FORCES

Force - changes the ***motion*** of an object by either speeding it up or slowing it down, or it changes the ***shape*** of an object.

Examples

1. The brakes on a car exert a force on the wheels to ***slow it down*** (directed ***backwards***).

2. The engine of a car exerts a force through the wheels to ***accelerate*** (speed up) the car (directed ***forwards***).

3. When a football is kicked, the foot exerts a force on the ball that makes it go out of shape.

Forces can act on objects either by ***direct contact*** or ***at a distance***.

Those that act by contact do not always cause the object to move or change shape.

e.g. Pushing against the wall does not make the wall move or change shape.

These forces can also be classified as pushing or pulling forces.

Classifying Forces

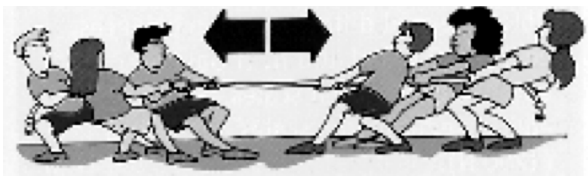
DIRECT CONTACT	AT A DISTANCE
Pushing e.g. wheelbarrow	**Gravity** e.g. jump off a roof
Pulling e.g. Tarzan swing	**Magnetic** e.g. fridge door
Explosive e.g. bullet	**Electrical** e.g. static electricity
Friction e.g. brakes on car	
Collision e.g. football	

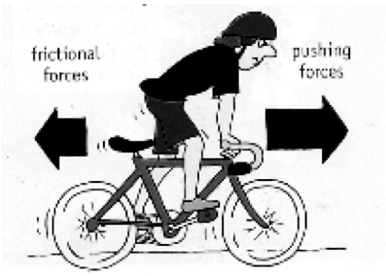
The unit used to measure forces is the **Newton** (N).

Balanced and Unbalanced Forces

When two forces are equal and opposite, there is no movement.

e.g. Two even teams in a tug-of-war.





When bike riding, if the speed is constant, then the frictional forces are equal and opposite to the pushing forces of the rider.

When one force is bigger than the other, the object moves (accelerates) in the direction of the bigger force.

e.g. If the pushing forces of the rider are greater than the frictional forces, the bike accelerates forwards.