

## Review of Concepts Learned in Chemistry 11

### Measurement, Units, and Significant Figures

1.	a. $\frac{1\mu\text{L}}{10^{-6}\text{L}}$ or $\frac{10^6\mu\text{L}}{1\text{L}}$	b. $\frac{10^6\text{mg}}{1\text{kg}}$ or $\frac{1\text{mg}}{10^{-6}\text{kg}}$	c. $\frac{10^7\text{nm}}{1\text{cm}}$
2.	a. $0.0555\text{ kg} \times \frac{10^3\text{g}}{1\text{kg}} \times \frac{1\text{mg}}{10^{-3}\text{g}} = 55500\text{mg}$		
	b. $0.234\text{ mol} \times \frac{10^3\text{ mmol}}{1\text{mol}} = 234\text{ mmol}$		
3.	a. microgram	b. megamole	
4.	a. $4.73 \times 10^{14}$	b. $8.9 \times 10^{-11}$	
5.	a. 0.00255      3 sig figs	b. 976.00      5 sig figs	
6.	a. g	b. S	c. mol      d. k

### Chemical Nomenclature

1.	a. Vanadium (III) chloride				
	b. lithium chlorite				
	c. copper (II) sulphate				
	d. Iron (III) sulphide				
	e.				
2.	a. $\text{Hg}_2(\text{NO}_2)_2$				
	b. $\text{Li}_2\text{O}$				
	c. $\text{Ca}(\text{ClO})_2$				
	d. $(\text{NH}_4)_3\text{PO}_4$				
	e.				
3.	positive				
4.	a. A	b. B	c. S	d. S	e.

## Mole Concept

1.	$6.02 \times 10^{23}$
2.	$Ba_3(PO_4)_2$ $6.03 \text{ g} \times \frac{1 \text{ mol}}{601.9 \text{ g}} = 1.00 \times 10^{-2} \text{ mol}$ $3(137.3) + 2(31.0) + 8(16.0) = 601.9 \text{ g/mol}$
3.	$8.912 \times 10^{21} \text{ molecules} \times \frac{1 \text{ mol}}{6.02 \times 10^{23}} = 0.0148 \text{ mol}$
4.	$0.891 \text{ mol} \times \frac{6.02 \times 10^{23}}{1 \text{ mol}} = 5.36 \times 10^{23} \text{ atoms}$
5.	$4.50 \text{ mol} \times \frac{53.5 \text{ g}}{1 \text{ mol}} = 241 \text{ g}$
6.	$0.45 \text{ mol } CO_2 \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} \times \frac{2 \text{ atoms}}{1 \text{ molecule}}$ $= 5.4 \times 10^{23} \text{ atoms}$
7.	$67.5 \text{ L } SO_3 \times \frac{1 \text{ mol}}{22.4 \text{ L}} \times \frac{80.1 \text{ g}}{1 \text{ mol}} = 241 \text{ g } SO_3$

## Writing and Balancing Chemical Reactions

1.	a.	$2Na + 2H_2O \rightarrow 2NaOH + H_2$	S.R.
	b.	$2C_6H_{14} + 19O_2 \rightarrow 12CO_2 + 14H_2O$	Comb.
	c.	$1HBrO_3 + 5HBr \rightarrow 3H_2O + 3Br_2$	Decomp.
	d.	$V_2O_5 + 5Ca \rightarrow 5CaO + 2V$	S.R.
2.	a.	$2Zn + O_2 \rightarrow 2ZnO$	Syn.
	b.	$2HBr \rightarrow H_2 + Br_2$	decomp.
	c.	$2C_4H_6O + 11O_2 \rightarrow 8CO_2 + 6H_2O$	Combust

# Measurement, Units, and Significant Figures

1. Complete these conversion factors:

a.  $\frac{\mu\text{L}}{\text{L}}$     b.  $\frac{\text{mg}}{\text{Kg}}$     c.  $\frac{\text{nm}}{\text{cm}}$

2. Complete the following conversions:

a.  $0.0555 \text{ kg} \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ mg}$

b.  $0.234 \text{ mol} \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ mmol}$

3. Name the following units:

a.  $\mu\text{g} \underline{\hspace{2cm}}$                       b.  $\text{Mmol} \underline{\hspace{2cm}}$

4. Express in scientific notation:

a.  $473,000,000,000,000 = \underline{\hspace{2cm}}$

b.  $0.0000000008900 = \underline{\hspace{2cm}}$

5. Express in standard form:

a.  $2.55 \times 10^{-3} = \underline{\hspace{2cm}}$                       # of sig figs?  $\underline{\hspace{1cm}}$

b.  $9.7600 \times 10^2 = \underline{\hspace{2cm}}$                       # of sig figs?  $\underline{\hspace{1cm}}$

6. Provide the metric (SI) base units for the following quantities:

a. Mass  $\underline{\hspace{2cm}}$     b. Time  $\underline{\hspace{2cm}}$   
c. Amount of substance  $\underline{\hspace{2cm}}$     d. Temperature  $\underline{\hspace{2cm}}$

# Mole Concept

1. Avogadro's number is: \_\_\_\_\_
2.
  - a. Calculate the molecular mass of barium phosphate.
  - b. 6.03 g of barium phosphate is how many moles?
3.  $8.912 \times 10^{21}$  molecules are how many moles?
4. 0.891 moles is how many atoms?
5. 4.50 mol of  $\text{NH}_4\text{Cl}$  would have a mass of how much?
6. How many oxygen atoms are there in 0.45 moles of carbon dioxide?
7. A 67.5 L sample of  $\text{SO}_3$  (g) at STP would have a mass of what?

# Chemical Nomenclature

1. Name the following compounds

- a.  $\text{VCl}_3$ : \_\_\_\_\_
- b.  $\text{LiClO}_2$ : \_\_\_\_\_
- c.  $\text{CuSO}_4$ : \_\_\_\_\_
- d.  $\text{Fe}_2\text{S}_3$ : \_\_\_\_\_
- e.  $\text{P}_2\text{O}_5$ : \_\_\_\_\_

2. Write the chemical formula for each of the following:

- a. Mercury (I) nitrite: \_\_\_\_\_
- b. Lithium oxide: \_\_\_\_\_
- c. Calcium hypochlorite: \_\_\_\_\_
- d. Ammonium phosphate: \_\_\_\_\_
- e. Carbon tetrachloride: \_\_\_\_\_

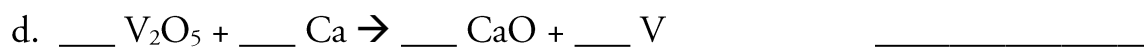
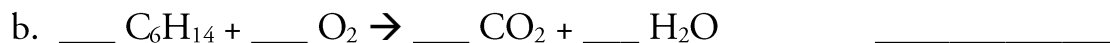
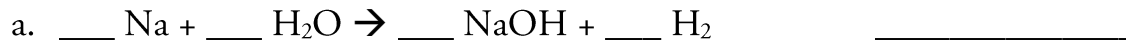
3. A **cation** is an ion with a \_\_\_\_\_ (negative or positive) charge.

4. Classify the following compounds as a **salt**, **acid**, **base**, or **covalent compound**:

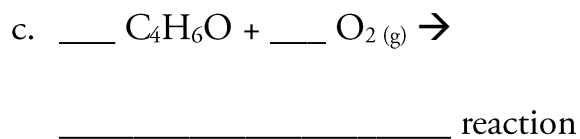
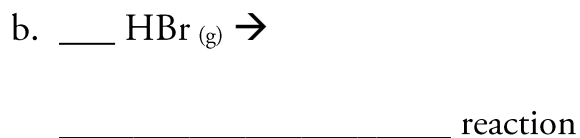
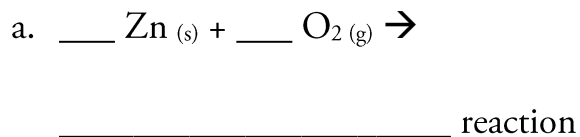
- a.  $\text{H}_3\text{PO}_4$
- b.  $\text{NH}_3$
- c.  $\text{Zn}(\text{OH})_2$
- d.  $\text{Fe}_2\text{S}_3$
- e.  $\text{Au}(\text{NO}_3)_3$

# Writing and Balancing Chemical Reactions

## 1. BALANCE and CLASSIFY:



## 2. COMPLETE, BALANCE, and CLASSIFY:



## Review of Concepts Learned in Chemistry 11

### Measurement, Units, and Significant Figures

7.	b.	b.	c.
8.	c.		
	d.		
9.	b.	b.	
10.	b.	b.	
11.	b.	b.	
12.	b.	b.	c. d.

### Chemical Nomenclature

1.	a.				
	b.				
	c.				
	d.				
	e.				
2.	a.				
	b.				
	c.				
	d.				
	e.				
3.					
4.	a.	b.	c.	d.	e.

## Mole Concept

8.	
9.	
10	
11	
12	
13	
14	

## Writing and Balancing Chemical Reactions

1.	a.
	b.
	c.
	d.
2.	a.
	b.
	c.