

Archimedes' Principle

- Buoyant Force (F_B)

- weight of fluid displaced

- $F_B = \rho_{\text{fluid}} V_{\text{displaced}} g$

- $F_g = mg = \rho_{\text{object}} V_{\text{object}} g$

- object sinks if $\rho_{\text{object}} > \rho_{\text{fluid}}$

- object floats if $\rho_{\text{object}} < \rho_{\text{fluid}}$



- If object floats...

- $F_B = F_g$

- Therefore: $\rho_{\text{fluid}} V_{\text{displaced}} g = \rho_{\text{object}} V_{\text{object}} g$

- Therefore: $V_{\text{displaced}} / V_{\text{object}} = \rho_{\text{object}} / \rho_{\text{fluid}}$