KEY

Review: Chemical Formulas, Moles , Percent Composition

Name each of the following compounds

1) $NaBr$ = Sodium bromide
2) H_2SO_3 = sulfurous acid
3) $Ca(C_2H_3O_2)_2$ = Calcium acetate
4) P_2O_5 = diphosphorus pentoxide
5) H_3P = hydrophosphoric acid
6) $FePO_4$ = iron(III) phosphate / ferric phosphate
7) K_3N = potassium nitride
8) SO_2 = sulfur dioxide
9) $CuOH$ = copper(I) hydroxide / cuprous "
10) $Zn(NO_2)_2$ = zinc nitrite
11) Na_2CO_3 = Sodium carbonate
12) H_2S = hydrosolfuric acid
~~13) P_2O_5 =~~
14) $FeSO_4$ = iron(II) sulfate / ferrous "
15) H_3PO_4 = phosphoric acid
16) $CoBr_2$ = cobalt (II) bromide / Cobaltous "
17) B_2H_4 = diboron tetrahydride
18) CO = carbon monoxide
19) HCN = hydrocyanidic acid (except * polyatomic -ide → -ic hydro)
20) $Sn(CO_3)_2$ = tin (II) carbonate / Stannous "

Write the formulas for the following chemical compounds:

1) nickel (III) sulfide = Ni_2S_3
2) nitrous acid = HNO_2
3) sulfuric acid = H_2SO_4
4) diboron tetrabromide = B_2Br_4
5) magnesium sulfate = $MgSO_4$
6) hydrofluoric acid = HF
7) potassium carbonate = K_2CO_3
8) ammonium oxide = $(NH_4)_2O$
9) tin (IV) selenide = SnS_2
10) dinitrogen trioxide = N_2O_3
11) hydroselenic acid = H_2Se
12) lithium acetate= $LiC_2H_3O_2$
13) phosphorus trifluoride= PF_3
14) silicon tetrafluoride = SiF_4
15) silver phosphate = Ag_3PO_4
16) carbonic acid = H_2CO_3
17) cobalt (II) hydroxide = $Co(OH)_2$
18) hydrobromic acid= HBr

Name each of the following chemical compounds and list their molar masses:

1) $AgNO_3$ Silver nitrate 169.87 g/mol
2) N_2O_3 dinitrogen trioxide 76.01 g/mol
4) $CoCl_2$ cobalt (II) chloride 129.84 g/mol
5) B_2F_6 diboron Hexafluoride 135.61 g/mol

Write the formulas of each of the following chemical compounds and list their molar masses:

1) ammonium phosphate $(NH_4)_3PO_4$ 149.09 g/mol
2) vanadium (V) cyanide $V(CN)_5$ 181.09 g/mol
3) iron (II) fluoride FeF_2 93.84 g/mol
4) sulfur hexachloride SCl_6 244.78 g/mol.

Find the percent compositions of all of the elements in the following compounds:

1) $CuBr_2$

Cu: 28.4 %
Br: 71.6 %

2) NaOH

Na: 57.5%
O: 40.0%
H: 2.5%

3) $(NH_4)_2S$

N: 41.1%
H: 11.8%
S: 47.1%

4) N_2S_2

N: 30.4%
S: 69.6%

Molar Conversions. Show all correct work and label answers correctly. Answer should be in correct significant figures.

1) How many grams does 0.500 moles of CuBr weigh?

$$\frac{.500 \text{ moles CuBr}}{1} \left| \frac{143.45 \text{ g}}{1 \text{ moles}} \right. = 71.7 \text{ g CuBr}$$

2) How many molecules are there in 0.655 moles of C_6H_{14}?

$$\frac{.655 \text{ moles } C_6H_{14}}{1} \left| \frac{6.02 \times 10^{23} \text{ molec}}{1 \text{ mol } C_6H_{14}} \right. = 3.94 \times 10^{23} \text{ molecules } C_6H_{14}$$

3) How many moles are there in 2.35×10^{24} molecules of water?

$$\frac{2.35 \times 10^{24} \text{ molecules } H_2O}{6.02 \times 10^{23} \text{ molec}} \left| \frac{1 \text{ mol } H_2O}{} \right. = 3.90 \text{ moles } H_2O$$

4) How many grams of SiO_2 are there in 5.60×10^{22} molecules of SiO_2?

$$\frac{5.60 \times 10^{22} \text{ molec}}{6.02 \times 10^{23} \text{ molec}} \left| \frac{1 \text{ mole } SiO_2}{1 \text{ mole } SiO_2} \right| \frac{60.08 \text{ g}}{} = 5.59 \text{ grams } SiO_2$$

5) How many molecules are there in 21.6 grams of CH_4?

$$\frac{21.6 \text{ g } CH_4}{16 \text{ g } CH_4} \left| \frac{1 \text{ mol } CH_4}{1 \text{ mol } CH_4} \right| \frac{6.02 \times 10^{23} \text{ molec}}{} = 8.13 \times 10^{23} \text{ molec } CH_4$$