LO: Air resistance and water resistance

Success Criteria:

- To understand what air and water resistance are.
- To identify the effects of water resistance between moving surfaces.

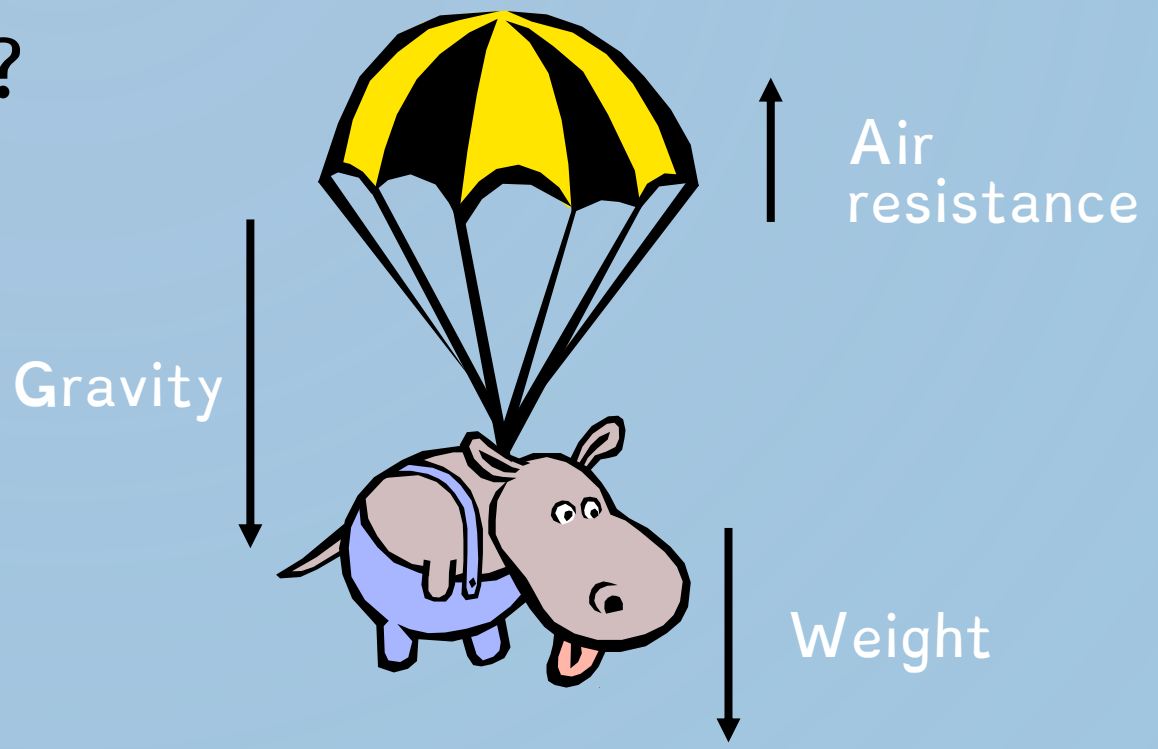
Starter

Look at this picture.

- What are the different forces involved?
- Think about what action they have on the object.

Starter

Did you guess correctly?



Task

Watch the three videos (links under this slideshow) to understand what friction, air resistance and water resistance are.

Make notes about each.

The following slides summarise the main points you need to know.

What is air resistance?

- Air resistance is a type of friction between air and another object.
- The more air resistance between an object and the air, the slower the object with will move.
- An example is when an aeroplane flies through the air: air particles hit the aeroplane making it more difficult for it to move through the air.

So what is friction?

- **Friction** is the force between two surfaces that slide across each other.
- For example, when you try to push a book along the floor, friction makes this difficult.
- Remember that friction works in the opposite direction to the direction that an object is moving
- It will always slow a moving object down.

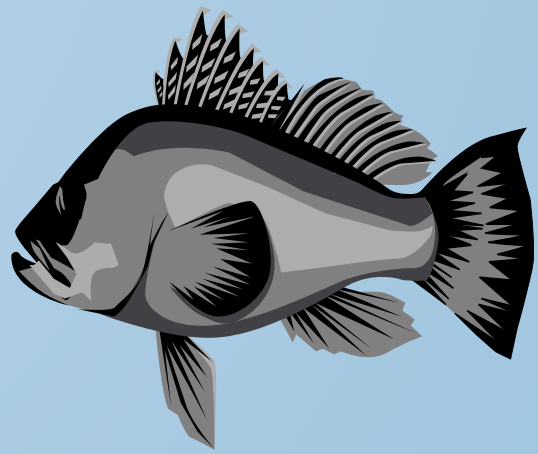
Water resistance and drag

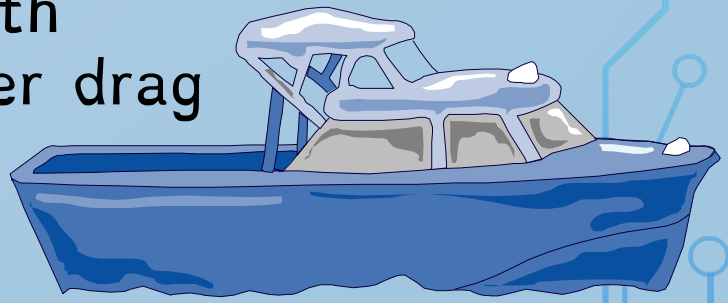
- Water resistance is a type of friction between water particles and another object.
- If you go swimming, there is friction between your skin and the water particles. This is water resistance.

- Drag is a force that acts on an object that is moving through air or water.

Water resistance and shape

- Different shaped objects have different levels of water resistance.
- Streamlined shapes create less resistance as they can move through water more easily. This is why fish are shaped the way they are.
- Area is one of the biggest factors affecting water resistance.
- If an object has a larger area, it will collide with more water particles and therefore have a bigger drag and will move slower through the water.





Penguins

- Penguins are able to glide through the water with little water resistance because they have slim bodies.
- To change their direction, they can stick out their flippers which steer them against the water.

Your task:

- Draw a swimming penguin and label it.
- Key words to use: flippers, slim body, water resistance, weight, drag, gravity.
- Extension: Describe how a penguin moves through the water.

Extension:

Watch the extension video.

- What shape do you think will allow the object to go through water faster?
- What force will slow the object down in water?