

Name:
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CALVIN

Chemistry Ch.10 Quiz

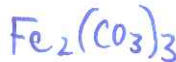
1) Molar mass

Find the molar mass of each item:

a) Calcium

40.08 g/mol

b) Iron (III) Carbonate (formula!)



291.73 g/mol

c) Aluminum Hydroxide (formula!)



78.01 g/mol

d) Carbon Dioxide



44.01 g/mol

- Make the following conversions... Use factor-label method!
- Units are your guide ~ put in the #'s last! SIG DIGS! BOX in your answer! UNITS!

2) Moles to grams

a) 1.00 moles of KCl \rightarrow g

$$\frac{1.00 \text{ mol KCl}}{1 \text{ mol KCl}} \times \frac{74.55 \text{ g KCl}}{1 \text{ mol KCl}} = \boxed{74.6 \text{ g KCl}}$$

b) 5.25 moles of Nickel (II) Cyanide \rightarrow g

$$\frac{5.25 \text{ mol Ni}(\text{CN})_2}{1 \text{ mol Ni}(\text{CN})_2} \times \frac{110.75 \text{ g Ni}(\text{CN})_2}{1 \text{ mol Ni}(\text{CN})_2} = \boxed{581 \text{ g Ni}(\text{CN})_2}$$

c) 3.00 moles of water \rightarrow g

$$\frac{3.00 \text{ mol H}_2\text{O}}{1 \text{ mol H}_2\text{O}} \times \frac{18.02 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = \boxed{54.1 \text{ g H}_2\text{O}}$$

3) Grams to moles

a) 12.01 g of Carbon \rightarrow moles

$$\frac{12.01 \text{ g C}}{12.01 \text{ g C}} \times \frac{1 \text{ mol C}}{12.01 \text{ g C}} = \boxed{1.000 \text{ mol C}}$$

b) 36.04 g of CaCl_2 \rightarrow moles

$$\frac{36.04 \text{ g CaCl}_2}{110.98 \text{ g CaCl}_2} \times \frac{1 \text{ mol CaCl}_2}{110.98 \text{ g CaCl}_2} = \boxed{0.3247 \text{ mol CaCl}_2}$$

c) 225 g of Lithium Phosphate \rightarrow moles

$$\frac{225 \text{ g Li}_3\text{PO}_4}{115.79 \text{ g Li}_3\text{PO}_4} \times \frac{1 \text{ mol Li}_3\text{PO}_4}{115.79 \text{ g Li}_3\text{PO}_4} = \boxed{1.94 \text{ mol Li}_3\text{PO}_4}$$

4) Atoms to grams/grams to atoms

a) 1.23×10^{28} atoms of Boron \rightarrow g

$$\frac{1.23 \times 10^{28} \text{ atoms B}}{6.02 \times 10^{23} \text{ atoms B}} \times \frac{1 \text{ mol B}}{1 \text{ mol B}} \times \frac{10.81 \text{ g B}}{1 \text{ mol B}} = 2.21 \times 10^5 \text{ g B}$$

b) 6.02×10^{23} atoms of $\text{Li}_2(\text{SO}_4) \rightarrow$ g

$$\frac{6.02 \times 10^{23} \text{ atoms Li}_2\text{SO}_4}{6.02 \times 10^{23} \text{ atoms Li}_2\text{SO}_4} \times \frac{1 \text{ mol Li}_2\text{SO}_4}{1 \text{ mol Li}_2\text{SO}_4} \times \frac{109.94 \text{ g Li}_2\text{SO}_4}{1 \text{ mol Li}_2\text{SO}_4} = 110. \text{ g Li}_2\text{SO}_4$$

c) 42.0g of Sodium Chloride \rightarrow atoms

$$\frac{42.0 \text{ g NaCl}}{58.44 \text{ g NaCl}} \times \frac{1 \text{ mol NaCl}}{1 \text{ mol NaCl}} \times \frac{6.02 \times 10^{23} \text{ atoms NaCl}}{1 \text{ mol NaCl}} = 4.33 \times 10^{23} \text{ atoms NaCl}$$

5) Find the % composition of $\text{K}_2(\text{SO}_4)$

K $2 \times 39.10 = 78.20$ $\frac{78.20}{174.26} \times 100 = 44.9\% \text{ K}$

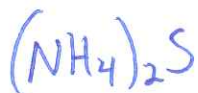
S $1 \times 32.06 = 32.06$

$\frac{32.06}{174.26} \times 100 = 18.4\% \text{ S}$

O $4 \times 16.00 = 64.00$
174.26

$\frac{64.00}{174.26} \times 100 = 36.7\% \text{ O}$

6) Find the % composition of Ammonium Sulfide (formula!)



$\frac{28.02}{68.16} \times 100 = 41.1\% \text{ N}$

N $2 \times 14.01 = 28.02$

$\frac{8.08}{68.16} \times 100 = 11.9\% \text{ H}$

H $8 \times 1.01 = 8.08$

S $1 \times 32.06 = 32.06$
68.16

$\frac{32.06}{68.16} \times 100 = 47.0\% \text{ S}$

GO VIKINGS!