Name: _____ p._____

29
Cu
63.546

1a. The average mass of a copper atom is 1.05558×10^{-22} grams (this was discovered by experiments culminating in 1909). What is the mass of 6.02×10^{23} copper atoms; in other words, what is the mass of 1 mole of copper atoms?

$$\left(6.02 \times 10^{23} \text{ atoms}\right)\left(\frac{1.05558 \times 10^{-22} g}{\text{atom}}\right) = 63.5459 \rightarrow 63.5 g$$

b. Copper's atomic mass can be written as ___63.546 amu___ or ___63.546 g/mole___

2a. The average mass of a lithium atom is 1.153×10^{-23} g.
What is the mass of 6.02×10^{23} lithium atoms; in other words, what is the mass of 1 mole of lithium atoms?

3
Li
6.941

b. Lithium's atomic mass can be written as ___6.941 amu___ or ___6.941 $\frac{g}{mole}$___.

3a. What is the atomic mass (or "molar mass") of aluminum (Al)?_____
b. What is the atomic mass (or "molar mass") of Gold (Au)?_____
c. How does 1.00 mole of aluminum compare to 1.00 mole of gold: (circle the *answer* for each)

Which has more atoms?   *the aluminum*   *the gold*   *these contain the same # of atoms*
Which has more mass?   *the aluminum*   *the gold*   *these have the same mass*

4a. Calculate the molar mass of water.

H_2O : $2(1.0079) + (15.9994) =$ ⟦18.0152 g/mole⟧

b. Calculate the mass of 0.110 moles of water.
(in other words, convert 0.110 moles of water into grams.)

$$\left(0.110 \text{ moles}\right)\left(\frac{18.0152 g}{1 mole}\right) = \boxed{1.98 g \; H_2O}$$

c. How many moles of water are in 43.1 grams of water?
(in other words, convert 43.1 grams of water into moles.)

$$\left(43.1 g\right)\left(\frac{1 \text{ mole}}{18.0152 g}\right) = \boxed{2.39 \text{ moles } H_2O}$$

5a. Calculate the molar mass of potassium carbonate; K_2CO_3.

b. Convert 0.0582 moles of potassium carbonate into grams.

and here are the answers
I put on chalkboard:

c. Convert 300. grams of potassium carbonate into moles.

5a) 138.206 $\frac{g}{mole}$
b) 8.04 g
c) 2.17 moles
6b) 36.8611 %F
8a) $6.6 \times 10^{19} M$
9a) 3.01×10^{23} molecules
b) 15.5 moles
c) 13000 moles
d) 6.56×10^{22} atoms