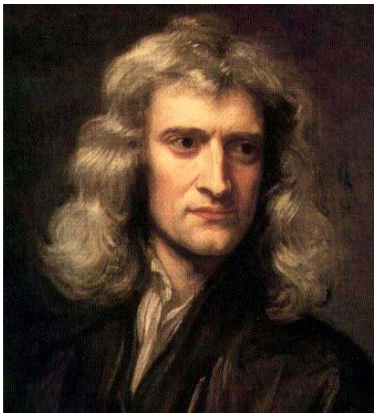
BUSINESS DEVELOPMENT WORKSHOP
SUPPLEMENTAL READING

Newton's Three Laws of Motion



Sir Isaac Newton (4 January 1643 – 31 March 1727) was an English physicist, mathematician, astronomer, natural philosopher, alchemist, and theologian who is perceived and considered by a substantial number of scholars and the general public as one of the most influential men in history.

His 1687 publication of the *Philosophiæ Naturalis Principia Mathematica* (usually called the *Principia*) is considered to be among the most influential books in the history of science, laying the groundwork for most of classical mechanics. In this work, Newton described universal gravitation and the **three laws of motion**, which dominated the scientific view of the physical universe for the next three centuries. Newton showed that the motions of objects on Earth and of celestial bodies are governed by the same set of natural laws by demonstrating the consistency between Kepler's laws of planetary motion and his theory of gravitation, thus removing the last doubts about heliocentrism and advancing the scientific revolution.

Newton's Three Laws of Motion are three physical laws that form the basis for classical mechanics.

They are:

- **First Law** (Law of Inertia):
  - In the absence of force, a body either is at rest or moves in a straight line with constant speed
  - Or in other words: An object at rest tends to stay at rest, or if it is in motion tends to stay in motion with the same speed and in the same direction unless acted upon by a sum of physical forces
- **Second Law:**
  - A body experiencing a force **F** experiences an acceleration **a** related to **F** by **F** = *m***a**, where *m* is the mass of the body. Alternatively, force is proportional to the time derivative of momentum
  - Or in other words: A body will accelerate with acceleration proportional to the force and inversely proportional to the mass ($a = F/m$)
- **Third Law:**
  - Whenever a first body exerts a force **F** on a second body, the second body exerts a force −**F** on the first body. **F** and −**F** are equal in magnitude and opposite in direction
  - Or in other words: Every action has a reaction equal in magnitude and opposite in direction

Source:

Wikipedia contributors. "Newton's laws of motion." *Wikipedia, The Free Encyclopedia*. Wikipedia, The Free Encyclopedia, 28 Mar. 2010. Web. 29 Mar. 2010.