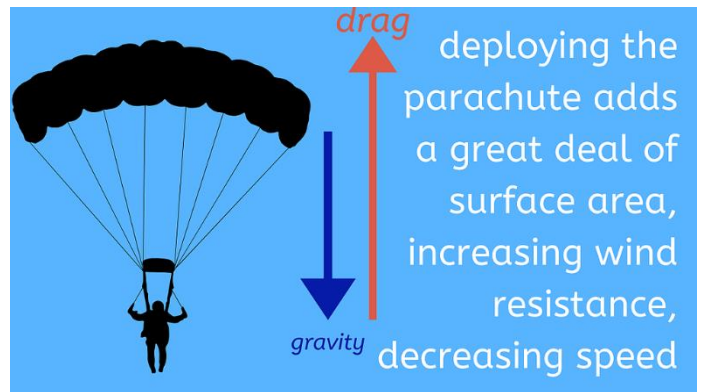
LI: to explore what we know about forces.

1. I can start using scientific language relating to forces (air resistance, gravity, friction, surface area)
2. I can use my own knowledge to pose scientific questions.
3. I can write what I know already about forces.

This term, we're learning about forces and thinking about how they're used in the 'real' world and why they're important.

For example:

This parachutist is falling because of gravity, but the parachute is slowing its descent because of air resistance on the parachute (gravity is pulling down whilst air resistance is an upward force)



Task 1:

Watch the videos and read the information on this website:

<https://www.bbc.co.uk/bitesize/topics/zvr3nrd/articles/zywcrdm>

<https://www.bbc.co.uk/bitesize/topics/zn77hyc/articles/zptckqt>

Then, write at least 10 things you know or have learnt about forces below:

Task 2:

Using what you have learned in the videos, your own knowledge and things learned in Year 3, tell me what forces are acting in these situations:

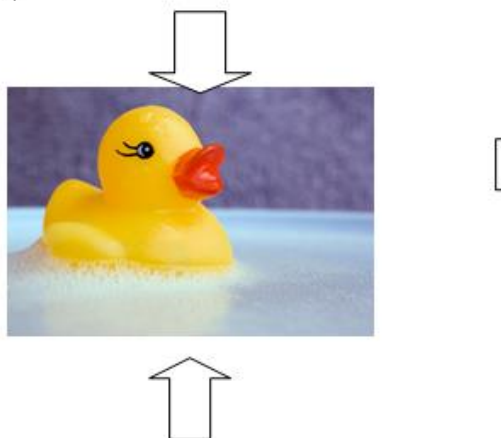
Car

This car is moving forward. Where will you place the forces of: **gravity**, **propulsion**, **air resistance** and **friction**?



Rubber duck

This rubber duck is floating happily in the bath, where will you place the forces of: **gravity** and **up thrust**?



Sky Diver

This sky diver is falling to the ground with his parachute open. Where will you place the forces of: **gravity** and **air resistance**?



Skier

This skier is skiing down the slope. Where will you place the forces of: **propulsion**, **air resistance**, **gravity**, and **friction**?



Task 3:

GALILEO AND GRAVITY

Galileo was a famous scientist in the 16th and 17th Century. His most famous observation was that two objects of the same size, but different weights hit the ground at the same time if they are dropped from the same height. This happens because the force of gravity acting on both objects is the same.

If a feather and a ball are dropped from the same height (on Earth) they fall at different rates. This is because the feather has more air resistance acting on it. Air pressure acts on the feather from all directions counteracting the force of gravity. Galileo dropped two balls of different weights but the same size off the Leaning Tower of Pisa, proving that the weight of an object doesn't affect how fast it falls.



However if a ball and feather are dropped in a vacuum, where there is no air resistance as there's no air, the ball and feather will hit the ground at the same rate.

Test this theory: take two pieces of paper that are the same size and weight. Screw one up and drop both from the same height. Do they land at the same time and fall at the same rate? If not, why not? Why do you think this is? What forces are in action? **Record your observations below.**