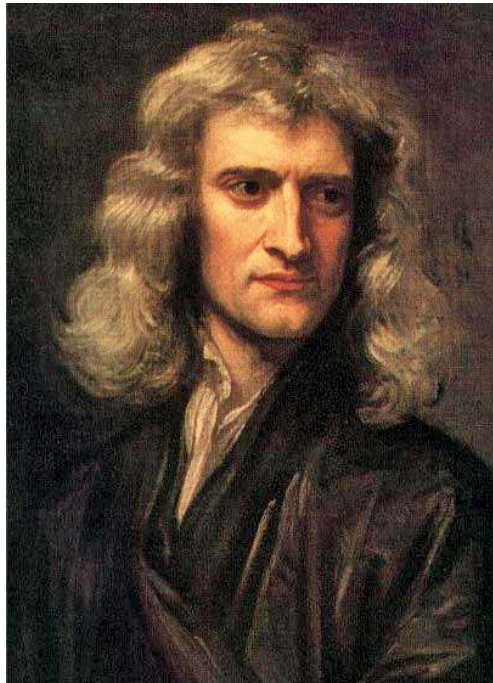


Sir Isaac Newton

Born: December 25, 1642, Woolsthorpe-by-Colsterworth, United Kingdom

Died: March 31, 1727, Kensington, London, United Kingdom



Overview:

Sir Isaac Newton is regarded by some to be the most influential scientist in history. His contributions to math, physics, astronomy, and optics are heavily relied upon still today and have led to countless innovations and achievements including getting humans to the Moon. Although he suffered from a rough childhood, Newton rose above these difficulties, and would eventually be knighted. We will examine the life and contributions of Sir Isaac Newton, who is arguably the **most influential scientist in history**.

History of His Life:

Sir Isaac Newton was born on December 25 (Christmas Day), 1642 in a house called **Woolsthorpe Manor** in Woolsthorpe county England. Newton was born prematurely, leading to him being so small at birth that his mother often stated that he was small enough to fit into a “quart pot.” Newton’s father was a **yeoman**, a farmer who owned a small amount of land and had died three months prior to his birth. As an only child, Newton



Woolsthorpe Manor

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During his time at Cambridge and throughout his adult years, Newton was described as reclusive and untrusting towards others. Although he was attending university, Newton much preferred private study. He read of the progress being made by the scientists of his day, but he was always skeptical and wanted to see how their experiments worked. One example of Newton's skepticism and search for objective truth comes from an entry in his notebook, which read, "Plato is my friend, Aristotle is my friend, but my best friend is truth." This refers to his drive for knowledge but also his inclination to seek out the truth and not simply rely on facts obtained by others.

Newton returned to his home at **Woolsthorpe Manor** during the Great Plague of 1665. During his isolation, he carried out some of his most significant experiments and made great contributions to optics, math, physics, and astronomy.

Struggles:

Newton's biggest struggle seemed to be his self-isolation. He had a distrust of others and disliked confrontation, which may have stemmed from his childhood environment. He retreated from the intellectual community due to the controversy surrounding his findings. As a result of paranoia, he often believed that his friends were conspiring against him. Although Newton became quite wealthy, he suffered from a violent temper, experienced two mental breakdowns, had very few friends, and never married.

His Accomplishments:

Newton made great contributions to many fields including mathematics, physics and optics. Before Newton's discovery, it was believed that white light was a **single entity**. After viewing beams of light passing through a glass prism, Newton declared that white light was made up of different types of rays that each produce a specific color at slightly different angles. He also concluded that light must be made of **particles**. However, the

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Newton is also famous for his discoveries in mathematics, especially his contributions to **integral and differential calculus**. During the Great Plague, Newton made two great contributions to mathematics: **the binomial theorem** and **calculus**. The binomial theorem is the expansion of the term $(a + b)^n$. However, Newton expanded and devised a method that would work for all values of n , including fractions and negatives.

This discovery led Newton to his development of calculus. Newton's contribution to calculus includes discovering the **Fundamental Theorem of Calculus**, that differentiation and integration are inverses of each other. He first showed his findings in his book entitled *Method of Fluxions*. He used the term *fluxions* to refer to differential calculus.

Isaac Newton's largest contribution to science is arguably his **Three Laws of Motion** that he first published in 1687 in his **Principia Mathematica**. The importance of these laws is shown by the behavior of everyday objects in a "normal" frame of reference (i.e. the objects are not as massive as a black hole, not as small as an atom and are not traveling at speeds approaching the speed of light). It was Newtonian mechanics that allowed us to land on the Moon!



- # Ecobottle Sample

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- 1789 - Newton became a Member of Parliament and serves for one year
- 1703 - Newton is elected president of the Royal Society of London
- 1705 - Newton receives the highest honor in the land when he becomes the first British scientist to be knighted

Controversies:

During Newton's return to Cambridge, he had intense disputes with the **Royal Society's** curator of experiments. The Royal Society is an elite group that meets to share and critique each other's work. The disputes Newton had with the curator of experiments were over his findings on light and color, which the Royal Society was unable to reproduce. Their inability was due to their misunderstanding of his directions. Newton did not take criticism well and began to withdraw from the Royal Society as well as other scholars.



Newton 1712 - Age 70

There is an infamous controversy between Newton and German mathematician Gottfried Leibniz over **who invented calculus**. In reality, both men made great contributions, but Newton's discoveries were made several years before that of Leibniz.

Reading Comprehension Questions

1. What
2. Why do you believe Newton was reclusive and untrusting of others?
3. Did
4. In what fields of study did Newton make great contributions?
5. What did
6. What
7. What major discovery in astronomy did Newton make?

Extension Questions - Answer Key

8. Referring specifically to Newton's laws of motion,
9. What do you think of the quote by Newton, "Plato is my friend, Aristotle is my friend, but my best friend is truth"? Do you agree with Newton, or are there flaws in his thinking?
10. Do

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TWF READING

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