

KS3 Knowledge Organiser: Contact Forces

Key Words:

- 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, 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 of the surfaces is a fluid.
- Tension:** Force extending or pulling apart.
- Compression:** Force squashing or pushing together.
- Contact force:** One that acts by direct contact.

Forces exist when objects interact- this produces an interaction pair. Forces can deform objects, change their speed, or change their direction of motion.

Contact Forces:

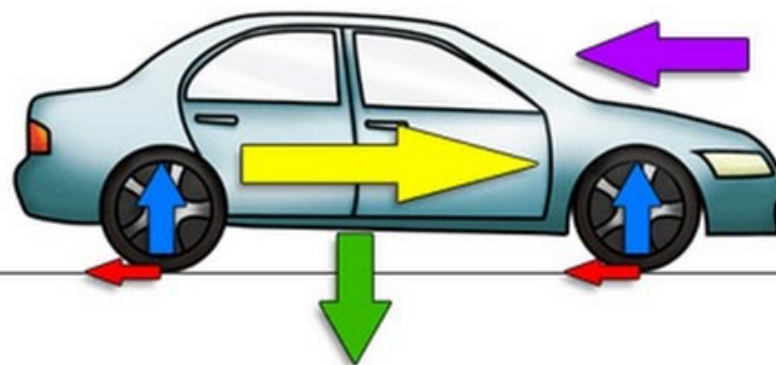
Friction, Air Resistance, and Water Resistance

Non Contact Forces:

Gravity, Magnetic force



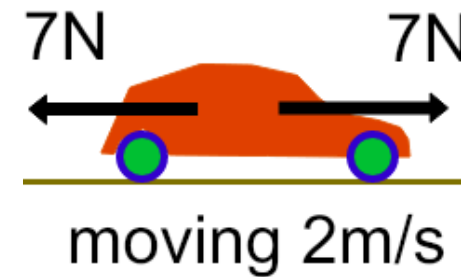
Friction can be reduced by lubrication. Air resistance and water resistance can be reduced by streamlining.



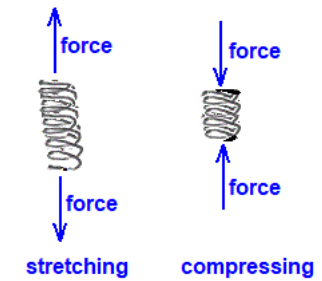
- weight
- driving force
- reaction force
- friction
- air resistance

You can draw a force diagram to show the forces acting on an object and label their size (length or thickness of the arrow) and direction with Newtons.

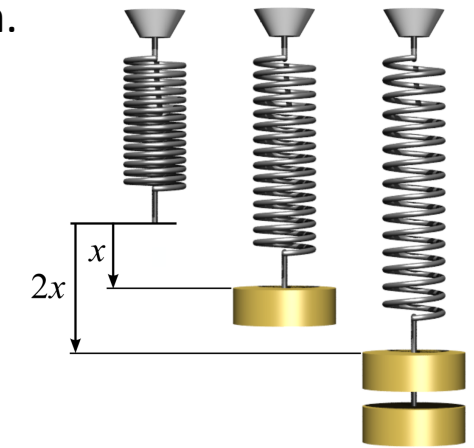
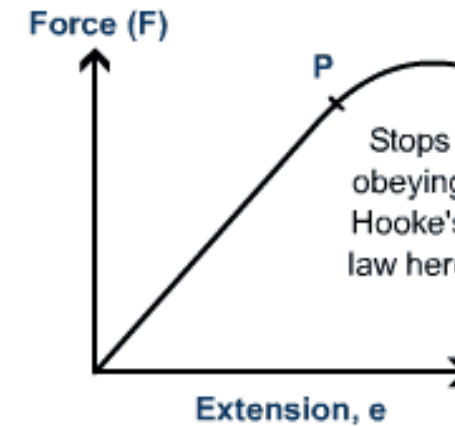
When the resultant force on an object is zero, it is in **equilibrium** and does not move, or remains at constant speed in a straight line.



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.

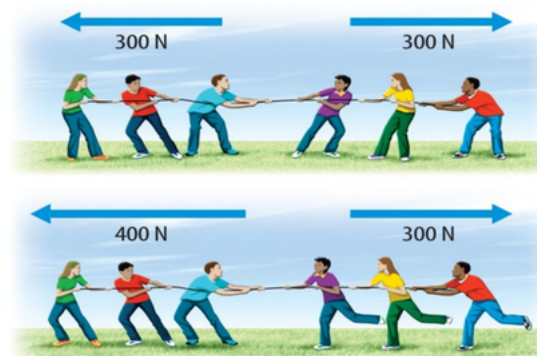


Hooke's law states when you double the force on a spring you double the extension.



If forces are not balanced the object will speed up, slow down or change direction

Balanced and Unbalanced Forces



Air resistance



Drag/frictional forces slow down falling or accelerating objects.