

CHEM. I assignment – “MOLES AND MORE MOLES”

- 1) List the four types of representative particles.
- 2) Give a defining characteristic of each type of representative particle.

Identify the type of representative particle of the following:

- 3) O_2
- 4) S^{2-}
- 5) NaBr
- 6) Cu
- 7) $LiClO_4$
- 8) $(NO_2)^-$
- 9) $C_{12}H_{22}O_{11}$

Complete the three different conversion factors for one mole of substance:

- 10) 1 mol = _____ r.p.
- 11) 1 mol = _____ L (gas at STP)
- 12) 1 mol = _____ g

For the following questions, set up a sample TWO-STEP D.A. ...

- 13) ... converting liters to grams (for a gas at STP).
- 14) ... converting liters to r.p. (for a gas at STP).
- 15) ... converting r.p. to grams.
- 16) ... converting r.p. to liters (for a gas at STP).
- 17) ... converting grams to liters (for a gas at STP).
- 18) ... converting grams to r.p.

For the following questions, set up a sample ONE-STEP D.A. ...

- 19) ... converting liters to moles (for a gas at STP).
- 20) ... converting moles to liters (for a gas at STP).
- 21) ... converting grams to moles.
- 22) ... converting moles to grams.
- 23) ... converting r.p. to moles.
- 24) ... converting moles to r.p.

Show all work for math problems.

- 25) Calculate the molar mass of ammonium carbonate.
- 26) How many moles are contained in 1.67×10^{29} representative particles of calcium hypochlorite? Specify the correct type of representative particle in your work.
- 27) How many moles are found in 61.0 g boron trichloride?

- 28) What is the percent composition of acetic acid?
- 29) How many grams are contained in 0.88 mol potassium permanganate?
- 30) What is the volume, in L, of 0.1900 mol CH₄ gas at STP?
- 31) A gas has a density of 4.20 g/L at STP. What is the molar mass of the gas?
- 32) How many g of sodium phosphite are found in 5.19×10^{24} representative particles of sodium phosphite? Specify the correct type of representative particle in your work.
- 33) 5.55×10^{19} r.p. of carbon monoxide gas would occupy how many liters of space under STP conditions? Specify the correct type of representative particle in your work.
- 34) What is the empirical formula of a compound with 5.9% hydrogen and 94.1% sulfur?
- 35) See your answer from #34. If the molar mass of the “real life” formula is 34.1 g/mol, what is the molecular formula?
- 36) 47 L of nitrogen gas at STP would contain how many grams?
- 37) How many r.p. of sodium chlorate are in 8.7 g of sodium chlorate? Specify the correct type of representative particle in your work.

WRITE THE CHEMICAL FORMULAS:

- 38) lithium permanganate
- 39) sulfuric acid
- 40) sulfur hexafluoride
- 41) aluminum selenide
- 42) nitric acid
- 43) carbon tetrachloride
- 44) phosphoric acid
- 45) silver nitrate
- 46) barium phosphide
- 47) aluminum carbonate
- 48) copper(II) dichromate
- 49) diphosphorus pentachloride
- 50) tin(IV) oxide