Forces

What are forces

MYP Physics 1.1

Forces are: pushes and pulls

Forces can: speed up, slow down, change direction, stop, start, deform.

Classifying forces: tension forces – stretch an object

Compression forces – which squash an object

Torsion forces – which twist an object

Bending forces – which bend an object

Shear forces – which tear an object

Measuring forces: A force that causes a mass of 1kg to accelerate at $1m/s^2$ is defined as 1 Newton (N). One Newton is in fact one kg.m/s2

Forces are vector quantities: they have direction and magnitude

Net Force: If all the forces on an object in one direction add up to zero, we say the forces are balanced.

If all the forces on an object in one direction add up to something other than zero, we say the forces are unbalanced.

If the forces are balanced, the object is at rest or moving with constant velocity.

If the forces are unbalanced, the object is speeding up or slowing down (accelerating).

The net force or resultant force is the sum of all the forces in one direction.

Free body diagrams: The size and direction of the force is indicated with a vector arrow.

Arrows pointing to the right have a positive value, those to the left a negative value. The + or – represents a direction. Up is + whilst down is -.