

Name:
Date:
Hour:

CALVIN

Chemistry Ch.10 Practice

1) Molar mass

Find the molar mass of each item:

a) Copper

63.55 g/mol

b) Iron (II) Phosphate

$\text{Fe}_3(\text{PO}_4)_2$

357.49 g/mol

c) Aluminum Hydroxide

$\text{Al}(\text{OH})_3$

78.01 g/mol

d) Sodium Nitrate

NaNO_3

85.00 g/mol

e) Ammonium Sulfide

$(\text{NH}_4)_2\text{S}$

68.16 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 Potassium Bromide \rightarrow g

$$\frac{1.00 \cancel{\text{mol KBr}}}{1 \cancel{\text{mol KBr}}} \times 119.00 \text{ g KBr} = \boxed{119 \text{ g KBr}}$$

b) 5.25 moles of Copper (II) Nitrate \rightarrow g

$$\frac{5.25 \cancel{\text{mol Cu}(\text{NO}_3)_2}}{1 \cancel{\text{mol Cu}(\text{NO}_3)_2}} \times 187.57 \text{ g Cu}(\text{NO}_3)_2 = \boxed{985 \text{ g Cu}(\text{NO}_3)_2}$$

c) 3.00 moles of Carbon dioxide \rightarrow g

$$\frac{3.00 \cancel{\text{mol CO}_2}}{1 \cancel{\text{mol CO}_2}} \times 44.01 \text{ g CO}_2 = \boxed{132 \text{ g CO}_2}$$

3) Grams to moles

a) 12.01 g of Carbon \rightarrow moles

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

b) 36.04 g of Water \rightarrow moles

$$\frac{36.04 \cancel{\text{g H}_2\text{O}}}{18.02 \cancel{\text{g H}_2\text{O}}} \times 1 \text{ mol H}_2\text{O} = \boxed{2.000 \text{ mol H}_2\text{O}} \text{ OR } \boxed{2 \text{ mol H}_2\text{O}}$$

c) 225 g of Calcium Hydroxide \rightarrow moles

$$\frac{225 \cancel{\text{g Ca}(\text{OH})_2}}{74.10 \cancel{\text{g Ca}(\text{OH})_2}} \times 1 \text{ mol Ca}(\text{OH})_2 = \boxed{3.04 \text{ mol Ca}(\text{OH})_2}$$

4) Atoms to grams/grams to atoms

a) 1.23×10^4 atoms of Silver \rightarrow g

$$\frac{1.23 \times 10^4 \text{ atoms Ag}}{6.02 \times 10^{23} \text{ atoms Ag}} \times \frac{1 \text{ mol Ag}}{1 \text{ mol Ag}} \times 107.87 \text{ g Ag} = 2.20 \times 10^{-18} \text{ g Ag}$$

b) 6.02×10^{23} atoms of Lithium Sulfate \rightarrow g

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

c) 75.53 g of Calcium Chloride \rightarrow atoms

$$\frac{75.53 \text{ g CaCl}_2}{110.98 \text{ g CaCl}_2} \times \frac{1 \text{ mol CaCl}_2}{1 \text{ mol CaCl}_2} \times 6.02 \times 10^{23} \text{ atoms CaCl}_2 = 4.097 \times 10^{23} \text{ atoms CaCl}_2$$

5) Find the % composition of Potassium Sulfate



K $2 \times 39.10 = 78.20$
 S $1 \times 32.06 = 32.06$
 O $4 \times 16.00 = 64.00$
174.26

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

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

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

OR
 $4.10 \times 10^{23} \text{ atoms CaCl}_2$

6) Find the % composition of Aluminum Nitrate



Al $1 \times 26.98 = 26.98$
 N $3 \times 14.01 = 42.03$
 O $9 \times 16.00 = 144.00$
213.01

$$\frac{26.98}{213.01} \times 100 = 12.7\% \text{ Al}$$

$$\frac{42.03}{213.01} \times 100 = 19.7\% \text{ N}$$

$$\frac{144.00}{213.01} \times 100 = 67.6\% \text{ O}$$

GO VIKINGS!