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Experiment 1: Introduction to LaTeX

For a fairly simple yet complicated & important equation, Newton's law of gravitation provides an excellent example:

$$F = \frac{Gm_1m_2}{r^2}$$

With the variables representing the following values:

- F = The magnitude of force of attraction between two masses

- G = the gravitational constant

- m_1 = the mass of the first object

- m_2 = the mass of the second object

- r^2 = the distance, r, between these two objects to the second power

The beauty of the equation

$$F = \frac{Gm_1m_2}{r^2}$$

is in the implications it brings, such as the fact that every single object with mass attracts other objects with mass, no matter the distance or magnitude of the mass itself (though the only truly noticeable effects happen on a macroscopic scale, usually regarding moon-sized objects or larger).

The reason this gravitational attraction doesn't seem quite as ever-present as the equation suggests lays within the fact it's inversely related to distance squared. The further away two objects are, the faster the force between the two will dissipate (at an exponential rate).

Equation Variables

Variables	Units	Significance
F	N	Force of attraction
G	$m^3kg^{-1}s^{-2}$	gravitational constant
m_1	kg	mass of object 1
m_2	kg	mass of object 2
r	m	distance between the two objects