

# Stoichiometry Quiz

# Version 1

Name: \_\_\_\_\_

Round molar masses to a 2 decimal places as on PT. Round final answer to significant figures. Show all your work and put a box around your final answer. Include units. Good luck 😊

1. Name the following compounds: (4)

a.  $\text{Na}_2\text{S}$  = Sodium sulfide

b.  $\text{P}_2\text{O}_5$  = Diphosphorus pentoxide

c.  $\text{NaCO}_3$  = Sodium carbonate

d.  $\text{CrCl}_3$  = Chromium(III) chloride

2. Give the chemical formula for: (4)

a. Aluminum chloride =  $\text{AlCl}_3$

b. Ammonium hydroxide =  $\text{NH}_3\text{OH}$

c. Chlorine gas =  $\text{Cl}_2$

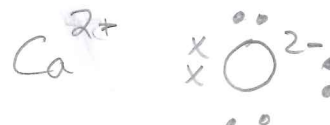
d. Iron (III) Chloride =  $\text{FeCl}_3$

3. Show the Lewis dot structures for the ions formed as the following ionic compounds are dissolved into water: (2)

a. LiF

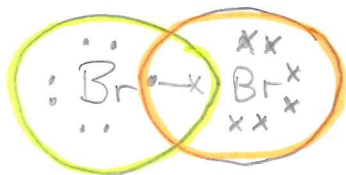


b. CaO

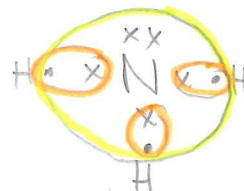


4. Show the Lewis dot structures for the covalent bonds present in the following compounds. Circle the octets. (2)

a.  $\text{Br}_2$



b.  $\text{NH}_3$



5. Do the following mole  $\leftrightarrow$  gram  $\leftrightarrow$  # of particles conversions. Show your work below! (4)

a. How many molecules are in 165 g of NaOH?

$$\frac{6.02 \times 10^{23} \text{ particles}}{\times} = \frac{40.00 \text{ g NaOH}}{165 \text{ g NaOH}}$$

$$\boxed{2.48 \times 10^{24} \text{ molecules}}$$

b. How many grams are in 10 moles of sugar,  $\text{C}_6\text{H}_{12}\text{O}_6$ ? (leave 5 sig.fig.)

$$\frac{1 \text{ mol } \text{C}_6\text{H}_{12}\text{O}_6 = 180.18 \text{ g}}{10 \text{ mol } \text{C}_6\text{H}_{12}\text{O}_6 \times}$$

$$\boxed{1801.8 \text{ g of sugar}}$$

c. What is the molar mass of vinegar,  $\text{CH}_3\text{COOH}$ ? (you do not need to show your work)

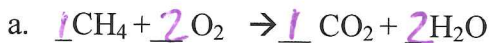
$$\boxed{60.06 \text{ g/mol}}$$

d. How many grams are in 0.500 mol of isopropanol (rubbing alcohol),  $\text{C}_3\text{H}_8\text{O}$ ?

$$\frac{1 \text{ mol } \text{C}_3\text{H}_8\text{O} = 60.11 \text{ g}}{0.500 \text{ mol } \text{C}_3\text{H}_8\text{O} \times}$$

$$\boxed{30.1 \text{ g } \text{C}_3\text{H}_8\text{O}}$$

6. Balance the following equations. (2)



2

Balance the equations first! Show all your work! Circle your final answer. (6)

6



145.86      123.88      269.74

a. How many grams of Magnesium phosphide will be produced if 110g of magnesium are used?

$$\frac{269.74 \text{ g Mg}_3\text{P}_2}{x \text{ g Mg}_3\text{P}_2} = \frac{145.86 \text{ g Mg}}{110 \text{ g Mg}} \quad \boxed{203 \text{ g Mg}_3\text{P}_2}$$

b. How many moles of Mg need to be used to produce 47.2 moles of Mg<sub>3</sub>P<sub>2</sub>?

$$\frac{6 \text{ mol Mg}}{x \text{ mol Mg}} = \frac{2 \text{ mol Mg}_3\text{P}_2}{47.2 \text{ mol Mg}_3\text{P}_2} \quad \boxed{142 \text{ mol Mg}}$$

c. How many grams of phosphorus need to be used to make 4 moles of Magnesium phosphide?

don't  
cancel sig figs

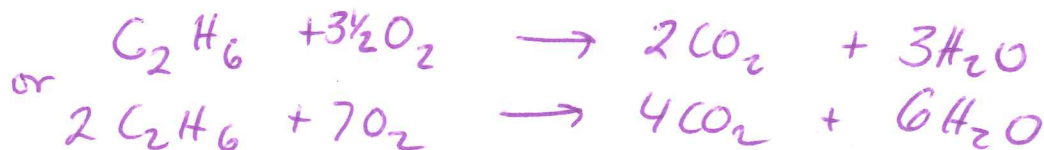
$$\frac{1 \text{ mol P}_4}{x} = \frac{2 \text{ mol Mg}_3\text{P}_2}{4 \text{ mol Mg}_3\text{P}_2} \quad \boxed{248 \text{ g P}_4}$$

$$\frac{1 \text{ mol P}_4}{2 \text{ mol P}_4} = \frac{123.88 \text{ g}}{x}$$

8. Burning ethane (C<sub>2</sub>H<sub>6</sub>) in air containing oxygen (O<sub>2</sub>) produces carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O). You are to produce 32.00 mol of carbon dioxide. What mass of oxygen is used? (3)

3

Write out the balanced equation first →



$$\frac{4 \text{ mol CO}_2}{32.00 \text{ mol CO}_2} = \frac{7 \text{ mol O}_2}{x}$$

$$\frac{1 \text{ mol O}_2}{56.00 \text{ mol O}_2} = \frac{32.00 \text{ g}}{x}$$

56.00 mol O<sub>2</sub>

$$\boxed{1792 \text{ g O}_2}$$

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