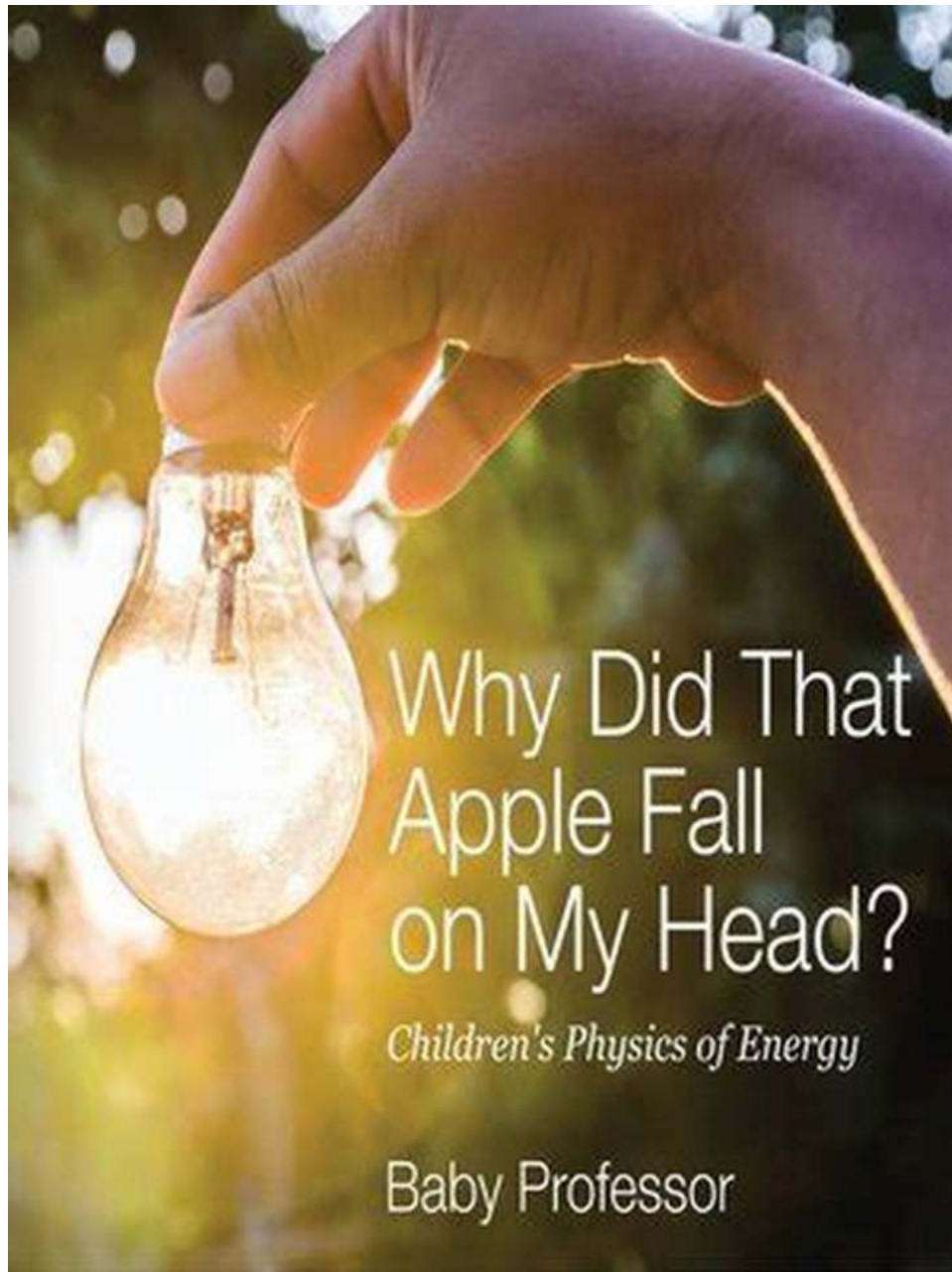


# Curious about Why Did That Apple Fall On My Head? Let's Explore the Physics of Energy!



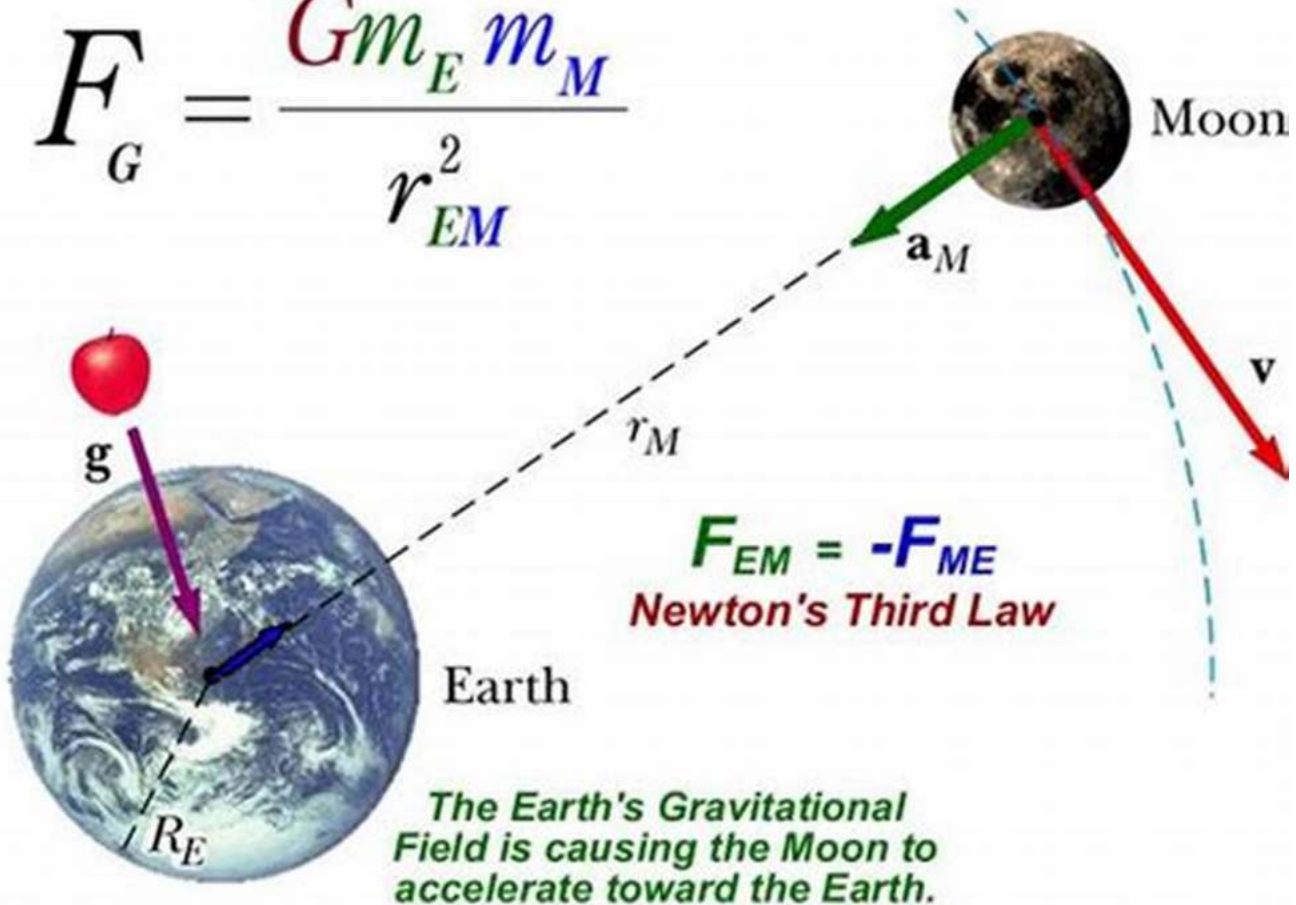
Have you ever wondered why that apple fell on your head? Don't worry, you're not alone! In this article, we will explore the fascinating world of physics and energy to understand why objects fall and how energy plays a crucial role in this process. So, put on your thinking caps and let's dive in!

# Understanding Gravity

## Newton's Universal Law of Gravitation

$$F_G = \frac{Gm_E m_M}{r_{EM}^2}$$

The Moon's Gravitational Field is causing the Earth to accelerate toward the Moon.



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## Why Did That Apple Fall on My Head? | Children's Physics of Energy by Baby Professor (Kindle Edition)

★★★★★ 5 out of 5

Language : English

File size : 1529 KB

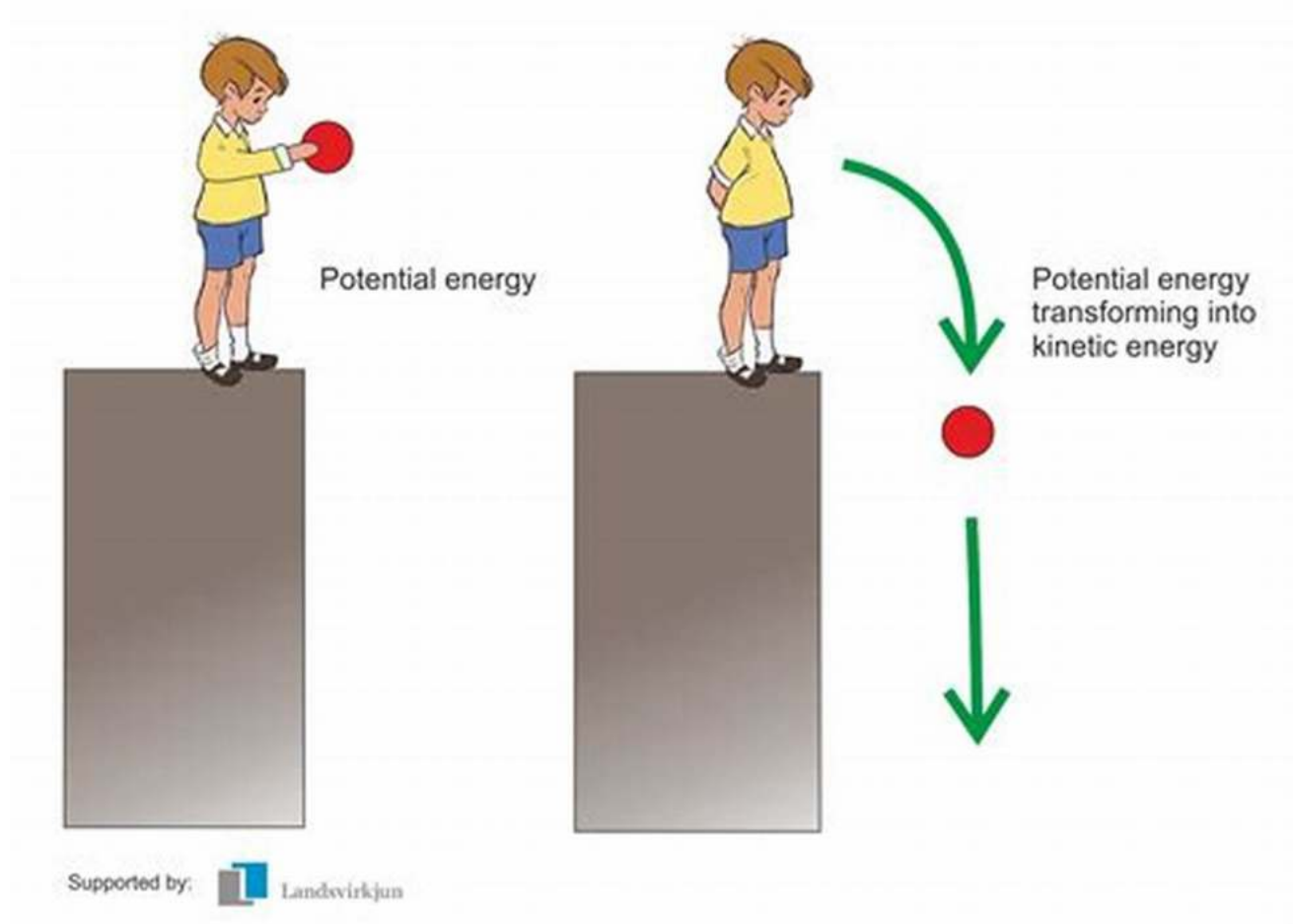
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Gravity is the force that pulls objects toward each other. It's what keeps us grounded on Earth and causes objects to fall when they are dropped. The greater the mass of an object, the stronger its gravitational pull.

When an apple falls from a tree, it is due to the gravitational pull of the Earth. The Earth's mass is much larger than the apple's mass, so the apple is pulled towards the center of the Earth. This is why the apple fell on your head!

## The Role of Energy



The concept of energy is crucial in understanding why objects fall. Energy is the ability to do work, and there are different forms of energy. Two important forms for this discussion are potential energy and kinetic energy.

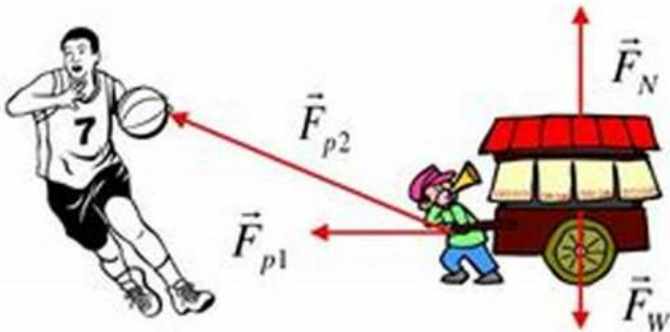
Potential energy is the stored energy an object has due to its position or shape. When the apple is hanging from a tree, it has potential energy. As it falls, the potential energy is converted into kinetic energy.

Kinetic energy is the energy of motion. When the apple falls, its potential energy decreases while its kinetic energy increases. This increase in kinetic energy is what causes the apple to gain speed and eventually come in contact with your head!

## The Laws of Motion

### Newton's Laws of Motion

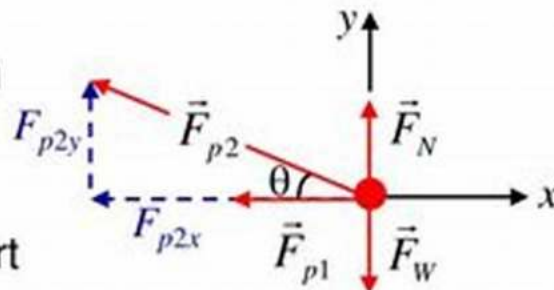
- Suppose we add a 2<sup>nd</sup> pulling force:



- Easier to add forces if we use the components of each force
- Any force can be replaced by its component vectors, acting at the same point

- Set up coordinate system & determine vector components:

● = hot dog cart



Isaac Newton, a famous physicist, formulated three laws of motion that help explain the movement of objects, including falling ones:

## 1. Newton's First Law of Motion (The Law of Inertia)

This law states that an object at rest will stay at rest, and an object in motion will stay in motion unless acted upon by an external force. In the case of the apple falling, the external force is gravity.

## 2. Newton's Second Law of Motion (The Law of Acceleration)

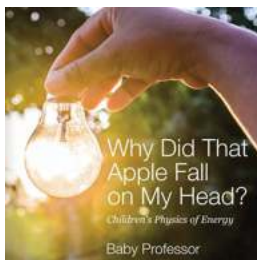
This law explains how an object's acceleration (change in velocity) is directly proportional to the net force acting on it. As the apple falls, the force of gravity accelerates it towards the ground.

## 3. Newton's Third Law of Motion (The Law of Action-Reaction)

This law states that for every action, there is an equal and opposite reaction. When the apple falls on your head, your head exerts an equal and opposite force on the apple, causing it to stop momentarily.

So, the next time an apple falls on your head, you'll know the intriguing physics behind it. Gravity pulls objects towards each other, and the conversion of potential energy into kinetic energy causes them to fall. Newton's laws of motion help us understand the dynamics of falling objects.

Physics is all around us, and by exploring its concepts, we can gain a deeper understanding of the world we live in. So, keep questioning, keep exploring, and embrace the wonders of the universe!



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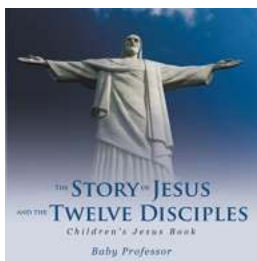
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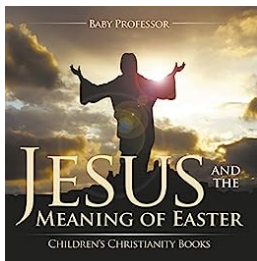


Do you know the famous story of how Isaac Newton discovered gravity? We're going to use the same concept to teach the little ones about Newton's discovery. Since we are teaching young minds, it is very important that we break down complex information into bits and pieces that are easily understood. That's exactly what we did in this book. Grab a copy now!



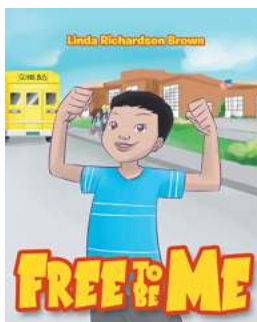
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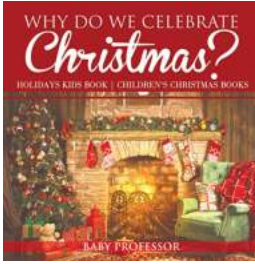
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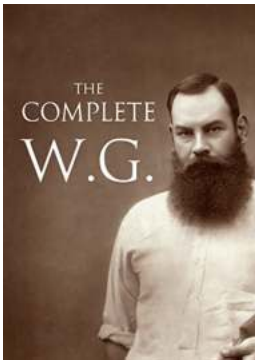
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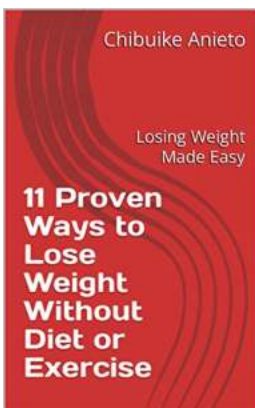
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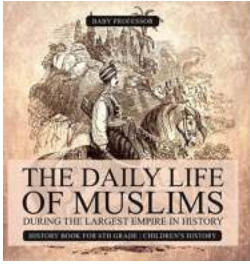
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why did the apple fall down to the ground and not up or sideways