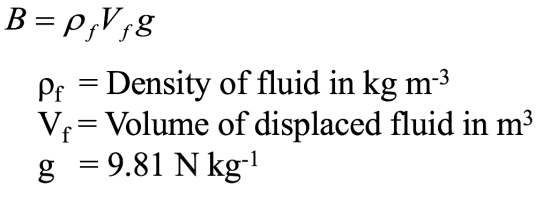
**Videos 10H – Buoyancy Name**



Example – What is the buoyant force on a 3.0 cm diameter air bubble under water? ρH2O = 1.0E3 kg m-3

Example - What is the buoyant force on a 5.45 kg iron shot submerged in water? What is the weight of the shot in air, and what is its apparent weight submerged?

ρFe = 7.8E3 kg m-3, ρH2O = 1.0E3 kg m-3, ρ = m/V so V = m/ρ

Example - The King’s crown has a mass of 14.7 kg, but appears to have a mass of only 13.4 kg when weighed when it is submerged in water. What is the density of the crown? Is it gold?

ρAu = 19.3E3 kg m-3, ρH2O = 1.0E3 kg m-3, ρ = m/V so V = m/ρ

Over for whiteboards

Whiteboards:

|  |  |
| --- | --- |
| 1. What is the buoyant force on a rectangular block of wood that measures 12x23x15 cm if it is submerged in the Dead Sea where the density of the water is 1240 kg m-3?  (convert cm to m first)  (50. N) | 2. A 15x15x5.0 cm piece of wood floats in water  (1000. kg m-3) face down in the water with the waterline 3.1 cm up the 5.0 cm side:  What is its mass?  What is its density?  (620 kg m-3) |
| 3. A 5.0x4.0x4.0 cm piece of wood with a density of 530 kg m-3 is tied to the bottom of a pail of water (1000. kg m-3) with a string and held completely submerged. What is the tension on the string? (0.37 N) | 4. A 25x25x10 cm block of iron (7.80x103 kg m-3) floats on mercury (13.6x103 kg m-3) If one of the 25x25 cm faces is down into the mercury, how far into the mercury does the block sink before coming to equilibrium? (5.7 cm) |