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|  **Creech St Michael Primary School** |
| **Science: Physics**  | **Earth and Space** | **Year 5/6** |

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| **Background understanding (what I should already know)…** |
| * **We have four seasons (autumn, winter, spring and summer).**
* **The Sun is a source of light but the Moon is not.**
* **Know that a shadow is created when an object blocks light from passing through it**
* **To know the history of space travel.**
* **The properties of a sphere.**
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| **Key vocabulary** |
| **asteroid**  | A rock that orbits the Sun in a belt between Mars and Jupiter |
| **axis** | An imaginary line through the middle of something |
| **comet** | A bright object with a long tail that travels around the Sun |
| **galaxy** | An extremely large group of stars and planets. Our galaxy is called the Milky Way. |
| **gravity**  | The force which causes things to drop to the ground |
| **leap year** | A year which has 366 days. The extra day is the 29th February. There is a leap year every four years. |
| **meteorite**  | A rock from outer space that has landed on Earth |
| **orbit**  | The curved path in space that is followed by an object going round and round a planet, moon or star. |
| **planet**  | A large, round object in space that moves around a star |
| **shadow**  | A dark shape on a surface that is made when something stands between a light and the surface |
| **Solar System** | The sun and all the planets that go round it. |
| **sphere**  | An object that is round in shape like a ball |
| **spin**  | Turns quickly around a central point |
| **star**  | A large ball of burning gas in space |
| **time zones** | One of the areas into which the world is divided into where the time is calculated as being a particular number of hours behind or ahead of GMT (Greenwich Mean Time)  |
| **universe** | The whole of space and all the stars, planets, and other forms of matter and energy in it  |

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| **What I will know by the end of the unit…** |
| **What causes night and day**? | * The Earth rotates on its **axis** anti-clockwise and makes a complete **rotation** over 24 hours (a day). This makes it appear as the Sun moves through the sky but the Earth’s rotation causes day and night.
* Different parts of the Earth experience daylight at different times - this means that it is morning, afternoon and night in different places. This is also the reason why we have **time zones**.
* Because of the Earth’s **tilt**, the poles experience 24 hours of sunlight in the summer, and very few hours of sunlight in the winter.
* As the Earth rotates, **shadows** that are formed change in size and orientation.
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| **Year length and the seasons** | * The Earth takes 365 and a quarter days to **orbit** the Sun.
* Season Definition: When Do They Start?Because of the extra quarter day it takes to orbit the Sun, every four years on Earth is a **leap year**!
* It is the Earth’s tilt that causes the seasons
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| **The Moon** | * The Moon orbits the Earth **anticlockwise** and takes approximately 28 days.
* The Moon spins once on its **axis** every time it orbits Earth. This means that we only see one side of the Moon.
* The Moon has different **phases** depending on where it is in its orbit.
* The Moon’s **gravity** causes high and low tides
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| **What is the Solar System?** | * There are 8 **planets** in our Solar System (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune). Pluto is a **dwarf planet.**
* They all orbit the Sun, which is a star, and they all have moons.
* The first four planets are relatively small and rocky, while the four outer planets are **gas** **giants** (Jupiter and Saturn) or **ice giants** (Uranus and Neptune).
* There are also **asteroids**, **meteoroids** and **comets** in the Solar System.
* The Solar System is in a **galaxy** called the **Milky Way.**
* The galaxy is in the **universe**.
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| **Working Scientifically: Possible Investigations** |
| * Compare the time of day at different places on Earth
* Construct shadow clocks and sundials
* Keep a moon diary over the course of a month.
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| **Scientific skills and enquiry (Year 5 and 6)** * planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
* taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
* recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
* using test results to make predictions to set up further comparative and fair tests
* reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
* identifying scientific evidence that has been used to support or refute ideas or arguments
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| **Who: (famous people)** |
| **Nicolaus Copernicus****(1473-1543)** | **Galileo Galilei****(1546-1642)** | **Isaac Newton****(1643-1727)** |
| **The work and ideas of many astronomers (including Copernicus and Kepler) combined over several years before the ideas of the Heliocentric model was developed.**  | **Galileo was a scientist, philosopher, astronomer, engineer and inventor. He made several important scientific discoveries and observations including the four largest moons of Jupiter, the rings of Saturn and sunspots.****Galileo’s work on gravity allowed astronauts to understand how planets stayed in orbit.** | **Isaac Newton is one of the most famous scientists of all time. He studied astronomy (and many other scientific subjects too).** **In 1687, Newton shared his knowledge about gravity and taught about the universe being ‘pulled together’ by gravity.** |