

Physics - Introducing Forces - Chapter 4

We have so far studied the motion of objects and how they are moving. This is the field of kinematics.

In this chapter we begin to look at why things move the way they do. This is Dynamics.

Do things tend to stay stopped, or do they tend to stay moving in some manner? Stopped or moving at a con. speed?

ARISTOTLE: 384 BC A force is needed to make an object move in any way. (including "uniform motion")

Euclid: (300's) "An object stays moving because it has 'impetus'." (con. speed)

GALILEO: (1600's)

It took over 2000 years for the above to be challenged but it finally was when Galileo said that to be moving "at a constant speed" is just as natural as to be stopped.

This led to the development of the idea of INERTIAL MASS.

"Inertia" - The tendency of an object to remain in its current state of motion (stopped or con. speed) unless acted on by an external force.

INERTIA: (This is really Newton's first Law of Motion.)

what if there is a net external force?  
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 - leads to acceleration  
 - Newton's 2nd law  
 $F=ma$

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