

# [Gravitation](https://assignbuster.com/gravitation/)

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Born out of the curiosity of a young fellow named Isaac Newton, Gravitation has been one of the most baffling phenomenon of all times. Sitting under anAppletree might be one of the best opportunities to think about new ideas or ways to solve a problem or maybe think about families, loved ones among others but after seeing an apple fall to the ground from a tree, Newton began to wonder why the apple didn’t go upwards but rather fell to the ground. He didn’t just see this occurrence as a normal one but rather decided to pick it up as a whole project and after several years of research, calculations, mistakes, etc.

the Law of Universal Gravitation was born. This is a law that states that ‘ any two objects in the Universe attract each other with a force that is directly proportional to the product of their respective masses and inversely proportional to the square of the distance between their centre of masses and the force acts upon the line joining the two centres. This is mathematically denoted as: F = G (M1\*M2)/R^2 Where F = the force of attraction. M1 and M2 = are the respective masses between the two objects under study. R = the distance between the two centre of masses of Mass 1 and Mass 2.

This force works on the principle that the larger the distance between the two centre of masses, the lower the magnitude of the force and also on the principle that the magnitude of the force depends on the magnitude of the masses and as such the objects with the larger mass exerts a greater pull on the other. As such there was a force of attraction between the apple and the Earth and due to the differences in mass magnitude, the apple rather fell to the ground but since the earth’s crust is not permeable, the apple will continue to lie on the surface of the earth with high hopes to reach the centre of the earth. The gravitational force between an object of mass (m) which is on the earth is in the form ‘ mg’. M = mass g = acceleration due to gravity which was calculated to be equal to 9. 8m/s2 or approximately 10m/s2. Neglecting all other factors, ‘ mg’ can be considered as the earth’s gravitational pull on all objects on its surface.

This answered Newton’s question but there was more to Gravitation than just falling apples. Gravitation also enabled us to measure the approximate values for distances between bodies such as the Sun and the Earth, Earth and the Moon etc. It also allowed us to calculate the minimum velocity needed to escape the gravitational pull of the Earth and travel into outer space. Once again, it enabled us to calculate the distances from the Earth surface that satellites can be positioned such that they will use the gravitational pull of the earth as centripetal force to enable it orbit the Earth without moving out of orbit and as such no energy will be needed to displace these satellites that have played a major role in communication, weather studies among many other things. All these things are the outcomes of the determination to find out why apples fell to the ground.

This also shows us that sometimes the answers to the little questions could be the door to a land full of undiscovered mysteries. But I have one question for you the reader which is: ‘ is there any force of attraction between a male and female? ‘ Well that will be an article for another time. Thank You Sir Isaac Newton. Griffith Asare Awuah #africa\_rising#BENSCO #Team\_Newton