moles practice quiz (Homework)

1.
What is the percent by mass of hydrogen in NH_3?

2.
The gram formula mass of NH_4Cl is
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3.
Calculate the number of molecules present in each of the following samples.
(a) 0.700 mol propane, C_3H_8, a gas used in laboratories
(b) a 250 mg tablet of $CaCO_3$, an antacid
(c) a water droplet containing 8.50×10^{-5} g of H_2O.

4.
Calculate the number of moles of CO_2 in 21.0 g of CO_2. Use a molar mass with at least as many significant figures as the data given.

5.
Calculate the number of moles of $C_6H_{12}O_6$ in 46.0 g $C_6H_{12}O_6$. Use a molar mass with at least as many significant figures as the data given.

6.
Calculate the mass of 0.420 moles of CaI_2. Use a molar mass with at least as many significant figures as the data given.

7.
Calculate the number of molecules of C_2H_5OH in 21.0 g of C_2H_5OH. Use a molar mass with at least as many significant figures as the data given.

8.
Calculate the mass of 2.90×10^{23} molecules of SO_3. Use a molar mass with at least as many significant figures as the data given.

9.
Calculate the volume of 88.5 g of NH_3 gas at standard temperature and pressure (STP). Use a molar mass with at least as many significant figures as the data given.

10.
Calculate the percent by mass of the element listed first in the formulas for each of the following compounds.
(a) sodium nitrate, $NaNO_3$
(b) copper(II) bromide, $CuBr_2$

(c) nitrogen dioxide, NO_2
(d) calcium phosphate, $Ca_3(PO_4)_2$
(e) tin(II) oxide, SnO
(f) iron(III) chloride, $FeCl_3$
(g) 1-octanol, $C_8H_{18}O$
(h) copper(I) bromide, $CuBr$

11.
Give the empirical formula that corresponds to each of the following molecular formulas. (Type your answer using the format CH4 for CH_4.)
(a) benzene, C_6H_6
(b) hydrogen peroxide, H_2O_2
(c) carbon tetrachloride, CCl_4
(d) dioxin, $C_{12}H_4Cl_4O_2$

12.
Calculate the average mass in grams of 1 atom of carbon.