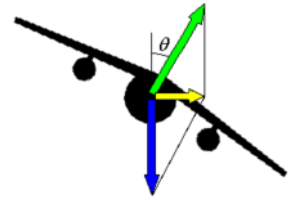
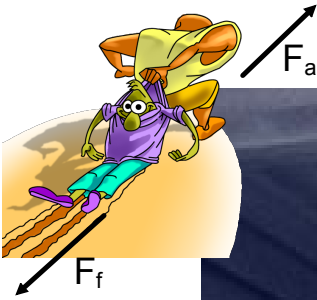


# Inertia

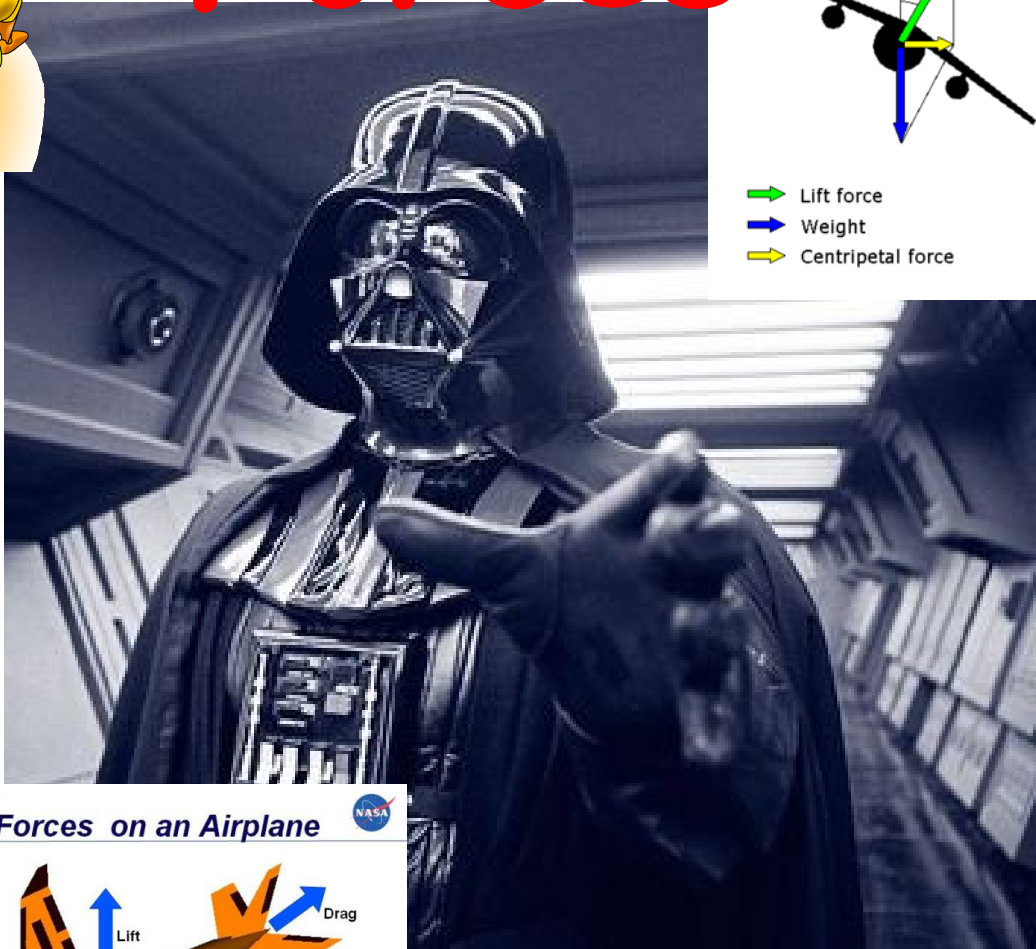
Do a close reading of pg. 126 - 128 of MHR

1. Define inertia.
2. Summarize Galileo's thought experiment on inertia.
3. Describe inertial and gravitational mass.  
Are they the same?
4. What would happen, and why, if you kicked a bowling ball with the same amount of power as you would a soccer ball?

# Forces

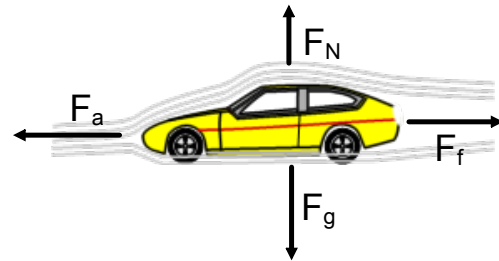
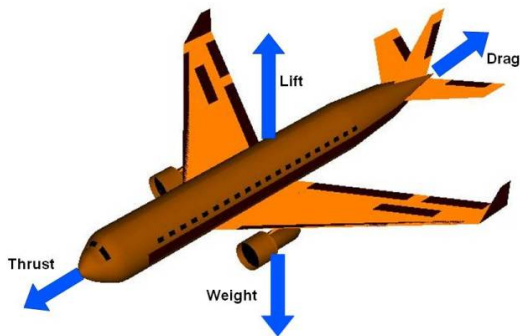


- Lift force
- Weight
- Centripetal force



National Aeronautics and Space Administration

Four Forces on an Airplane



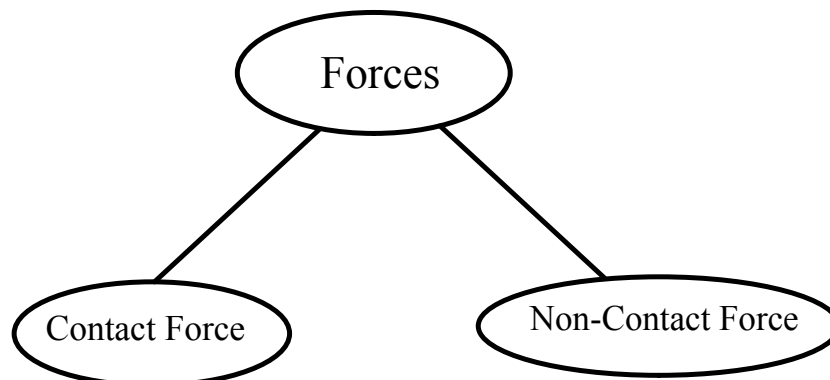
www.nasa.gov

# Common Forces

A *force* is defined as a push or a pull.

They are vector quantities.

The sum of all the forces acting on an object is referred to as the resultant force. *Net force*,  $F_{\text{net}}$ , is another term used for the vector sum of forces.



a force exerted by an object in direct contact with another object

### Examples

friction  
tension  
normal force  
applied force

a force that acts over a distance

### Examples

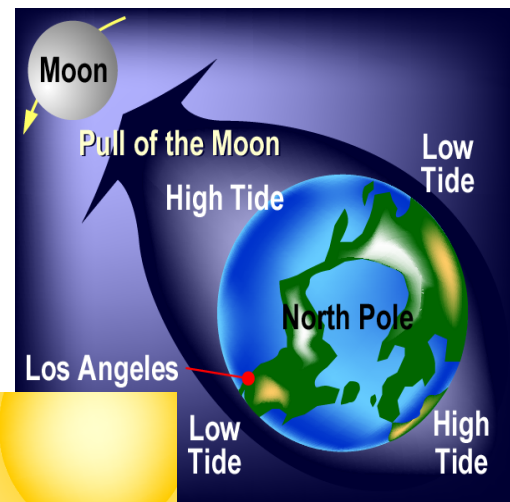
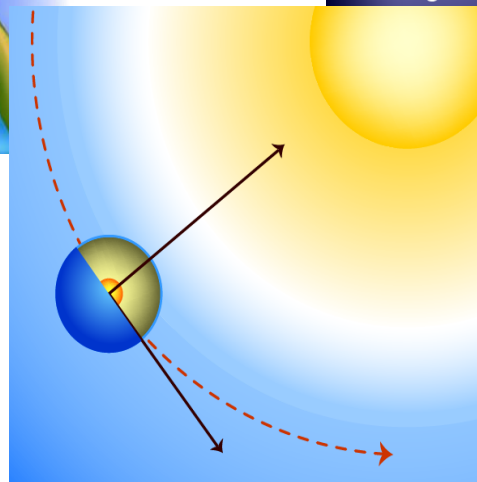
force of gravity  
magnetic force  
electric force

Many of the above forces can act on an object simultaneously, however, the process of problem solving for net force is independent of the type of force.

# The Force of Gravity



$F_g$  : gravitational force (force of *gravity*) - an attractive force that acts over a distance between masses



- What object is responsible for the tides on Earth, the Sun or Moon?
- What object pair has the stronger gravitational pull: Earth-Sun or Earth-Moon?

**Did you know?** That the interactions of the Earth-Moon tidal system is resulting in the Moon moving farther away and the Earth's spin is slowing down. Not to worry, it won't stop spinning or slow down all that much, but at some point in the distance future the Moon will only be visible from one side of the Earth.

## Close Reading: Gravitational Force

Pg 130 - 133 of MHR

Terms to look for:

- Mass
- Weight
- Acceleration due to gravity  $\rightarrow g = 9.81 \text{ m/s}^2$

Pair and write answers to the conceptual problems on page 131.

### Discussion Question

The force of gravity is dependent on the distance between an object and the Earth; looking at the formula for the force of gravity, how or where is distance taken into account?

$$F_g = mg \leftarrow \text{To calculate this value: } 9.81 \text{ m/s}^2$$

## Attachments

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forces-and-motion-basics\_all.jar

forces-1d\_all.jar