MOLAR MASS CALCULATIONS

1. What is the molar mass of iron, Fe? How many moles of iron atoms are in 111.8 g of iron? How many atoms of iron are in 111.8 g?
2. What is the molar mass of N_2 (g)? How many moles of nitrogen molecules are in 112 g? How many molecules of nitrogen are in 112 g?
3. What is the molar mass of carbon dioxide, CO_2? How many grams of CO_2 do 3 moles represent? How many molecules of carbon dioxide are in 3 moles?
4. How many moles of KCl are there in 50 g? How many particles of KCl are in 50 g?
5. How many moles are in 89 g of NaCl? How many particles of NaCl are in 89 g?
6. Calculate the number of moles and the number of particles in each of the following masses:
    a. 3 g of BBr_3
    b. 0.472 g NaF
    c. 7.50×10^2 g CH_3OH
    d. 50.0 g $Ca(ClO_3)_2$
    e. 0.039 g of palladium
    f. 8200 g iron
    g. 0.0073 kg of tantalum
    h. 0.00655 g antimony
7. Determine the mass and number of particles of each of the following amounts:
    a. 1.366 mol of NH_3
    b. 0.120 mol of $C_6H_{12}O_6$
    c. 6.94 mol of $BaCl_2$
    d. 0.005 mol of C_3H_8
    e. 1.002 mol of chromium
    f. 550 mol of Al
    g. 7 mol of titanium
    h. 0.0086 mol of xenon

Selected Answers:

1. 55.9 g/mol; 2 moles; 12.04×10^{23} atoms (or 1.204×10^{24} atoms)
3. 44.0 g/mol; 132 g; 18.06×10^{23} molecules (or 7.806×10^{24} atoms)

6a. 0.012 moles; 7.2×10^{21} particles

7h. 1.1 g; 5.2×10^{21} atoms