Pressure

What is Pressure?

- Related to the word "press".
- Earth's gravity pulls downward.
- Due to gravity, your feet exert a force on the surface of Earth over an area the size of your feet.

Pressure and Area

- The amount of pressure you exert depends on the area over which you exert force.
- The larger area is, the less pressure is exerted.
- **Pressure = Force / Area**
- Measured in Pascals or 1 N/m^2

Fluid Pressure

- **Fluid** is a material that can easily flow. All Liquids and Gases are fluids.
- In a fluid, all of the forces exerted by the individual particles combine to make up the pressure exerted by the fluid.

Air Pressure

- Air exerts pressure because it has mass.
- Because the force of gravity pulls down on the mass of air, the air has weight.
- Weight of the air is the force that produces air pressure or atmospheric pressure.

Balanced Pressure

- When you hold out your hand, you are holding up air. 1,000 Newtons of air, which is about the same weight as that of a large washing machine!

Variations in Fluid Pressure

- Atmospheric Pressure and Elevation.
- Popping in ear is caused by changing air pressure.
- Higher elevations means there is less air above you therefore leading to less air pressure.
- **Atmospheric pressure decreases as your elevation increases**
- Water Pressure and Depth
- Water pressure increases as depth increases. (The deepest part of the ocean 1,000 times greater air pressure than we experience every day)

Measuring Pressure

- A **barometer** measures atmospheric pressure.