

## KNOWLEDGE ORGANISER

**BIG IDEA:** GRAVITY AND UNIVERSE

**TOPIC:** GRAVITY AND UNIVERSE

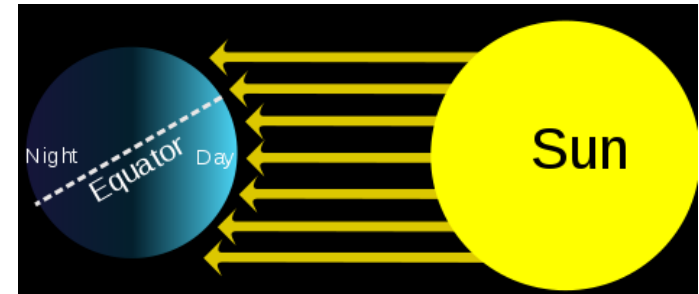
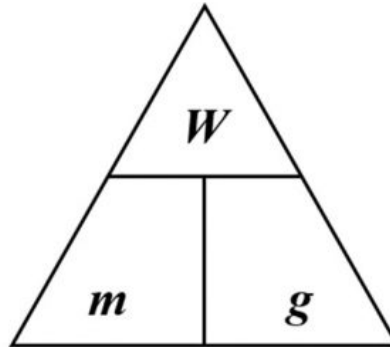
Key Word	Definition
<b>force</b>	A push or pull that changes the shape or movement of an object.
<b>galaxy</b>	A grouping of billions of stars and their solar systems.
<b>gravitational field strength</b>	The force of gravity acting on the mass of an object.
<b>mass</b>	How much matter an object contains.
<b>matter</b>	All the atoms that things are made up from.
<b>Moon</b>	A natural satellite of the Earth
<b>orbit</b>	A closed path.
<b>Planet</b>	A large ball of matter that orbits a star.
<b>solar system</b>	The sun, with all the planets and smaller objects orbiting it.
<b>star</b>	Giant spheres of superhot gas, mainly hydrogen and helium.
<b>Universe</b>	All of the galaxies.
<b>weight</b>	The force caused by gravity.

### Mass and weight

Mass means how much matter an object contains, whereas weight is the force on an object due to gravity. Mass is measured in kg, whereas weight is measured in N. Mass is measured using a balance, whereas weight is measured using a newtonmeter. Mass does not vary depending on gravitational field strength, whereas weight does depend on gravitational field strength.

### Gravity

Gravity is a force that acts between any two objects with mass.  $W = mg$  is the equation that relates weight to mass and gravitational field strength. On Earth  $g = 10 \text{ N/kg}$ . Gravity is the force that holds objects in orbit.



### Day and night

Day and night are caused by the Earth rotating on its axis. Whether it is day or night depends on where on the Earth's surface you are. Days are 'longer in summer in the UK because the Earth's axis is tilted towards the Sun.



### Objects in space

Our Solar System contains the Sun, the planets and their moons. The Sun is a star. The planets in order from nearest to the Sun working outwards are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune. A galaxy is a grouping of billions of star and their solar systems. The Universe means all of the galaxies.