

## Vocabulary: Archimedes' Principle



### Vocabulary

- Archimedes' principle – the physical law that states that an object is pushed upward by a force equal to the weight of fluid it displaces.
- Buoyant force – an upward force created by the fluid that is displaced by an object.
  - The magnitude of the buoyant force is equal to the weight of the displaced fluid.
- Density – the amount of matter per unit volume.
  - The symbol for density is the Greek letter  $\rho$ , pronounced “row.”
  - Density is measured in grams per milliliter (g/mL) or kilograms per liter (kg/L).
  - Density ( $\rho$ ) is calculated by dividing mass ( $m$ ) by volume ( $V$ ):  $\rho = m \div V$
- Displace – to push out of the way.
- Mass – the amount of matter in an object.
  - The symbol for mass is  $m$ .
  - Gases, liquids, and solids all have measurable mass.
  - Mass is similar to weight but it is not exactly the same. Your weight depends on the gravity of the planet you are on. If you went to the Moon, your *mass* (amount of matter in your body) would be the same, but your *weight* would be much less than on Earth because the Moon's gravity is weaker than Earth's.
- Volume – the amount of space an object occupies or takes up.
  - The symbol for volume is  $V$ .
  - The volume of a boat with straight sides and a rectangular base is:
 
$$\text{Volume} = \text{width} \cdot \text{length} \cdot \text{height}$$
  - For solids, the unit of volume is the cubic meter ( $\text{m}^3$ ) or cubic centimeter ( $\text{cm}^3$ ). For liquids, the unit of volume is the liter (L) or milliliter (mL). One cubic centimeter is equivalent to the same volume as one milliliter.
- Weight – the downward force of gravity on an object.
  - The symbol for weight is  $w$ .
  - The greater the strength of gravity is, the more the object weighs.
  - The greater the mass of the object is, the more it weighs.
  - To calculate weight, multiply the mass ( $m$ ) by the gravitational acceleration ( $g$ ):

$$w = mg$$