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Isaac Newton

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Abstract

This paper includes a biography over the life, work and religion of Isaac Newton. There is information about his early life and how he got to the different schools that he went to. Also, there is information about the papers he wrote that had major scientific and mathematical discoveries. There is also information on the political aspects of his life and how he got involved in government. Finally, there is a description of his religious views and how they impacted his work.

Isaac Newton was a man of God and a man of science. He stated, "In the absence of any other proof, the thumb alone would convince me of God's existence." He was a leader in the scientific and mathematical world for many centuries, and he continues to be one of the most recognizable names today.. His laws of motion and his contribution to calculus have stood the test of time. He is truly a remarkable man that had much to offer during his life.

Isaac Newton was born in 1643 on January 4th in Woolsthorpe, Lincolnshire, England. This date is with the new calendar that we use today. Before this calendar was put into place, he was actually born on Christmas Day. He was named after his father Isaac Newton, Sr. who "was described as a 'wild and extravagant man'" (Wenger, 2017). Newton's father was a farmer that did very well for himself, even though he could not read or write. Newton's father passed away before he was born. He was born to a widowed mother as a premature baby and he was very weak. Newton was strong and made it through. Just a few short years later, his mother remarried an older gentleman that Newton did not particularly enjoy. When his mother remarried, Newton stayed with his maternal grandmother, Margery Ayscough, but after his stepfather died his mother came back to get him. When Newton was 12, he was educated at The King's School until the age of 17. During this time, he was introduced to many subjects such as, Chemistry. His mother tried to make him a farmer, but soon realized that that was not for him and sent him back to school to finish his basic education. After Newton's basic education, his uncle was able to

convince Newton's mother to send him to a university, specifically Cambridge University, Trinity College. But,

"His mother refused to pay for his education so while at college he worked as a servant to pay his way. Newton also kept a journal where he was able to express his ideas on various topics. He became interested in mathematics after buying a book at a fair and not understanding the math concepts it contained. Newton graduated with a bachelors degree in 1665" (NASA, 2017).

By his third year as a student at Cambridge University Trinity College, he was spending most of his time studying mathematics and natural philosophy (now it is known as physics). While he was studying physics, Galileo Galilei had a physics document called "Two New Sciences" showing a new basis for motion in physics. Cambridge University Trinity College based their teaching on Aristotle's ideas, which were incorrect and "Newton began to disregard the material taught at his college, preferring to study the recent (and more scientifically correct) works of Galileo, Boyle, Descartes, and Kepler" (Famous, 2017). By 1666 Newton had developed the beginnings of the three laws of motion. Which are: An object will remain in a state of inertia unless acted upon by force. The relationship between acceleration and applied force is $F=ma$. For every action, there is an equal and opposite reaction. These have withstood the test of time and are still being used today.

Newton's education was cut short due to the plague and the university was shut down. After a few years, Newton had the opportunity to go back to school at the university after it reopened from the plague, Black Death, that had been running rampant; he took a

fellowship to acquire his master's degree in 1667. He received a Master of Arts in 1669 and during this time he "came across Nicholas Mercator's published book on methods for dealing with infinite series. Newton quickly wrote a treatise, *De Analysi*, expounding his own wider-ranging results" (Biography, 2017). In 1669, Isaac Barrow, Newton's mentor at the time, shared the manuscript of his findings with the British mathematician John Collins. Collins said that "Mr. Newton ... very young ... but of extraordinary genius and proficiency in these things" (Biography, 2017). With this raving review, Newton was brought into the professional mathematical community for the first time. After this, Barrow resigned his professorship at Cambridge, and Newton took his place as the Lucasian chair. The current chair holder is Stephen Hawking. Newton was only 26 at the time of taking this position at Trinity College. In the 1670s and 1680s, Newton was heavily influenced by the astronomer Edmond Halley. Halley talked Newton into studying gravitational force. The result of this research was the work *Principia* where "Newton breaks down the workings of the solar system into 'simple' equations, explaining away the nature of planetary orbits and the pull between heavenly bodies. In describing why the Moon orbits the Earth and not vice-versa" (Whipps, 2008). Newton also took an interest in light and optics. In 1672, Newton published "Opticks: Or, A treatise of the Reflections, Refractions, Inflections and Colours of Light". Even though this was an evolutionary document, not everyone agreed with what Newton had to say about light, especially Robert Hooke. Hooke was a pioneer in the optics world, but he said that light was composed of waves, not particles which is what Newton had theorized. Hooke actually condemned Newton's paper and said that Newton was

completely wrong. Other scientists and mathematicians such as Christiaan Huygens and many French Jesuits raised doubts about Newton's work. We now know that light can be studied as a particle or a wave, but at that time, this caused a lot of controversy. The criticism that Newton endured during this time caused him to go into a complete nervous breakdown in 1678. The following year, his mother passed away and he went further into isolation. For six years he withdrew from the intellectual world except when others initiated correspondence, which he always kept short (Biography, 2017). During these six years, he went back to his studies on gravity and its effects on the orbits of planets.

Newton was also extremely active in politics during his lifetime. In 1696, he was able to get the government position that he had waited for: Warden of the Mint. When this life event occurred, he moved to London permanently. Where he lived with his niece, Catherine Barton. Barton resided with Lord Halifax who was a high-ranking government official who helped Newton get promoted in 1699 to the Master of the Mint. This is the position that Newton held until his death in 1727. Some people considered this just an honorary position, but Newton took the job seriously. He reformed the British currency, the pound, from the silver to gold standard.

In 1703 Newton was elected President of the Royal Society of London and he was given the high honor of knighthood in 1705. By 1705, the "German mathematician Gottfried Leibniz accused Newton of plagiarizing his research, claiming he had discovered infinitesimal calculus several years before the publication of *Principia*" (Biography, 2017). This had been coming to the surface for many years and it still continues to strike up a

debate between mathematicians today. By 1712, the Royal Society of London tried to settle this debate, but they were partial to Newton, considering he was the president of the society.

Newton became one of the most famous men in Europe. He had become a wealthy man and he gave a lot of his fortune away to those who were less fortunate than he was. When he was around 80 years old, he started to experience digestion problems and by March 1727, he started to have severe pain in his abdomen and slipped into a coma. He never regained consciousness and he died March 31, 1727. He was 84 years of age and buried in Westminster Abbey, London.

Newton had many ideas that were very profound and he was a pioneer in the mathematical and scientific world. He was a very religious man and he was considered a Protestant Christian because he had many of the same views as the Christians at the time. Newton's work led him to believe that this world could only have been made by God. He states:

"This most beautiful system of the sun, planets and comets could only proceed from the counsel and dominion of an intelligent and powerful Being. And if the fixed stars are the centers of other like systems, these, being formed by the like wise counsel, must be all subject to the dominion of One; especially since the light of the fixed stars is of the same nature with the light of the sun" (Famous, 2017).

In his work *Principia*, Newton wrote: "This Being governs all things, not as the soul of the world, but as Lord over all...The Supreme God is a Being eternal, infinite, absolutely

perfect...and from his true dominion it follows that the true God is a living intelligent, and powerful Being...He is not eternity and infinity, but eternal and infinite; he is not duration or space but he endures and is present” (Jones, 2011). I think that that is a very powerful statement on how much Isaac Newton really believed in the Lord and how he incorporated Him into his work. Newton took his belief in the Lord and put it in his work so that God could be glorified through it. Who else can have light be studied as a particle or a wave? Only God can and I believe that Newton recognized that in his work.

I am going to be a math a physics teacher in the public school and I know that it is going to be hard to exemplify Christ. I pray that I am able to show Christ’s love in my everyday attitude towards my students so they can see that I really care about their education and I want to see them succeed in mathematics. Mathematics is a hard subject for everyone to understand and I want to show my students how awesome and wonderful mathematics is and how the Lord put it together. How mathematics is always constant, just like Jesus is. Just like Hebrews 13:8 says: “Jesus Christ is the same yesterday and today and forever”. I believe that that is true and I hope that I am able to radiate Christ’s love at school and at home.

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