

# Isaac Newton

Isaac Newton was one of the **great figures** in the history of science. His ideas about motion and gravity are very important to the science of physics.



## Early Life

Isaac Newton was born in **Lincolnshire, England in 1643**. His father was a farmer. He died before Isaac was born. Isaac was raised by his grandmother. When he was a boy, he made lots of brilliant inventions like a windmill to grind corn, a water clock and a sundial. However, Isaac didn't get brilliant marks at school.

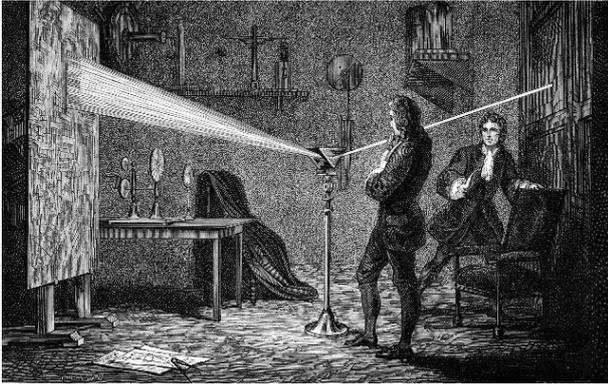
In 1661 Newton enrolled at **Cambridge University**. There he became interested in new scientific *ideas that were coming out of Europe*. They included the idea that Earth and the other planets travel around the sun. This idea challenged the long-held belief that Earth was the center of the universe.

## Scientific Work

In 1665 the Great Plague, which was a terrible disease, spread in England, and Cambridge University had to close down. Newton he returned to his family's farm, but he continued to *study and do experiments on his own*. His first great discovery came from his experiments with **light**. He found that when white light passes through a **prism**, or *triangular piece of glass*, it breaks up into a *band of seven colors*. Newton concluded that white light is a mixture of colors.

Newton also wanted to know what keeps the Moon in its orbit, or path, around Earth. He thought that only an *attraction, or pull*, between Earth and the Moon could explain it. This pull was called gravity. Newton's work showed how gravity controls the *motion of the planets* around the sun as well as the motion of the Moon. As he studied **gravity and motion**, Newton also made important contributions to **mathematics**.

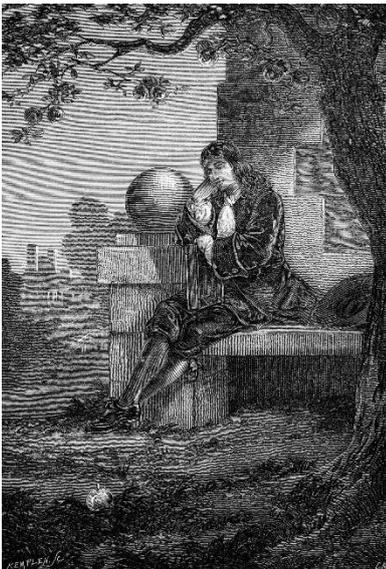
From 1669 to 1701 Newton was a professor at Cambridge. In 1703 he was elected president of a major scientific group called the **Royal Society**. In 1705 the queen of England made him a knight. Sir Isaac Newton died in London, England, in 1727 at the age of 85. He was buried along with English kings and queens in Westminster Abbey in London.



## Properties of Light

The color of light depends on its **wavelength and its frequency**. Red light has the longest wavelength. Violet light has the shortest wavelength. Orange, yellow, green, blue, and indigo have wavelengths in between those of red and violet. When light waves of all the colors travel together, the light looks white.

Certain objects, such as triangular pieces of glass called **prisms**, can *separate white light into the individual colors*. When light travels through a prism, waves of different wavelengths bend by different amounts. The color of each wavelength then appears separately. This effect is called a **light spectrum**. A rainbow is a type of spectrum. When raindrops make a rainbow, they are acting like prisms.



## Newton's Law of Gravity

Isaac Newton discovered a **law, or truth, about gravity** in the late 1600s. He said that the force of gravity between objects depends on their **mass**, or the amount of material they contain. The greater the mass of an object, the greater is its force of gravity. For example, the Sun, which has a very large mass, has a greater force of gravity than Earth, which has a much smaller mass. Even a speck of dust has a force of gravity. But its gravity is very, very small.

The force of gravity also depends on the **distance** between two objects. The smaller the distance, the greater is the force of gravity between them.

### Sources:

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