Sir isaac newton

Sir Isaac Newton was an English physicist and astronomer. Newton was one of the greatest scientific geniuses of all time. He formulated the basic laws of mechanics and gravitation and applied them to explain the workings of the solar system—to the satisfaction of scientists for more than two centuries. Although modern physics has modified some of Newton’s principles, his findings are still considered valid in most situations (Christianson, 2003). They form the basis of what is called classical, or Newtonian, physics. Newton’s contributions to optics and mathematics were also of major and lasting importance.

Isaac Newton was born in Woolsthorpe, Lincolnshire, where his family owned a small estate. His father had died before his birth and his mother soon remarried. Newton, raised by an aged grandmother, developed a solitary nature at an early age (Westfall, 2001). Newton entered Trinity College at Cambridge University in 1661 and received a bachelor’s degree in 1665. He had planned to continue his studies at Cambridge that year, but the university was closed during 1665-66 due to an epidemic of bubonic plague and he returned home.

In the following two years, Newton studied on his own, gaining many of the insights that formed the basis of his later discoveries. He formulated the binomial theorem (a mathematical principle) and invented both the differential and the integral calculus in this period (Westfall, 2001). Nature of Light While at home, Newton began experiments with light. He found that white light was refracted through a prism into various colors and that a second prism could recombine the colors into white light. He also invented the reflecting telescope.

Newton’s work on light was later summed up in his Optics (1704) which conclusively established the study of light as a branch of physics. Newton’s corpuscular, or particle, theory of light was generally discredited until Marx Planck’s quantum theory in 1905 showed that some aspects of light behavior are best explained by considering light rays as particles. Newton’s brilliance led to quick advancement. He was made a fellow of Trinity College in 1668 and received a master’s degree in 1669. In 1669, he was appointed a professor of mathematics, and in 1672 he was elected to the Royal Society.

Gravitation and Motion One day during 1665-66 while Newton was at the family estate, he saw an apply fall from a branch to the ground. He began to speculate whether a phenomenon of gravity responsible for this commonplace occurrence might not extend as far as the moon. From Kepler’s third law of planetary orbits Newton quickly came to the hypothesis later framed in his Law of Gravitation—every particle of matter attracts every other particle with a force proportional to the products of their masses and inversely proportional to the squares of their distances. At this time, however, Newton restricted his hypothesis to celestial bodies.

Later, both he and Robert Hooke came to believe that such a law of gravitation came to believe that such a law of gravitation applied to all matter. Newton was not inclined to publish his findings, preferring to avoid the attention and criticism that publication would provoke. At the insistent urging of Edmund Halley, Newton finally relented. The result was Philpsophiae Naturalis Principalia Mathematica (1687), published in Latin (Cohen, 2001). The book begins by defining terms such as mass,

momentum, and force, terms which Newton was the first to use with precision.

However, Newton’s assumption that space, time, and motion are absolute was later refuted by Albert Einstein, whose theory of relativity modified Newton’s laws of physics. The book then states Newton’s law of gravitation and his three laws of mechanics—the branch of physics dealing with the action of forces upon bodies. Finally, Newton shows that the motions of the bodies of the solar system and Galileo’s law of acceleration are explained by these laws (Cohen, 2001). In addition, Principia did much to explain mathematically the gravitational influence of the moon on tides.

It showed that comets follow an elliptical orbit. It explained certain irregularities in the earth’s orbit by the fact that the earth is not a perfect sphere (Cohen, 2001). Influence and Later Life Newton’s Principia was soon recognized as a stupendous feat of the human mind and as the culmination of the work of Galileo and Kepler. Though some 18th-century thinkers claimed that Newton’s physics had eliminated God from the universe, except as a first cause, Newton considered his findings to be an aid to religious belief.

A firm, though somewhat unorthodox, Protestant, he wrote several theological works. In politics, Newton was a staunch Whig and represented Cambridge University in the House of Commons 1689-90 and 1701-02. Newton was appointed to the lucrative position of warden of the mint in 1696, and in this post reformed English coinage. In 1701, he resigned his professorship and fellowship at Cambridge to live permanently in London.

Newton served as president of the Royal Society from 1703 until his death. He was knighted in 1705. Newton died a wealthy man and was buried in Westminster Abbey.