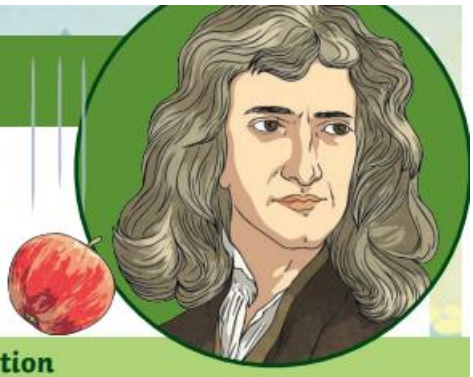
Reading Text

Sir Isaac Newton



Sir Isaac Newton was an influential physicist and mathematician who played a key role in the Scientific Revolution. He is famous for his pioneering work on the three laws of motion which introduced the concept of gravity.

Childhood

Isaac was born on Christmas Day (25th December) 1642 in the village of Woolsthorpe, Lincolnshire. Following his mother's remarriage when he was around three years old, Isaac was raised by his grandmother. He was sent to boarding school but returned when his mother asked him, as her eldest son, to manage the family farm and the surrounding estate. However, it soon became apparent that Isaac was not suited to this rural role so he returned to boarding school where he continued studying in preparation for university.

Education

In 1661, Isaac enrolled at the prestigious Trinity College, Cambridge. Initially, Isaac studied the works of traditional scientists and philosophers: such as the ancient Greek thinkers, Aristotle and Plato. However, Isaac soon became interested in the emerging Scientific Revolution: a movement which hugely influenced his views on nature and science. On the cover of one of his scientific notebooks, Isaac wrote, 'Plato is my friend, Aristotle is my friend, but my best friend is truth.'

What was the Scientific Revolution?

The Scientific Revolution was a movement that took place during the 16th and 17th centuries. People involved in the Scientific Revolution were interested in using experimental scientific methods to understand how nature works and began to think of nature as a machine. This questioned the popular ancient Greek ideas that were mainly concerned with the elements and viewed the Earth as the centre of the universe.

Scientific Discoveries

After graduating from university, Isaac was forced to spend a lot of time at home in Woolsthorpe owing to an outbreak of the plague in Cambridge. While there, he conducted some important studies about light. He found that when white light passes through a prism, it separates into a band of colours. He concluded from this that white light is made up of a mixture of colours.

Sir Isaac Newton

According to a well-known story, Isaac first made what is often considered as his greatest scientific breakthrough when sitting under a tree in an orchard on his family farm. It is said that an apple fell from a tree and landed on Isaac's head, causing him to ponder the reason that the apple fell to the ground rather than floating upwards. He then, supposedly, concluded that the same force that pulled the apple to the ground was also keeping the Moon in orbit around the Earth and the greater the mass of an object, the greater the gravitational pull. While researching gravity and motion, Isaac also made some important contributions to the field of mathematics.

Only four years after graduating, Isaac was appointed as a professor at the University of Cambridge. In 1687, Isaac published his famous work, commonly known as the 'Principia' in which he details his laws of motion. Isaac devised three laws to explain how objects move when forces act upon them:

First Law

The first law of motion states that something that is still will stay still unless a force is applied to it. For example, a football on the ground will not move unless it is kicked.

Second Law

The second law of motion states that if you apply more force to an object, it is accelerated at a higher rate. Similarly, if an object has a greater mass, more force will be needed to accelerate it. For example, a shopping trolley with a smaller mass will require less force to accelerate than a shopping trolley with a greater mass.

Third Law

The third law of motion explains that forces work in pairs: for each force applied, another force will act in the opposite direction. For example, when rowing a boat, we move the water backwards with the paddle and the water reacts with equal force, pushing the boat in the opposite direction.

Later Years

In 1703, Isaac was elected as the President of the Royal Society (a major scientific group) and, in 1705, he was knighted by Queen Anne. Isaac was also elected as a Member of Parliament (MP) and given the post of Warden of the Royal Mint — where he supervised the manufacture of British coins.