Summary – Forces

Force diagrams

We can **represent forces** on a diagram using **force arrows**. The force arrows point in the **direction that the force is pushing or pulling**.

Weight and Mass

The **mass** of something is the **quantity of matter** in it. The **weight** on something is the **force due to gravity** pulling on it. On earth, we can **calculate the weight** of something in Newtons by **multiplying** the mass in kilograms **by 10**.

Weight on the earth (N) = mass (kg) x 10

Balanced Forces

If the **forces** on an object are **balanced** (pulling equally in opposite directions) then the object will either **not move** or continue in the **same direction at the same speed**. If the forces are **unbalanced** then the object will **accelerate** in the direction of the larger force

Pressure

A **small force** on a **large area** will exert a **low pressure**. A **large force** on a **small area** will exert a **higher pressure**. The **pressure** in Pascals is equal to the **force** in newtons **divided by** the **area** in square meters.

Pressure = Force ÷ area

Friction

A **friction** force can be due to a **surface, air, water or even syrup** (if an object is floating in syrup). The **friction** force always **opposes** the **direction the object is trying to move**. You can **change** the **size** of the force due to friction by changing the **surface**, changing the **liquid** an object is floating in or changing the **shape** of the object.

Buoyancy

Objects floating on or in **water** have an **upward** force on them called **buoyancy**. If the force due to **gravity** is **larger** than the force due to **buoyancy** then the object will **rise** until it reaches the surface.