



Topic: Forces and Space

Date covered: 30/10/17 – 22/12/17

Key words:

Galaxy

Light - year

Stars

Orbit

Exo-planet

Speed

Relative motion

Acceleration

Weight

Mass

Field

Newton

Resultant force

Friction

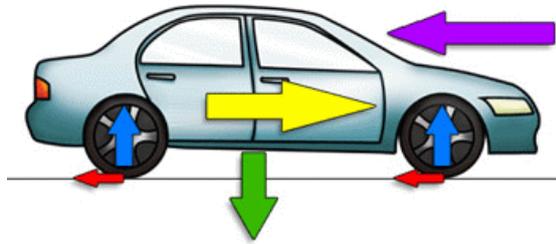
Tension

Key facts:

- Forces are all push or pulls.
- The names of forces pupils need to know are: Friction, weight, air resistance, upthrust, drag, normal reaction force, thrust and driving force.
- Normal reaction force is the upward force on any object placed on a solid surface.
- Upthrust is the upward force on any object placed on liquid.
- Forces are measured in newtons (N) with a newton meter.
- Equilibrium is when the forces horizontally or vertically are balanced.
- An object which has balanced forces will move at constant speed or be stationary.
- An object with unbalanced forces will accelerate or decelerate.
- Terminal velocity is the maximum speed an object can reach due to drag acting on it.
- Hooke's law states that the force applied to a spring is directly proportional to the extension of the spring. (If the force doubles so will the extension).
- $\text{Speed} = \frac{\text{distance}}{\text{time}}$
- Gravity causes objects to have weight.
- The bigger the mass of an object the bigger the gravitational field strength will be. (Hence why the Earth has a larger gravitational field strength than the moon.)
- $\text{Weight} = \text{mass} \times \text{gravitational field strength}$
- The solar system consists of the sun, the planets, asteroids, comets and dwarf planets.
- The planets in order from the sun are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
- Our solar system is in the Milky Way galaxy the universe consists of billions of galaxies.
- The Earth has day and night because it spins on its axis.
- The Earth has seasons because it is tilted on its axis.

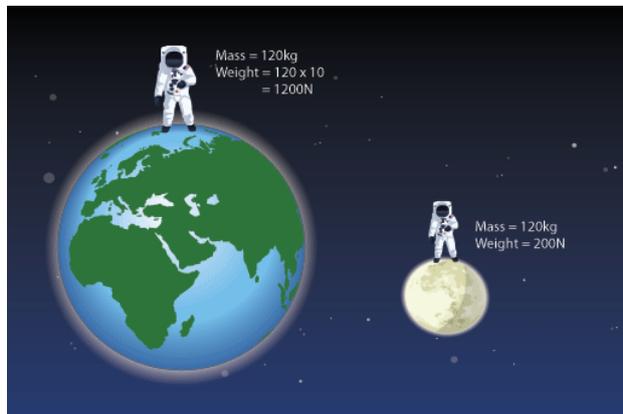
Key diagrams:

Forces on a vehicle:

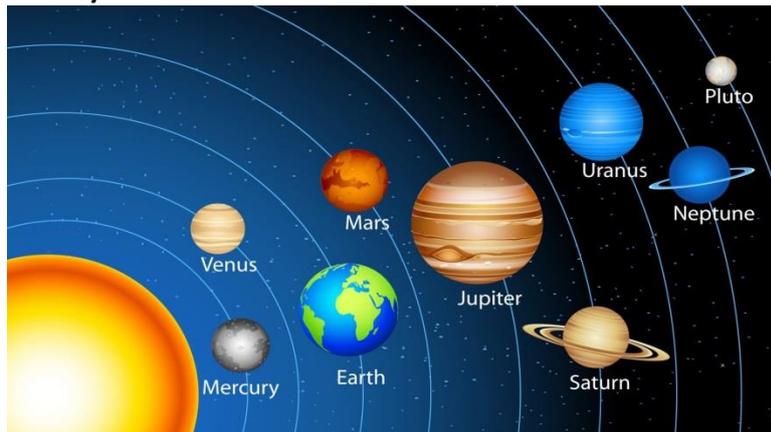


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|  weight |  driving force |
|  reaction force |  friction |
| |  air resistance |

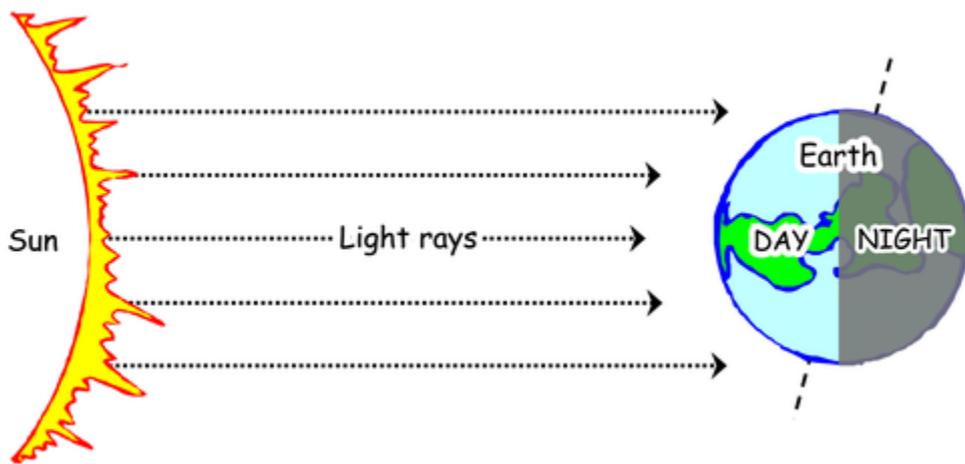
Mass and Weight:



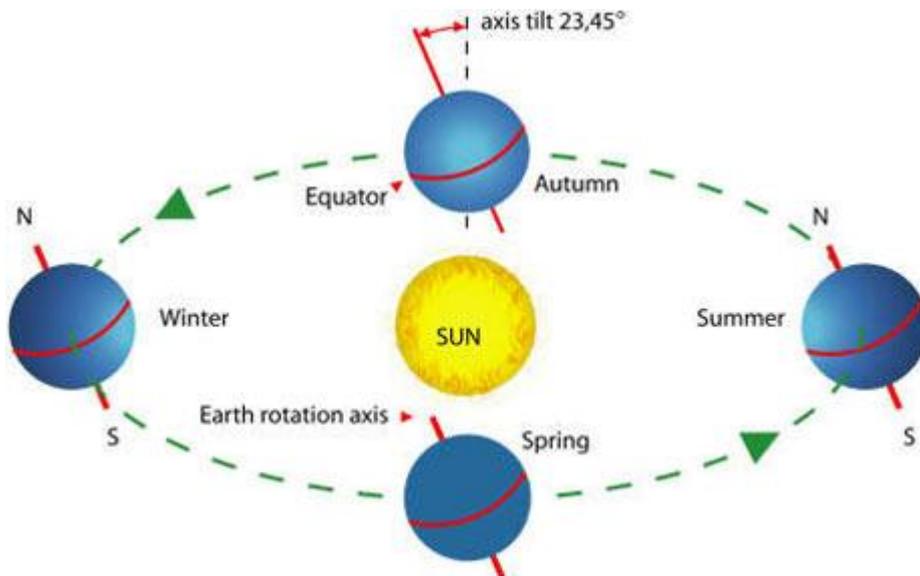
Solar system:



Day and night:



Seasons for the northern hemisphere:



Additional information:

Pupils will learn a calculation method called VESNU this half term. It teaches them to show their working out to allow them to gain as many marks as possible. This method is used all the way up to Physics A-level so it is important that they use it.