

**The Mechanical Universe**  
**THE APPLE AND**  
**THE MOON 13min**



Read the following questions before the video begins. Answer them while the video is in progress. Make note of when you are asked to pass this paper forward for collection. This is an *individual* effort. That means you **DON'T ASK OTHERS FOR ANSWERS** it may count as 10 lab points.

**LISTEN! CONCENTRATE ON THE WORDS! DO NOT BE DISTRACTED BY THE IMAGES! IF YOU ARE EASILY DISTRACTED BY VISUALS, CLOSE YOUR EYES AND JUST LISTEN!**

1. Everyone involved in the space program stands atop the \_\_\_\_\_ of Newton.
2. Before Newton, people thought that falling bodies and orbiting bodies were  
A. related to each other                      B. unrelated
3. \_\_\_\_\_ particle of mass in the astronaut is attracted by \_\_\_\_\_ particle of mass in the moon.
4. Acceleration of a falling body on the moon is \_\_\_\_\_ what it is on the earth.
5. A cannonball fired at 30ft/s from a height of 16ft travels \_\_\_\_\_ before hitting the ground one second later.
6. The zero g (weightlessness) experienced by astronauts in orbit around the moon ( IS / IS NOT ) due to the absence of gravity.
7. The objects in the space capsule are "weightless" because they are in a state of \_\_\_\_\_
8. How far does the moon fall in one second (by the prediction made by Newton's theory gravity)?
9. By applying UCM kinematics and Pythagorean geometry, Newton found how far the moon actually falls away from the straight line it wants to travel. What is this distance?
10. How long did Newton wait to publish his theory of universal gravity?