

## Chapter 4 - Introducing Forces

Inertia (see p126) for definition

See p129/1

mass - the amount of matter in an object (kg)

- mass does not depend on location

weight - the force of gravity acting on an object (N)

- weight depends on location

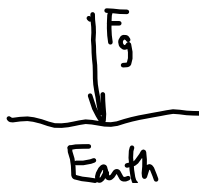
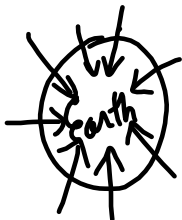
newton

$$\vec{F}_g = m\vec{g}$$

Where  $\vec{F}_g$  is the force of gravity (weight) (N)

$m$  is the mass (kg)

$\vec{g}$  is the acceleration due gravity ( $m/s^2$ )  
( $9.81 m/s^2$ )



NOTE:  $1N = 1kg \cdot m/s^2$

	$F_g(N)$	$\xrightarrow{\div 9.81 \text{ m/s}^2}$ $m(kg)$	$\xrightarrow{\times 2.2}$ $m(lb)$
S	450	45.9	101
T	840	85.6	188
B	725	73.9	163

MP/135

$$m = 4.0 \text{ kg}$$

$$\vec{g} = 1.64 \text{ m/s}^2 \text{ [down]}$$

$$\vec{F}_g = ?$$

$$\vec{F}_g = m\vec{g}$$

$$\vec{F}_g = (4.0 \text{ kg})(1.64 \text{ m/s}^2 \text{ [down]})$$

$$\vec{F}_g = 6.6 \text{ N [down]}$$

① Look over MP/136

② PP/137