

November 12, 2013

The Law of Inertia

- Place a student in a chair at the front of the class and ask....
 - What if this person began to move? How would you respond?
- Something would need to be causing the “push or pull” and that is what the next few chapters are about.
- QUIZ NEXT CLASS PERIOD ON TODAY'S NOTES

Historical Background

- About 200 BC, Aristotle studies motion and its affects.
 - Two types of Motion
 - Natural Motion
 - Heavy Objects: Drop a ball and notice its motion. Does it keep moving? Does it roll up a hill? Roll down? Where does it like to be found?
 - Light Objects: What about the motion of Smoke?
 - Circular Motion: The heavens, that is planets, sun, stars etc. move in circular motion.
 - ***For natural motion, no force is needed to maintain this motion.***

- Violent Motion—Motion that is imposed on an object.
 - Kick a ball
 - Throw an object
 - ***Forces are needed for this type of motion.***
- Side Note: According to Aristotle, the earth is in its natural state and NO force is big enough to move it, ***therefore the earth must be at rest.***
- This becomes known as the Aristotelian View and it becomes the **LAW** for almost the next 2000 years

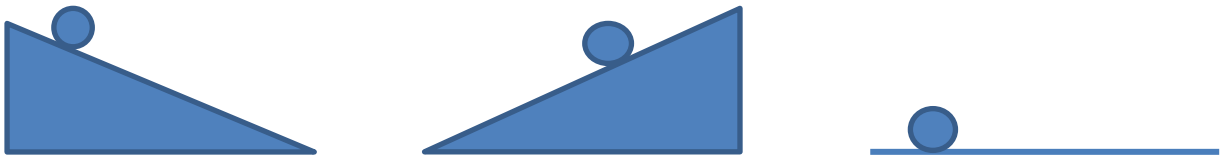
1500's AD—Copernicus.

- Feels the simplest way to interpret the known astronomical data is for the earth and other know planets to orbit about the sun.
- This happens over a life time and many people try to convince him to write a book about his views and conclusions but he resists because:
 - Fear of Persecution
 - He is a devout Catholic
- Late in his life, he writes the book, ***On the Revolution of Celestial Orbs***, and it is published.
- Copernicus receives a copy of the book on May 24, 1543. Then dies of old age.

- It becomes a capital offence to be in possession of Copernicus's book.

1600's AD—Galileo

- In the 1600's there are two views of the world and you are either an Aristotelian or Copernican.
- These two views are very much at odds with each other.
- Galileo is a Copernican, but he has little fear of society.
 - He is credited with the discovery of the telescope and has become famous. The Rock Star of his day.
- Galileo studies motion and asks the following questions:



What happens to the ball in each of the above cases?

- Discuss the marbles in the bowl and its implications
- Galileo calls this Idea INERTIA
 - ***INERTIA: The tendency an object has to maintain its state of motion.***
- In 1642 Galileo dies while under house arrest.

December 25, 1642—Isaac Newton is born in England and over the course of the next several decades, he single handedly tears apart the Aristotelian view of the earth with his three laws of motion. The first of these laws becomes known as the

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