



Exploring Gravity

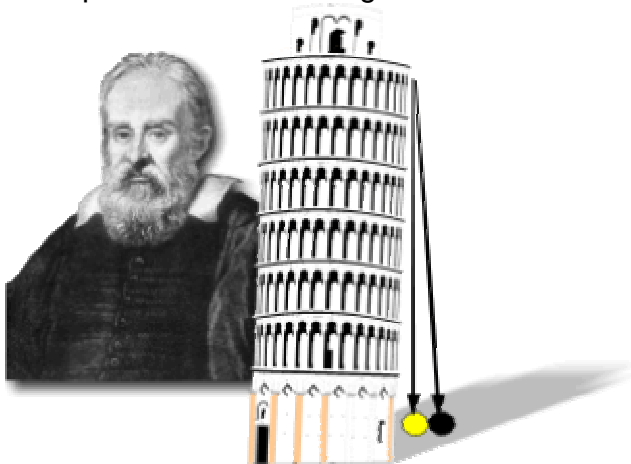
An Introduction to the Main Concepts

Galileo Galilei (1564-1642)

Galileo Galilei was born in Pisa in 1564.

One of Galileo's most famous experimental discoveries, and one of the most important, was the fact that all objects fall at the same rate, regardless of their mass. The experiment is reported to have taken place from the Leaning Tower in Pisa. The experiment:

- Galileo dropped two spheres of equal size from the top of the tower.
- The spheres had very different masses. One sphere was made of lead and the other of soap.
- Both spheres were dropped at the same time from the top of the Tower.
- Both spheres reached the ground at the same instant.

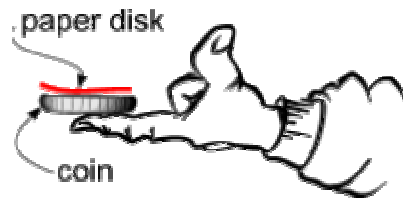


This simple experiment overthrew centuries of erroneous Aristotelian science which proclaimed that heavy objects should fall faster than lighter objects.

The simple fact that all objects accelerate at the same rate under the influence of gravity was a major stepping stone towards Isaac Newton's discoveries in mechanics and consequently our own current understanding of orbital mechanics.

Student Activity: Exploring Gravity

Loonie Drop



A simple demonstration can be done with a loonie and a paper disk.

Cut a small disk from a piece of note paper so that it is slightly smaller in diameter than the loonie. Sit the paper disk on top of the loonie. You should be able to see the edge of the loonie all the way around the paper disk. If not, trim the disk slightly to allow you to see the entire circumference of the loonie.



Next, balance the loonie and the paper disk on your finger and hold them perfectly level. Finally, pull your finger briskly out from under the loonie, being careful not to tilt or bump the loonie.



If you have done this correctly, the loonie and the paper disk will fall to the floor at exactly the same rate.

The reason for this is that all objects accelerate at the same rate unless air friction interferes with the motion of the falling objects. In this case the loonie effectively blocks the air flow from hitting the paper disk and both fall to the ground at the same rate.