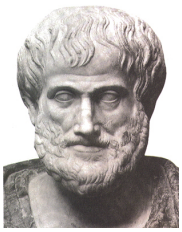
6.2 Newton's First Law of Motion

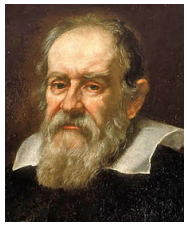
LEARNING TARGETS

6.1 I can define, explain, and apply Newton's first and second laws to solve problems.

Early Thoughts

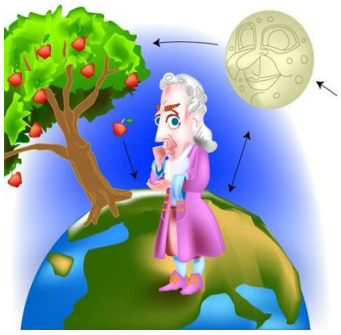


Aristotle



Galileo

Newton's First Law



"Every object continues in its state of rest, or uniform motion in a straight line, unless it is compelled to change that state by forces impressed upon it."

Newton's First Law

Newton's First Law is often referred to as the "Law of Inertia."

Inertia - The tendency of an object to resist change.

Physics of a Car Wreck

How can we use Newton's first law to analyze a front end car wreck?

Physics of a Car Wreck

Seat belts are designed to account for your inertia in a traveling vehicle.

Seat belts have been shown to decrease crash related injuries and fatalities.

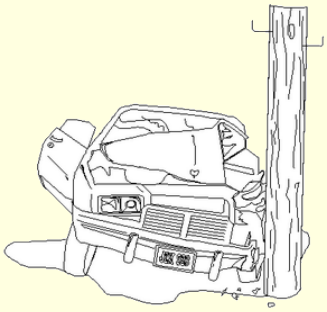
Studies show that 65% of the passenger vehicle occupants killed in traffic wrecks were not using restraints.

Physics of a Car Wreck

What about other passengers and seat belts?

Backseat Projectiles

26%



Backseat Projectiles

Harborview Injury Prevention and Research Center

Belted Back-Seat Passengers = No Back-Seat Passengers

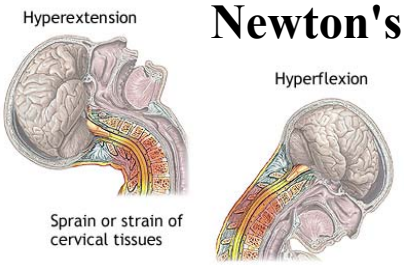
Backseat Projectiles

Back-seat passengers ran similar risks when front-seat occupants didn't wear safety belts. For various combinations of seating position and safety belt use, the danger varied with the direction and angle of the crash.

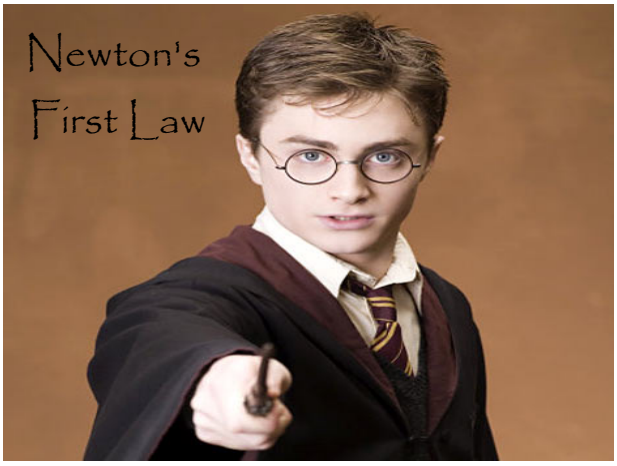
The researchers concluded, "Persons who wish to reduce their risk of death in a crash should wear their own restraint and should ask others in the same car to use theirs."

Whiplash

Newton's 1st Law



Are you taller in the morning, or at night?


Newton's
First Law


The Old Tablecloth Trick