

DENSITY

Instructions: Answer the following questions using the formula for density. You must show your work to receive full credit.

D=m/V *Density (D) is measured in g/cm³ or g/mL*
 Mass (m) is measured in grams (g)
 Volume (V) is measured in either cm³ or mL

Example 1: What is the density of ice if a 10.0 cm³ sample has a mass of 9.17g?
 $D=m/V$ $D=(9.17g)/(10.0\text{ cm}^3)$ $D=0.917g/cm^3$

Example 2: What is the volume of a 15.0g sample of iron (D=7.86g/cm³)
 $V=m/D$ $D=(15.0g)/(7.86\text{ g/cm}^3)$ $D=1.91\text{ cm}^3$

- What is the density of osmium if a 10.0 cm³ sample has a mass of 225.7g? 22.6g/cm³
 $D=m/V$ $D=(225.7g)/(10.0\text{ cm}^3)$
- What is the density of CO₂ if a 100mL sample has a mass of 0.196g? 0.00196g/mL
 $D=m/V$ $D=(0.196g)/(100\text{ mL})$
- What is the density of a 27g block of wood if each side is 3.0cm? 3.0g/cm³
 $D=m/V$ $D=(27g)/(9.0\text{ cm}^3)$
- What is the density of copper if a 5.00 cm³ sample has a mass of 44.8g? 8.96g/cm³
 $D=m/V$ $D=(44.8g)/(5.00\text{ cm}^3)$
- What is the mass of a 10.0 cm³ sample of lead if the density is 11.3g/cm³? 113g
 $m=VD$ $m=(10.0\text{ cm}^3)(11.3g/cm^3)$
- What is the mass of 22.4 L of nitrogen if the density is 0.00125 g/mL? 28g
 $m=VD$ $m=(22.4L)(1000mL/1L)(0.00125g/cm^3)$
- What is the volume of a 207g sample of lead if the density is 11.3g/cm³? 18.3 cm³
 $V=m/D$ $V=(207g)/(11.3g/cm^3)$
- What is the volume of 14.0g of nitrogen if the density is 0.00125g/mL? 11200mL
 $V=m/D$ $V=(14g)/(0.00125/mL)$
- If silver has a density of 10.5g/cm³ and gold has a density of 19.3 g/cm³, which would have a greater mass: 5.0 cm³ of silver or 5.0 cm³ of gold? gold
silver: m=VD m=(5.0cm³)(10.5g/cm³) m=52.5g
gold: m=VD m=(5.0cm³)(19.3g/cm³) m=96.5g
- If 5.0 mL of ethanol has a mass of 3.9 g and 5.0 mL of benzene has a mass of 4.4g, which liquid is denser? benzene
ethanol: D=m/V D=(3.9g)/(5.0mL) D=0.78g/mL
benzene: D=m/V D=(4.4g)/(5.0mL) D=0.88g/mL