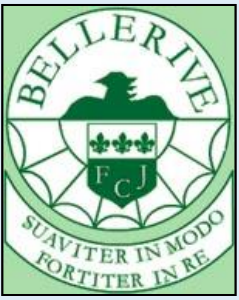


Lesson 1 - A place near the Sun



Key points to learn:

We live on a planet called Earth which gets heat and light from the Sun.

The Sun rises in the east and sets in the west.

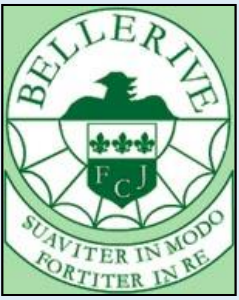
It's daytime on the side of the Earth that faces the Sun and night time on the side that is facing away.

A day (24 hours) is the time taken for the Earth to spin once on its axis.

A year is the time needed for the Earth to orbit the Sun once. This takes 365.25 days. Every 4 years the quarters add up to an extra day (leap year).

KS3 Physics Revision Guide reference P106-107

Lesson 2 - Moonshine



Key points to learn:

We can see the Moon because it reflects sunlight back to Earth.

A solar eclipse is when the moon is positioned between the Earth and the Sun, blocking the light from the Sun.

A lunar eclipse is when the Earth comes between the Sun and the moon and makes the moon appear red.

The shape of the moon changes depending on what part of it the Sun lights up.

Not in Revision Guide, but **Day and Night P106-107**

Lesson 3 – The Seasons

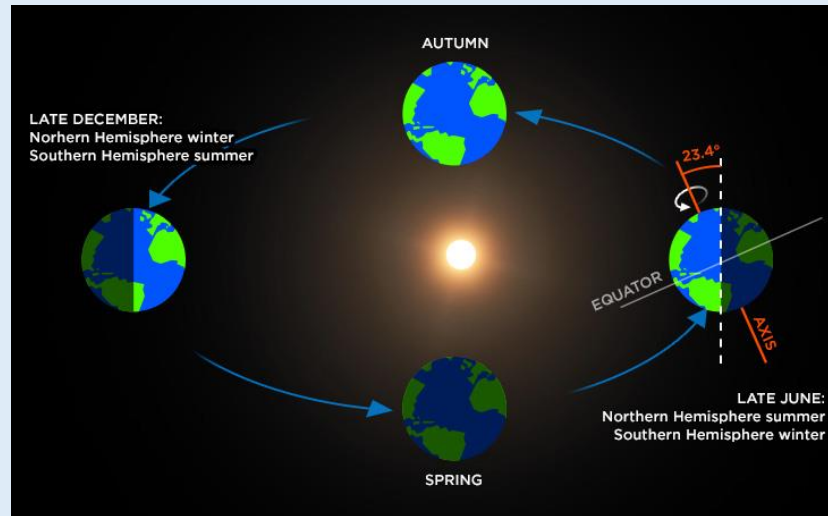
Key points to learn:

The Earth is tilted on its axis at an angle of 23°

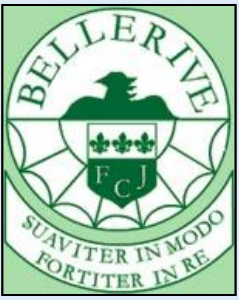
This tilt causes the seasons.

The part of the Earth that is tilted towards the sun has warmer weather while the part that is tilted away has colder weather.

The northern and southern hemispheres have opposite seasons because of this.



Lesson 4 – The Solar System



Key points to learn:

The Earth is one of 8 planets in our solar system.

Each planet orbits the Sun in an elliptical orbit.

The temperature of a planet, and length of its year, depend on its distance from the Sun.

All of the planets have different atmospheres, sizes and numbers of moons.

The order of the planets from the Sun is: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

KS3 Physics Revision Guide reference P103

Lesson 5 – Stars and Galaxies

Key points to learn:

Stars are huge balls of gas held together by gravity. They produce their own heat and light.

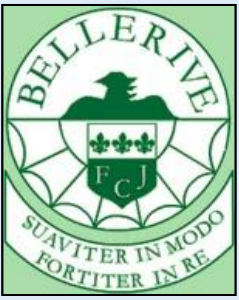
Patterns of stars are called constellations. The stars appear to move across the sky because of the Earth's rotation.

Millions of stars together form immense groups called galaxies. These are held together by gravity. Ours galaxy is called the Milky Way

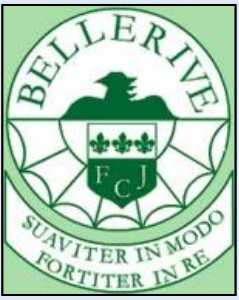
All the galaxies in space make up the Universe.

The 'light year' is a unit of astronomical distance. It is the distance travelled by light in one year.

KS3 Physics Revision Guide reference P103-104



Lesson 6 – Gravity and Weight



Key points to learn:

Mass is the amount of matter in an object.

Weight is the force due to gravity between the object and the body it is being pulled towards.

The weight of an object changes depending on the strength of gravity that is acting on it. This means if an object was put on a different planet, its weight would be different but its mass would be the same.

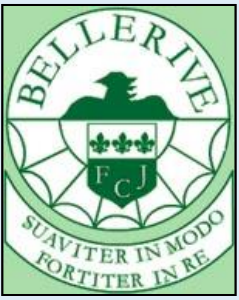
You can calculate weight using the equation:

$$\text{weight (N)} = \text{mass (kg)} \times \text{gravitational field strength (N/kg)}$$

On Earth, the gravitational field strength, or the strength of gravity, is about 10 N/kg.

KS3 Physics Revision Guide reference P101

Lesson 7 – Gravity in Space



Key points to learn:

Anything with mass will attract anything else with a mass. This force of attraction is called 'gravity' and depends on the masses of the two bodies and the distance between them.

Large planets, for example, have a much stronger gravitational field.

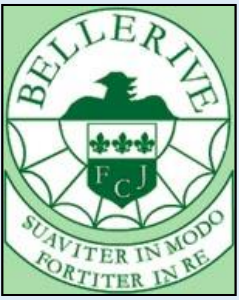
Gravity is what holds objects in the orbit of something much bigger (like the moon in the orbit of the Earth).

The closer a satellite is, the faster it travels.

Unless you are in the gravitational field of a large body you will experience zero gravity, or 'weightlessness'.

KS3 Physics Revision Guide reference P100

Lesson 8 – Simple Machines



Key points to learn:

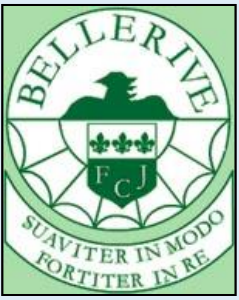
There are many examples of machines in every day life which help us apply a larger force to something. This can be done using pivots and levers.

When a force acts on something that has a pivot it creates a turning effect called a 'moment'.

You can balance moments by making sure that the clockwise moment is equal to the anti-clockwise moment

KS3 Physics Revision Guide reference P51-52

Lesson 9 - Moments



Key points to learn:

The formula for calculating moments is

$$\text{moment (Nm)} = \text{force (N)} \times \text{perpendicular distance from pivot(m)}$$

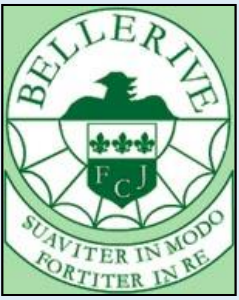
Moments are usually measured in Nm.

A beam will be balanced if its anti-clockwise moments are equal to its clockwise moments. There will be no overall turning effect.

A larger force or a larger distance will produce a larger moment.

KS3 Physics Revision Guide reference P51-52

Lesson 10 – Speed



Key points to learn:

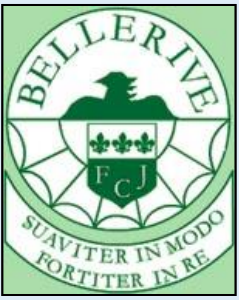
Speed can be calculated using the equation

$$\text{speed (m/s)} = \text{distance (m)} \div \text{time (s)}$$

Many factors can affect speed, e.g. slope, mass, engine power, surface etc.

KS3 Physics Revision Guide reference P36-37, P39.

Lesson 11 – Distance-Time Graphs



Key points to learn:

A distance-time graphs show the distance travelled by an object over time and allows us to understand its motion.

The gradient (slope) tells you the speed of the object.

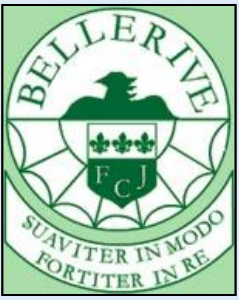
The steeper the slope, the faster the object is moving.

If a distance-time graph has a flat, horizontal section it means the object is stationary.

Curves on a distance time graph show a changing speed.

KS3 Physics Revision Guide reference P39

Lesson 12 - Pressure



Key points to learn:

Pressure is how much force is applied to a certain area.

It can be calculated using the equation:

$$\text{pressure (Pa)} = \text{force(N)} \div \text{area (m}^2\text{)}$$

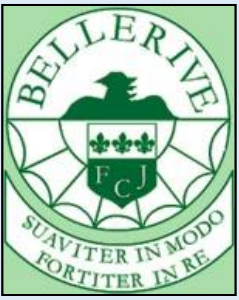
Pressure is measured in newtons per metre² N/m² or pascals (Pa)

1 newton/metre² is equal to 1 pascal.

A force applied over a larger area will have a smaller pressure.

KS3 Physics Revision Guide reference P56

Lesson 13 – Under Pressure



Key points to learn:

Pressure can be caused by particles colliding with objects.

Examples of this include the pressure from the atmosphere (atmospheric pressure) or pressure under water.

The lower you are, the more atmospheric pressure there is as there is more atmospheric particles pushing down on you than if you were higher up.

If an object is submerged in water it experiences water pressure equally in all directions.

Water pressure increases with depth.

KS3 Physics Revision Guide reference P56-57