Moles Worksheet

1) Define "mole". A term chemists use when refering to a specific number of atoms. They use 6.02×10^{23}.

2) How many moles are present in 34 grams of $Cu(OH)_2$?

Cu: 64
O: 32 = 98
H: 2

$\frac{34\text{g } Cu(OH)_2}{1} \cdot \frac{1\text{ mole}}{98} = .35\text{ moles}$

3) How many moles are present in 2.45×10^{23} molecules of CH_4?

C: 12 = 16
H: 4

$\frac{2.45 \times 10^{23} CH_4}{1} \cdot \frac{1\text{ mole}}{6.02 \times 10^{23}} = .41\text{ moles}$

4) How many grams are there in 3.4×10^{24} molecules of NH_3?

N: 14
H: 3
17

$\frac{3.4 \times 10^{24}}{1} \cdot \frac{1\text{ mole}}{6.02 \times 10^{23}} \cdot \frac{17\text{g}}{1\text{ mole}} = 96\text{g}$

5) How much does 4.2 moles of $Ca(NO_3)_2$ weigh?

Ca: 40
N: 28 = 164
O: 96

$\frac{4.2\text{ moles}}{1} \cdot \frac{164\text{g}}{1\text{ mole}} = 689\text{g}$

6) What is the molar mass of MgO?

Mg: 24.3
O: 16
40.3

40.3amu or 40.3g/mole

7) How are the terms "molar mass" and "atomic mass" different from one another? Molar mass is a fixed 6.02×10^{23} mass of molecules while atomic mass is a single atom

8) Which is a better unit for expressing molar mass, "amu" or "grams/mole"?

Grams/mole