Density (ρ) of the substance (true for liquids, solids and gases)

$$\rho = \frac{m}{V}, \tag{1}$$

where m is the volume of the substance and V is the volume of the substance.

Boyant force ($\vec{F_b}$) is expressed as:

$$\vec{F_b} = -\rho_\ell V \vec{g}, \tag{2}$$

where ρ_ℓ is the density of the liquid where the body is submerged, V is the volume of the body and $\vec{g}$ is the gravity of the planet.

Boyant force can also be expressed as:

$$\vec{F_b} = -(\vec{W_1} - \vec{W_2}), \tag{3}$$

where $\vec{W_1}$ is the weight of the body in the air and $\vec{W_2}$ is the apparent weight of the body in the liquid.