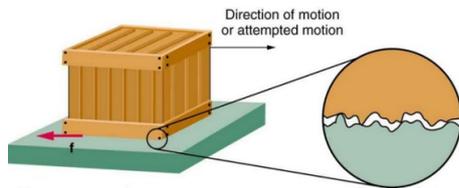


CONTACT FORCES

When the resultant force on an object is zero, it is in equilibrium and does not move, or remains at constant speed in a straight line.

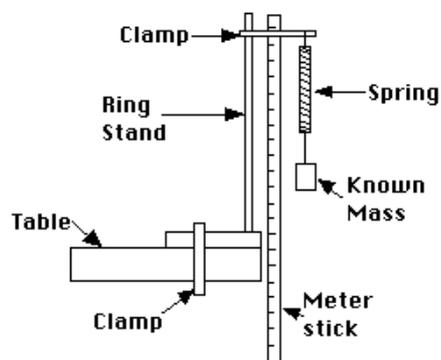
One effect of a force is to change an object's form, causing it to be stretched or compressed. In some materials, the change is proportional to the force applied.



When two surfaces move past one another we get friction. Friction is greater if:

- Surfaces are rough.
- Objects are heavy.

Apparatus for Hooke's Law Lab



The extension of a spring is directly proportional to the load.

Each extra mass causes the spring to extend by the same amount.

If forces are **balanced**:

- The object stays still **or** continues at a steady speed.

If forces are **unbalanced**:

- The object accelerates **or** decelerates.

**Keywords**

Equilibrium: State of an object when opposing forces are balanced.

Deformation: Changing shape due to a force.

Linear relationship: When two variables are graphed and show a straight line which goes through the origin, and they can be called directly proportional.

Newton: Unit for measuring forces (N).

Resultant force: Single force which can replace all the forces acting on an object and have the same effect.

Friction: Force opposing motion which is caused by the interaction of surfaces moving over one another. It is called 'drag' if one is a fluid.

Tension: Force extending or pulling apart.

Compression: Force squashing or pushing together. Contact force: One that acts by direct contact.

PRESSURE

Pressure acts in a fluid in all directions. It increases with depth due to the increased weight of fluid, and results in an upthrust. Objects sink or float depending on whether the weight of the object is bigger or smaller than the upthrust.

Keywords **Fluid:** A substance with no fixed shape, a gas or a liquid.
Pressure: The ratio of force to surface area, in N/m^2 . It's why we leave footprints!
Upthrust: The upward force that a liquid or gas exerts on a body floating in it.
Atmospheric pressure: The pressure caused by the weight of the air above a surface.

$$\text{Pressure} = \text{Force} \div \text{Area}$$



Upthrust is the **upward force** that a liquid or gas exerts on a body floating in it.

$$\text{Density} = \text{Mass} \div \text{Volume}$$

Subject	Year 8 Forces
What do we call the force between two rubbing surfaces?	Friction
How can we make friction bigger?	Rougher surfaces and heavier objects.
What meter would you use to measure the force of friction?	Newtonmeter
Are forces balanced or unbalanced at a steady speed?	Balanced
Are forces balanced or unbalanced when accelerating?	Unbalanced
Are forces balanced or unbalanced when slowing down?	Unbalanced
Are forces balanced or unbalanced when stationary?	Balanced
What word describes slowing down?	Deceleration
One mass extends a spring by 10cm. How much extension would you get with three masses?	30cm
Who's law says that the extension of a spring is directly proportional to the load.	Hooke's Law.
We predict 7 masses will extend a spring by 70cm. We find that the spring stretches by 78cm. What has happened to the spring?	Permanently stretched.
Balanced or unbalanced? $400\text{N} \rightarrow \leftarrow 300\text{N}$	Unbalanced (100N to right)
Balanced or unbalanced? $250\text{N} \rightarrow \leftarrow 250\text{N}$	Balanced
Balanced or unbalanced? 5N and $12\text{N} \rightarrow \leftarrow 19\text{N}$	Unbalanced (2N to left)
Complete the equation: $\text{Force} \div \text{Area} =$.	Pressure
Calculate the pressure. A 250N force over an area of 50cm^2 .	$5\text{N}/\text{cm}^2$
Calculate the pressure. A 250N force over an area of 0.005m^2 .	$50,000\text{N}/\text{m}^2$ (50,000Pa)
What is the upward force exerted by a liquid or gas called?	Upthrust
Complete the equation: $\text{Mass} \div \text{Volume} =$.	Density
Calculate the density of water. 15g has a volume of 15cm^3 .	$1\text{g}/\text{cm}^3$

Subject	Year 8 Forces
What do we call the force between two rubbing surfaces?	
How can we make friction bigger?	
What meter would you use to measure the force of friction?	
Are forces balanced or unbalanced at a steady speed?	
Are forces balanced or unbalanced when accelerating?	
Are forces balanced or unbalanced when slowing down?	
Are forces balanced or unbalanced when stationary?	
What word describes slowing down?	
One mass extends a spring by 10cm. How much extension would you get with three masses?	
Who's law says that the extension of a spring is directly proportional to the load.	
We predict 7 masses will extend a spring by 70cm. We find that the spring stretches by 78cm. What has happened to the spring?	
Balanced or unbalanced? 400N → ←300N	
Balanced or unbalanced? 250N → ←250N	
Balanced or unbalanced? 5N and 12N → ←19N	
Complete the equation: Force ÷ Area = .	
Calculate the pressure. A 250N force over an area of 50cm ² .	
Calculate the pressure. A 250N force over an area of 0.005m ² .	
What is the upward force exerted by a liquid or gas called?	
Complete the equation: Mass ÷ Volume = .	
Calculate the density of water. 15g has a volume of 15cm ³ .	

Subject	Year 8 Forces
What do we call the force between two rubbing surfaces?	
How can we make friction bigger?	
What meter would you use to measure the force of friction?	
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