

Density problems

- 1) A piece of silver (Ag) metal weighing 194.3 g is placed in a graduated cylinder containing 242.0 mL of water. The volume of water now reads 260.5 mL. From this data, calculate the density of silver.
- 2) Lithium is the least dense element known ($d = 0.53 \text{ g/cm}^3$). What is the volume occupied by $1.20 \times 10^3 \text{ cm}^3$ of lithium?
- 3) Osmium is the densest element known ($d = 22.57 \text{ g/cm}^3$). Calculate the mass in pounds and in kilograms of an Os sphere 15 cm in diameter (about the size of a grapefruit)? Hint: find the formula for volume of a sphere
- 4) Pheromones are compounds secreted by females of many insect species to attract males. Typically, $1.0 \times 10^{-8} \text{ g}$ of a pheromone is sufficient to reach all targeted males within a radius of 0.50 miles. Calculate the density of the pheromone (in grams per liter) in a circular air space having a radius of 0.50 miles and a height of 40 ft. (hint: watch out for the unit conversions)
- 5) Small spheres of equal mass are made of lead ($d = 11.3 \text{ g/cm}^3$), silver ($d = 10.5 \text{ g/cm}^3$) and aluminum ($d = 2.70 \text{ g/cm}^3$). Which sphere has the largest diameter and which has the smaller? Why?
- 6) A package of aluminum foil contains 50 ft^2 (area) of foil, which weighs approximately 8.0 ounces. Aluminum has a density of 2.70 g/cm^3 . What is the approximate thickness of the aluminum foil in millimeters?