

Tutorial 0010

1. A metal cube weighs 35 g. What is the density of the metal if the width of the cube is 10 cm? $(3.5 \times 10^{-2} \text{ g/cm}^3)$
2. Calculate the density in g/mL of H_2S at STP. $(1.52 \times 10^{-3} \text{ g/L})$
3. How many oxygen atoms are present in 4.5 moles of H_3PO_4 ?
 $(1.1 \times 10^{25} \text{ oxygen atoms})$
4. There is 16.0 g of AlBr_3 .
 - a) How many Al^{3+} ions are present?
 - b) How many Br^- ions are present?
 - b) How many moles of Br^- are present?

(a) $3.61 \times 10^{22} \text{ Al}^{3+}$ ions; b) $1.08 \times 10^{23} \text{ Br}^-$ ions; c) 0.180 moles Br^-)
5. How many hydrogen atoms are there in 1 molecule of $\text{CuSO}_4 \times 5\text{H}_2\text{O}$?
 $(10 \text{ hydrogen atoms})$
6. A solution of MgSO_4 is 2.5 M. How many moles of Mg^{2+} ions are in 1.5 mL?
 $(3.8 \times 10^{-3} \text{ moles of Mg}^{2+} \text{ ions})$

7. What is the trend in atomic size from left to right for period 3? Explain.

8. What is the trend in atomic size in group VIIA? Explain.

9. Which element from the following three has the smallest atomic radius: Mg, Sr or Be?

10. Which is the larger, a fluorine atom or a fluoride ion? Explain.