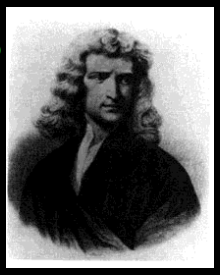
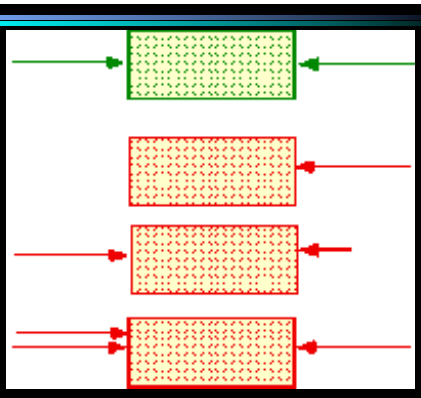
- Sir Issac's
- Laws of
- Motion



Ch 2 overview

- Nature of forces
  - 2 types
  - _____-no movement
  - _____ has movement
  - Shown with arrows, largest arrow is stronger force. If one is larger than the other the force is unbalanced

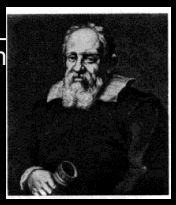


Inertia

- _____ is a measure of inertia, more mass more inertia
- A Body continues at rest or in a state of uniform motion unless acted on by a force.
- Uniform motion means no _____. Note forces can balance: "a force" means "a net force"

Newton's first law is the law of inertia

- Galileo's law of Inertia
- An object will remain in _____ or at ___ until another force acts on



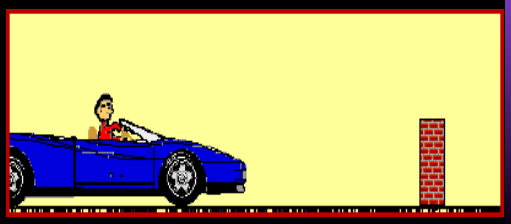
Newton's First Law

- The first law states:
  - An object will continue as it is _____ acted on by another force
  - A car will NOT move until something starts it to. It will not stop until something stops it (friction)

Inertia

- Is how
- an
- object
- RESISTS
- change

An object will continues doing what it was until acted on by something else.



Newton's Second Law

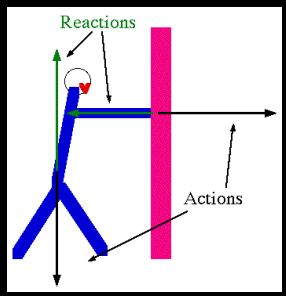
- The second law states:
- The_____ applied to an object will accelerate the object in relation to the mass.
- OR the _____you push something the FASTER it will go. BUT if you add mass it will slow down.

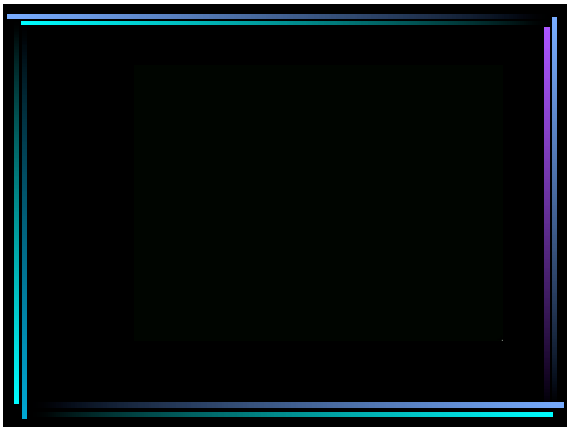
Example F= mass x acceleration

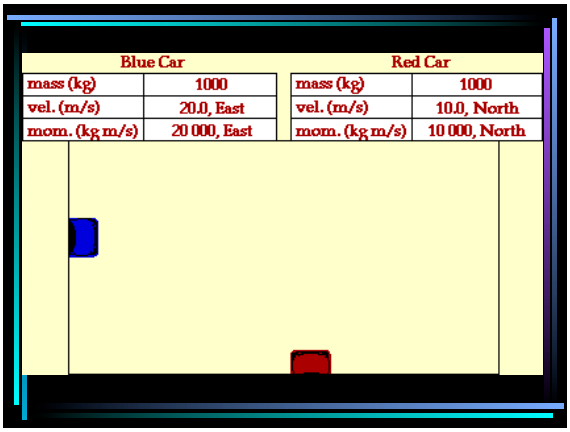
- You are pushing an empty cart at
- 2 m/s2

Newton's Third Law

- For every _____there is an = and opposite _____






Blue Car
mass (kg) 1000
vel. (m/s) 20.0, East
mom. (kg m/s) 20 000, East
Red Car
mass (kg) 1000
vel. (m/s) 10.0, North
mom. (kg m/s) 10 000, North


YOU CAN'T TOUCH
WITHOUT BEING TOUCHED-
NEWTON'S THIRD LAW

Momentum

- This is the energy that a _____ object has

Momentum is = mass x velocity

Ex 1

Car	
mass (kg)	1000
vel. (m/s)	20.0
mom. (kg m/s)	20 000

Truck	
mass (kg)	3000
vel. (m/s)	0.0
mom. (kg m/s)	0

Example 2

Truck	
mass (kg)	3000
vel. (m/s)	20.0
mom. (kg m/s)	60 000

Car	
mass (kg)	1000
vel. (m/s)	0.0
mom. (kg m/s)	0

Example 3

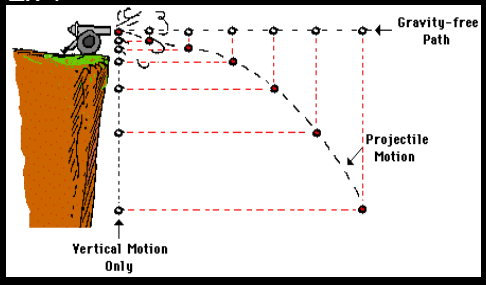
Car	
mass (kg)	1000
vel. (m/s)	20.0
mom. (kg m/s)	20 000

Truck	
mass (kg)	3000
vel. (m/s)	-20.0
mom. (kg m/s)	-60 000

Projectile motion

- Any object thrown or shot is a _____
- ON Earth any projectile shot horizontally follows an _____
- It will drop 9.8 meters for every 1 second of _____

Ex 1



Law of projectile motion

- Part 1…Objects always fall at rate of _____. Regardless of speed
- Part 2… objects with a horizontal motion fall with a _____called an arc. The rate of fall is the rate of gravity

Ex 2

?

- A person in the back of a pickup traveling 60 miles an hour shoots an arrow straight up in the air. Ignoring air resistance,where does the arrow come down?

Ex 3

Review

- Newton's Laws
- 1…..2……3
- Acceleration
- KE
- PE and GPE
- Momentum
- Projectile Motion