

Isaac newton life



**ASSIGN
BUSTER**

Sir Isaac Newton is deemed one of the most influential, preeminent scientists in history. He contributed to many different aspects of science throughout his successful life, and made an impact that will last forever.

Newton was brought into the world on December 25, 1642 in Woolsthorpe, England. He was born prematurely, and was very ill and weak. He wasn't even expected not to live. Although he lived, he did not have a stable home or relationship with his parents. His father died before his birth, and his mother remarried when he was just a young child. This resulted in Newton being sent to live with his grandparents.

At age 12, Newton was brought to King's School in a nearby town. He resided in the local house of apothecary while studying at the school. Newton drew interest in the the library of chemicals that was there, but soon after was removed from the school by his mother. He was sent to work on the family farm, where he was expected to take over one day in the future. However, Newton soon learned that it was not his talent. Fortunately, his uncle could see his academic potential, and encouraged Newton to continue his education at Cambridge University instead of continuing the work on the farm. After many struggles in his early life personally and academically, Newton graduated from college.

Although he was striving to obtain a master's degree, Newton had no choice but to return back to the farm. While there, he worked on varying studies and experiments. In 1666, while on the farm, he noticed an apple fall from a tree, and this brought on much curiosity about the force that caused it.

Initially, Newton believed that the apple fell because matter is attracted to

matter. However, he then made the theory that the rate in which the apple fell directly related to the force that the earth applied upon it. Along with that, he proposed the inverse square law. This law explains that force decreases based on the square of distance from the earth's center. These viewpoints were only the beginning.

After making these predictions, Newton then made a daring hypothesis. He suggested that maybe the force that was working on the apple was the same force that was responsible for keeping the moon in orbit around the earth. This was very important at the time, for most believed in the theory of Aristotle. This theory stated that heavenly bodies abided by different laws than objects on earth. Newton, however, believed that all bodies were acted upon by the same force, no matter where they existed at. This experience in the apple led to Newton's creation of the laws of universal gravitation in the future.

Newton continued his work on this subject, but continually came up short. This began to frustrate and disappoint him, for he needed information that was not necessarily available to him. Also, he was never positive if his calculations were correct, which made it very difficult to continue work. Because of these reasons, Newton decided to set aside the work on gravity and take a break from it, which lasted for fifteen years.

During this time, Newton explored other topics that brought interest to him. There was a book written by Robert Boyle explaining color that brought much interest to him. Newton decided then to begin experimenting with light. He performed many different tests involving light. One very significant

investigation involved a beam of sunlight being passed through a prism. Newton found that when going through the prism, light refracted and displayed the colors of the rainbow. Then, he passed the same light through a second prism and found that the light recombined. Using this, Newton discovered that all colors existed within the white light. Newton concluded that light was composed of streams of particles that moved through an invisible substance. Although this particular theory was later disproved, Newton gained much attention from the world of science throughout, and it was kept alive for around a century.

As Newton had wanted to do initially, he returned to Cambridge to earn his master's degree in 1667. Here, he began to pick up with work he had done when on the farm. In 1668, he assembled a reflecting telescope, which used mirrors in order to reflect and magnify the light of objects large distances away. This telescope was a major advancement from previous telescopes that had been made. It produced clear photographs and had much more power and capability than the others. Even today, the telescopes that are used by astronomers are modeled after the reflecting telescope that Newton created. He believed his design was good, so he presented it to the Royal Society, which is a scientific organization within England. The people it consisted of were so impressed with Newton's invention, that they decided to elect him to the organization in 1672.

Soon after being elected into the society, Newton spoke on his findings from the experiment with light. While most viewed it as interesting and important, one particular scientist, named Robert Hooke, dismissed it as irrelevant and unimportant. After Newton found out about this, he sent a rather angry

message to Hooke, which would soon go on to be published in the periodical of the Royal Society. This only caused a feud between the two to grow.

The dislike between the two reached its peak when Newton published his infamous law of universal gravitation. Simply stated, this law suggests that bodies of mass attract each other with a force that relies directly on the product of their individual masses and inversely as the squared distance between them. This intricate law brought much insight into the many mechanics of the world. This law became a guide for the future development of physical law.

Newton's law first derived from the laws of planetary motion by Johannes Kepler, a German astronomer and mathematician. He also built off of the observations of Galileo, declaring that gravity is a universal property within all matter. Newton also concluded that the force exerted by gravity extended to infinity, bringing the universe together. Mathematically, his law of gravitation is represented as $F = (G)(m_1m_2) / r^2$. F standing for force, G standing for gravity, m standing for the masses, and r standing for radius. His law of gravitation proved to be effective and precise. Although he had a formula, he wasn't positive about everything. The author of the author states, Newton admitted having no fundamental explanation for the mechanism of gravity itself. In Principia Newton stated, ... I have been unable to discover the cause of those properties of gravity from phenomena, and I feign no hypotheses (regarding its mechanism)' (Shlager, Lauer, 2001). Regardless of this struggle, it was useful enough to show that gravity was a force working upon and accelerating planets within their orbits. This law was

a descriptive and predictive tool that helped prove the existence of God and that no intervention was needed to bring movement to the heavens.

Newton's law made an exceptionally large impact throughout the world to this day. The author of the article explains that, Using the law allowed physicists and astronomers to bridge the relationship between cause and effect with regard to falling bodies and orbiting planets (Shlager, Lauer, 2001).

Newton also created the laws of motion, which is continuously taught within schools and other places throughout the world. These three laws describe motion within varying bodies, and how they interact. The first law simply explains that an object that is at rest will remain that way, and an object in motion will remain moving unless acted upon by another force. The second law is simply written in a mathematical formula. This formula is $F = ma$ (Force = mass x acceleration). Finally, the third law states that for an action, there is always an equal and an opposite reaction. These three laws have been proved valid for centuries, and are still used to prove differing occurrences.

Newton experienced many struggles throughout his life. He was expected to do things that he did not necessarily have talents in, and sometimes he struggled within school. This never stopped him from striving to do significant things within his life. He changed the world of science forever, and will forever be talked about as one of the most influential, successful scientists in history.