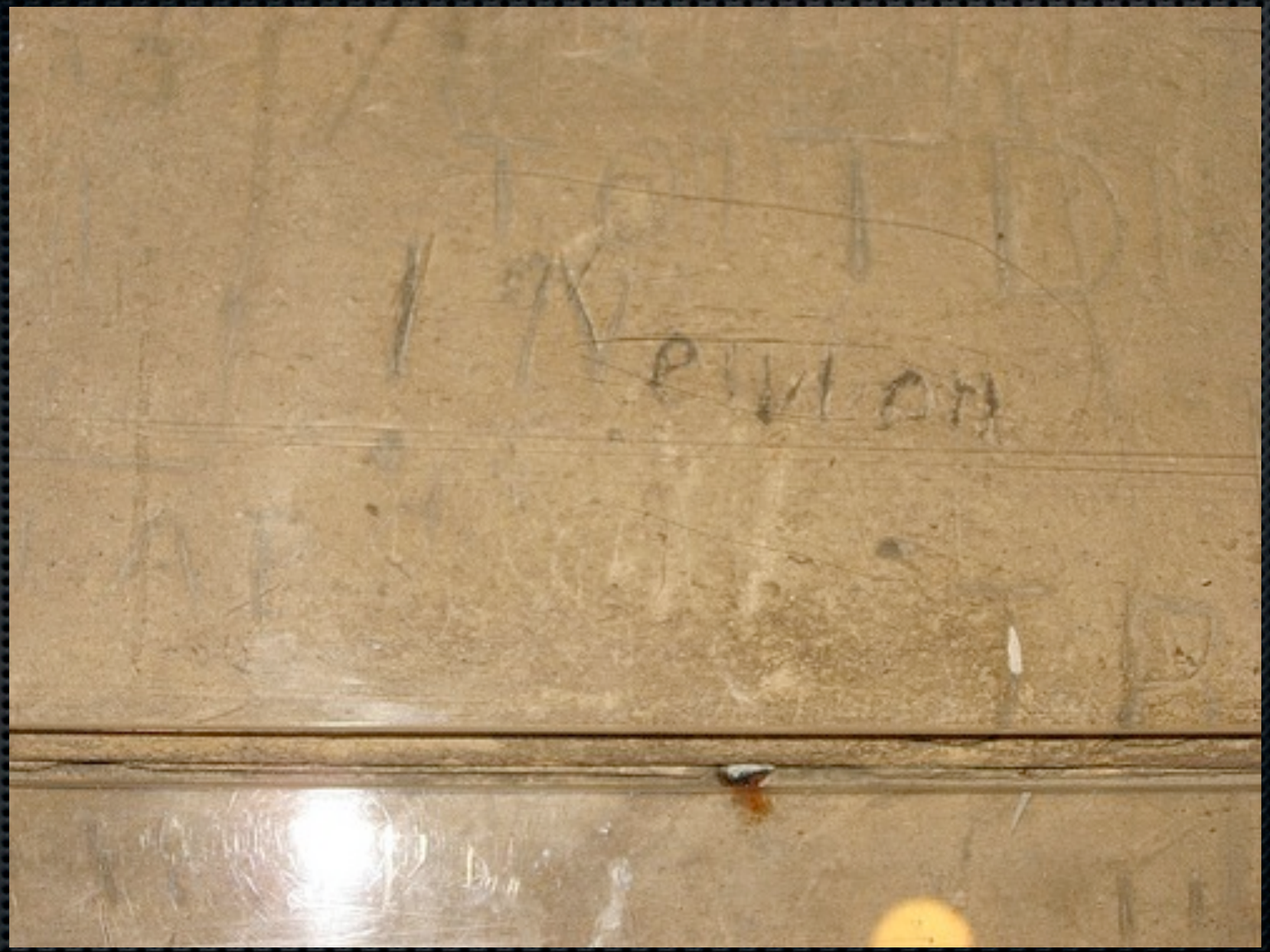
Sir Isaac Newton

Early Life

- Newton was born on January 4, 1643 (December 25, 1642)
- From Woolsthrope-by-Colsterworth, Lincolnshire, England
- Was born prematurely
- He was born 3 months after his father's death
- He was raised by his grandparents
- Came from a family of farmers
- He was a mathematician , astronomer, physicist, & natural philosopher

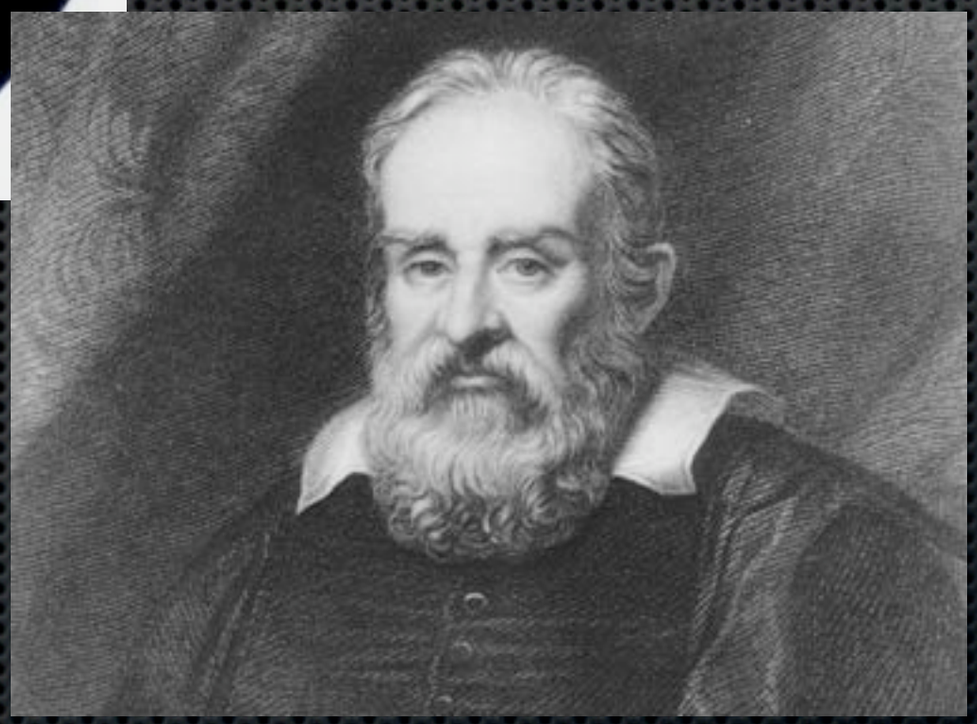
Education

- From the age of 12-17, Newton studied at The King's School, Grantham
- At the original school's building you can see his signature in the library window sill
- He was removed from school, moved back with his mother, she wanted him to become a farmer
- He hated farming
- Henry Stokes, master of The King's School persuaded his mom to let Newton further his eduaction
- Newton became the top ranked student



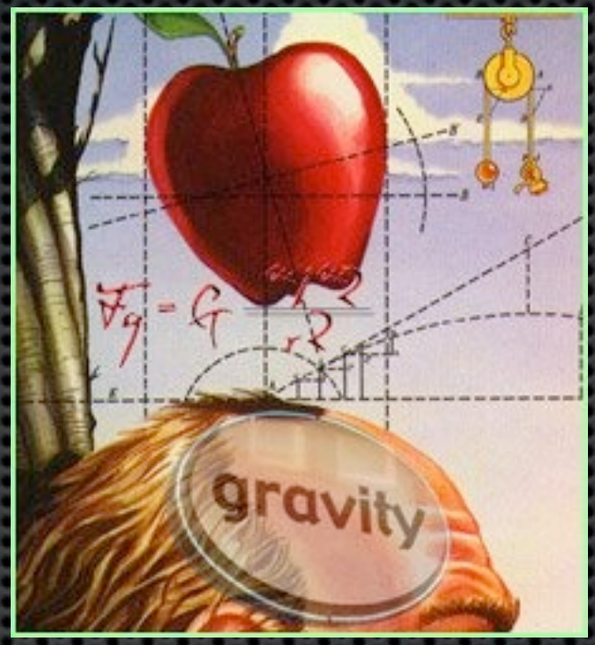
-Cont. Education

- In June of 1661, he attended Trinity College, Cambridge, United Kingdom
- He was there as a work study role
- He liked reading the more advanced ideas of modern astronomers; such as, Galileo, Kepler, & Copernicus
- Received his in degree in August of 1665
- Soon after receiving his degree the university had temporarily closed.
- Newton began his home studies at



Private Studies

- Moved back to Woolstrope
- Did his private studies at home
- He did it for 2 years
- He saw the development of his theories of Calculus, Optics, and the Law of Gravitation



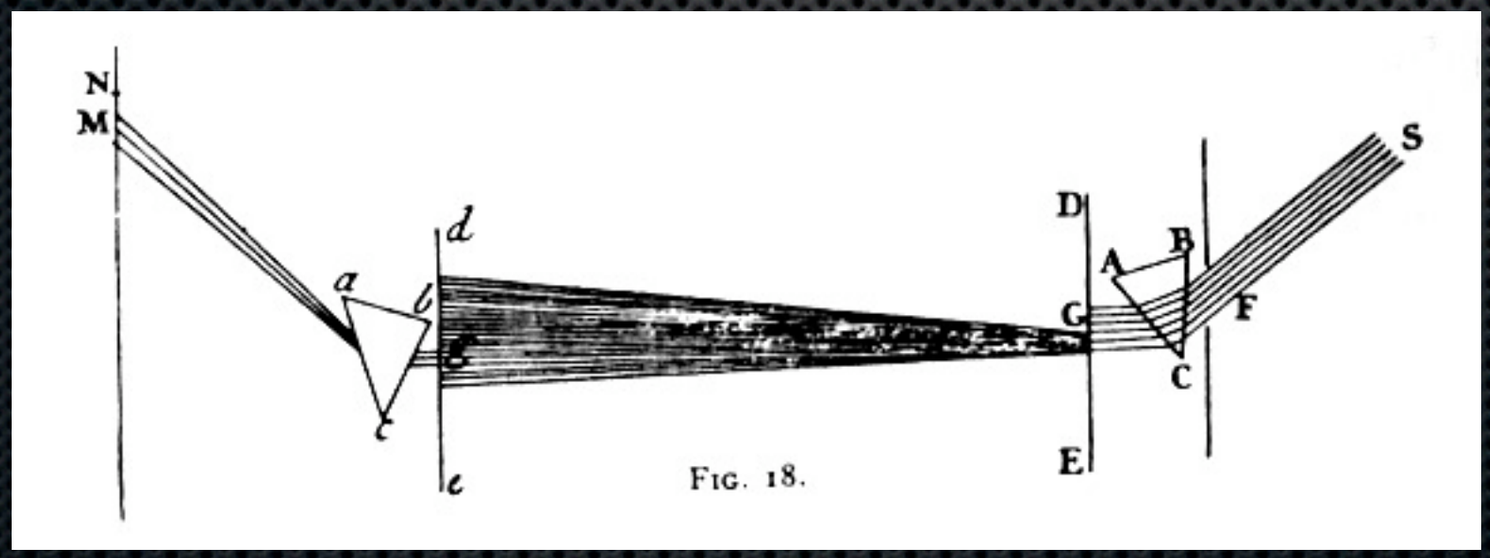
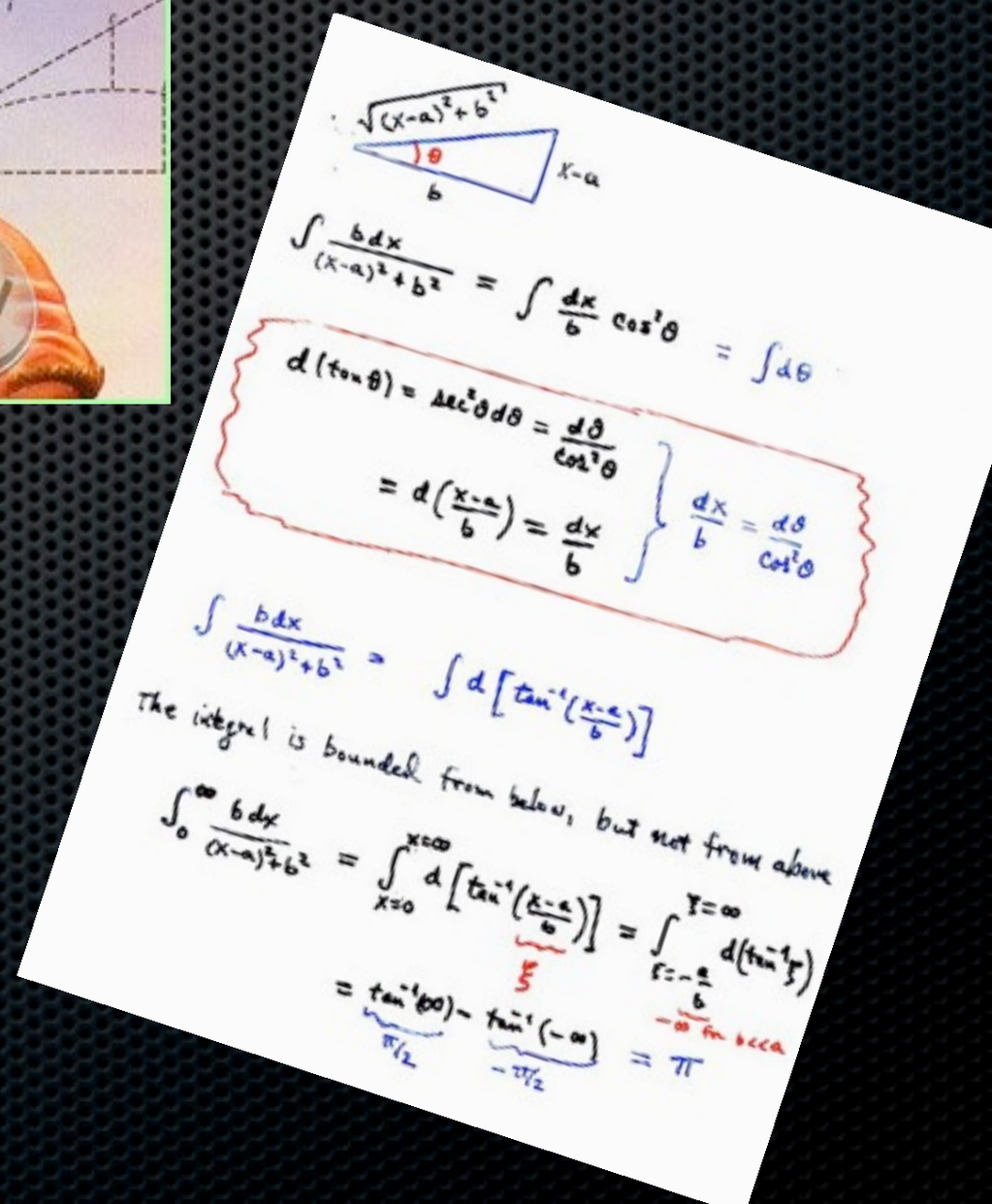
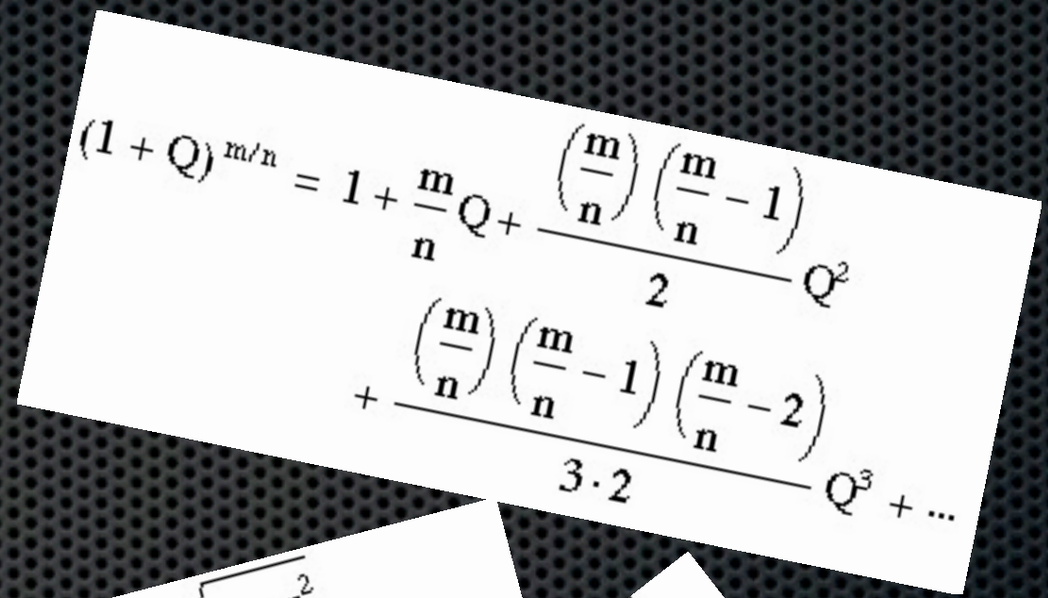


FIG. 18.



Calculus

- Newton started developing Calculus in 1666, but never got around to publish in that time
- He got in a dispute with Gottfried Leibniz, (who had also been working his methods of Calculus) about who invented Calculus
- Newton & Leibniz share the credit of developing the integral calculus
- He demonstrated the binomial theorem, Newton's method of approximating the roots of constant.



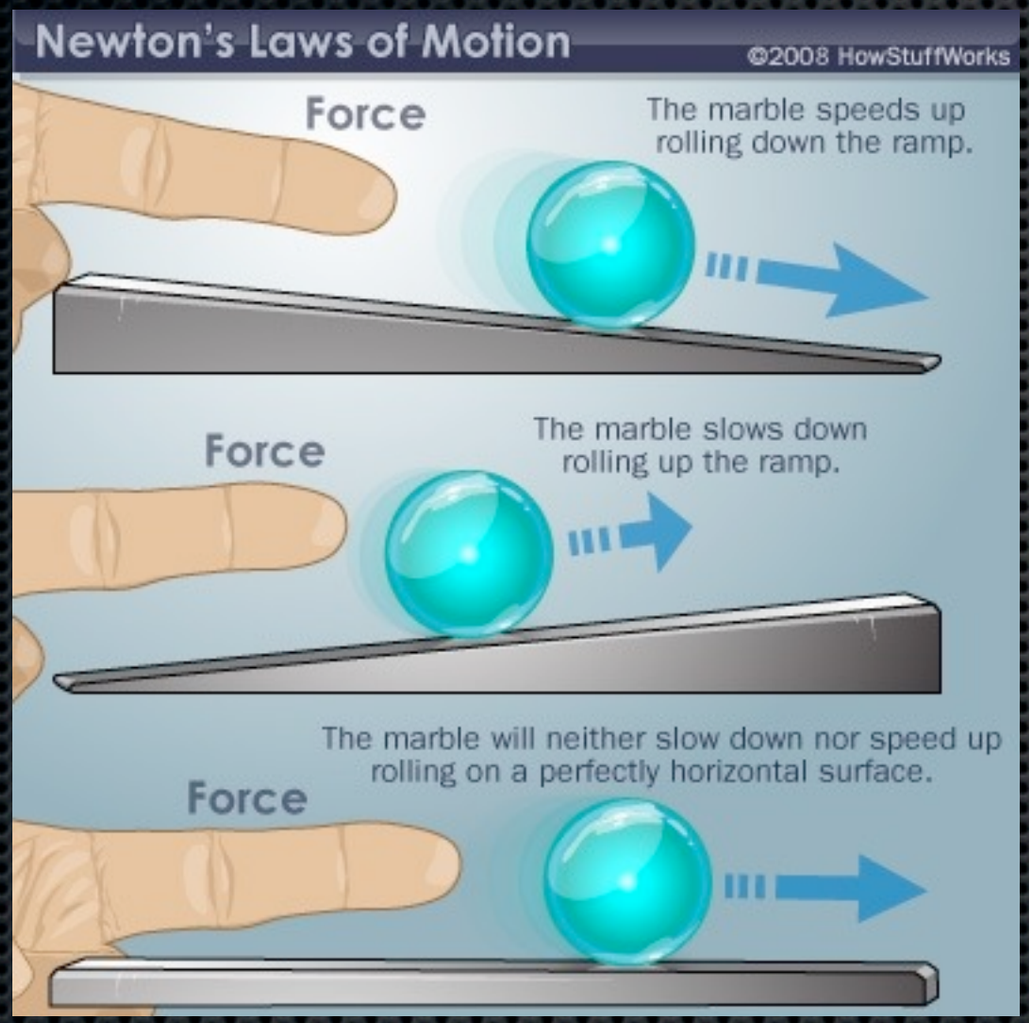
Optics

- From 1670-1672 he lectured in Optics
- Investigated the refraction of light
- Discovered that light had a spectrum of colors
- He build the first refracting telescope, instead of using lenses, he used a curved mirror
- He invented the Newtonian telescope

Newton’s Law of Motion

- Newton’s First Law of Motion states - An object at rest tends to stay at rest and that an object in uniform motion tends to stay in uniform motion unless acted upon by a net external force
- Newton’s Second Law of Motion states - The acceleration produced on a body by a force is proportional to the magnitude of the force and inversely proportional to the mass of the object
- Newton’s Third Law of Motion states - For every action there is an equal and opposite reaction

First Law of Motion

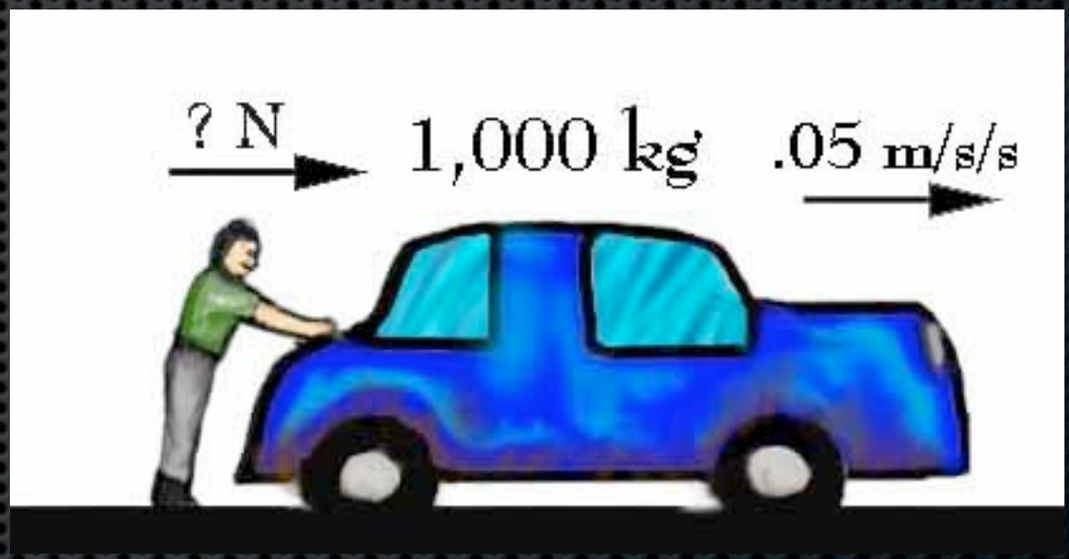


- Newton observed Galileo's Law of Inertia
- Newton's first law of motion states, an object at rest tends to stay at rest and that an object in uniform motion tends to stay in uniform motion unless acted upon by a net external force

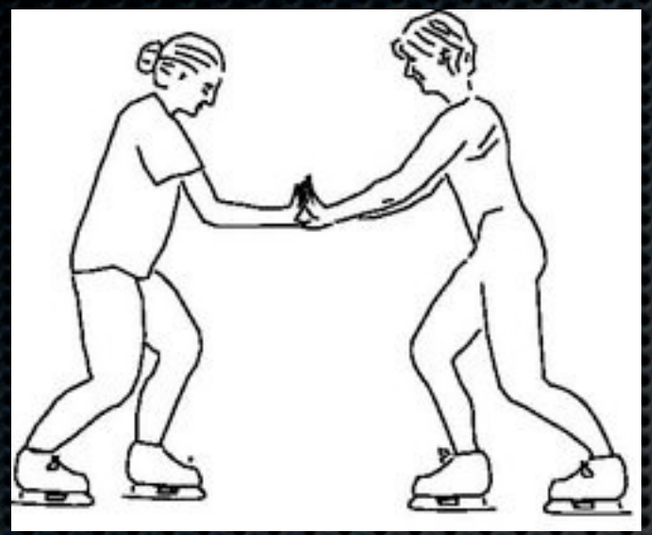
Second Law of Motion

- Newton's Second Law of Motion states - The acceleration produced on a body by a force is proportional to the magnitude of the force and inversely proportional to the mass of the object

- Ex : The harder you throw a baseball the faster is will go because of its mass, so the ball moves faster because of its size while if you throw a bowling ball the hardest you can, it will end up going very slower due to its size or mass



Third Law of Motion



- Newton's Third Law of Motion states - For every action there is an equal and opposite reaction
- Ex: a car crashed into a tree, the tree stops the car's motion, meaning the car gave exert force to the tree, the tree gave back force to the car.

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