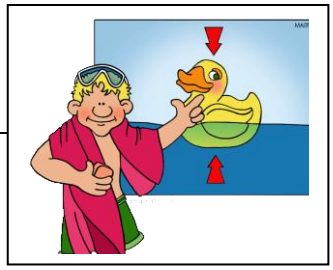
# Week 26 – SCIENCE NOTE PAGE
## Buoyant Force



*REMEMBER, Density?*

- Density is a measure of the mass of a material within a given space.
  - Density = mass / volume
    - D = m/v
  - **Why** does Pepsi sink and Diet Pepsi float?
    Pepsi is more dense per unit of volume because it has a greater mass.

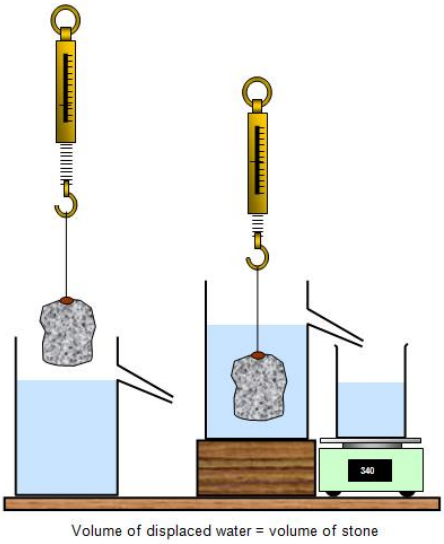
*HOW does this "play into" Buoyancy?*

*Buoyancy*

- **Buoyancy** is the tendency of an object to **float**
- **Buoyant Force** is the **upward** force on an object which is in a **fluid**

*Buoyant Force and Weight*

- In order for an object to float in a fluid, its **weight** (which is a force) must be **LESS** than the buoyant force exerted by the fluid.
- Example: a rubber ducky and a rock in a river
  - **Rubber Ducky** = the weight is LESS than the buoyant force of the water, so the duck **floats**
  - **Rock** = the weight is GREATER than the **buoyant** force of the water, so the rock will **sink**



Volume of displaced water = volume of stone

*Archimedes' Principle*

- When an object is placed in a **fluid**, the buoyant force acting on the object is equal to the weight of the fluid that the object displaces

*So Back to Density*

- If the density of an object is **less** than the density of a fluid, it will **float** in the fluid
- If the density of an object is **greater** than the density of the fluid, it will **sink** in the fluid.