

**WORKSHEET 1 - BALANCE THE FOLLOWING CHEMICAL EQUATIONS WHERE NECESSARY.**

Note: Many elements exist as diatomic molecules. ie. H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, F<sub>2</sub>, Cl<sub>2</sub>, Br<sub>2</sub>, I<sub>2</sub>

1.	Na	+	O <sub>2</sub>	→	Na <sub>2</sub> O		
2.	Na	+	Cl <sub>2</sub>	→	NaCl		
3.	Na	+	H <sub>2</sub> O	→	NaOH	+	H <sub>2</sub>
4.	Na	+	H <sub>2</sub>	→	NaH		
5.	Na	+	N <sub>2</sub>	→	Na <sub>3</sub> N		
6.	Mg	+	O <sub>2</sub>	→	MgO		
7.	Mg	+	Cl <sub>2</sub>	→	MgCl <sub>2</sub>		
8.	Mg	+	CO <sub>2</sub>	→	MgO	+	C
9.	Ag	+	O <sub>2</sub>	→	AgO		
10.	Al	+	Br <sub>2</sub>	→	AlBr <sub>3</sub>		
11.	Al	+	O <sub>2</sub>	→	Al <sub>2</sub> O <sub>3</sub>		
12.	Al	+	N <sub>2</sub>	→	AlN		
13.	Li	+	HCl	→	LiCl	+	H <sub>2</sub>
14.	Mg	+	HCl	→	MgCl <sub>2</sub>	+	H <sub>2</sub>
15.	Li	+	H <sub>2</sub> SO <sub>4</sub>	→	Li <sub>2</sub> SO <sub>4</sub>	+	H <sub>2</sub>
16.	Sr	+	H <sub>2</sub> SO <sub>4</sub>	→	SrSO <sub>4</sub>	+	H <sub>2</sub>
17.	NH <sub>3</sub>	+	HCl	→	NH <sub>4</sub> Cl		
18.	CuO	+	HCl	→	CuCl <sub>2</sub>	+	H <sub>2</sub> O
19.	Ca(OH) <sub>2</sub>	+	CO <sub>2</sub>	→	CaCO <sub>3</sub>	+	H <sub>2</sub> O
20.	Al	+	HCl	→	AlCl <sub>3</sub>	+	H <sub>2</sub>
21.	Fe	+	CuSO <sub>4</sub>	→	Cu	+	FeSO <sub>4</sub>
22.	Al	+	Fe <sub>2</sub> O <sub>3</sub>	→	Fe	+	Al <sub>2</sub> O <sub>3</sub>
23.	KI	+	Pb(NO <sub>3</sub> ) <sub>2</sub>	→	PbI <sub>2</sub>	+	KNO <sub>3</sub>
24.	Al	+	AgNO <sub>3</sub>	→	Ag	+	Al(NO <sub>3</sub> ) <sub>3</sub>
25.	Al	+	H <sub>2</sub> SO <sub>4</sub>	→	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	+	H <sub>2</sub>

**WORKSHEET 2- BALANCE THE FOLLOWING CHEMICAL EQUATIONS WHERE NECESSARY.**

Note: Many elements exist as diatomic molecules. ie. H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, F<sub>2</sub>, Cl<sub>2</sub>, Br<sub>2</sub>, I<sub>2</sub>

26.	Na	+	S	→	Na <sub>2</sub> S		
27.	Na	+	I <sub>2</sub>	→	NaI		
28.			HgO	→	Hg	+	O <sub>2</sub>
29.	ZnO	+	C	→	Zn	+	CO <sub>2</sub>
30.	Na	+	F <sub>2</sub>	→	NaF		
31.			CuCO <sub>3</sub>	→	CuO	+	CO <sub>2</sub>
32.	Na	+	I <sub>2</sub>	→	NaI		
33.	Ca	+	H <sub>2</sub> O	→	Ca(OH) <sub>2</sub>	+	H <sub>2</sub>
34.	Ba	+	O <sub>2</sub>	→	BaO		
35.	Ag	+	S	→	Ag <sub>2</sub> S		
36.	CH <sub>4</sub>	+	O <sub>2</sub>	→	CO <sub>2</sub>	+	H <sub>2</sub> O
37.	Mg	+	N <sub>2</sub>	→	Mg <sub>3</sub> N <sub>2</sub>		
38.	Mg	+	CO <sub>2</sub>	→	MgO	+	C
39.	Ba	+	HCl	→	BaCl <sub>2</sub>	+	H <sub>2</sub>
40.	K <sub>2</sub> O	+	H <sub>2</sub> SO <sub>4</sub>	→	K <sub>2</sub> SO <sub>4</sub>	+	H <sub>2</sub> O
41.	CuO	+	HNO <sub>3</sub>	→	Cu(NO <sub>3</sub> ) <sub>2</sub>	+	H <sub>2</sub> O
42.	NaI	+	Cl <sub>2</sub>	→	NaCl	+	I <sub>2</sub>
43.	Al	+	F <sub>2</sub>	→	AlF <sub>3</sub>		
44.	NaOH	+	CO <sub>2</sub>	→	Na <sub>2</sub> CO <sub>3</sub>	+	H <sub>2</sub> O
45.	Al <sub>2</sub> O <sub>3</sub>	+	HCl	→	AlCl <sub>3</sub>	+	H <sub>2</sub> O
46.	Cu	+	AgNO <sub>3</sub>	→	Cu(NO <sub>3</sub> ) <sub>2</sub>	+	Ag
47.	PbS	+	O <sub>2</sub>	→	PbO	+	SO <sub>2</sub>
48.	Pb <sub>3</sub> O <sub>4</sub>	+	C	→	Pb	+	CO <sub>2</sub>
49.	Fe	+	Cl <sub>2</sub>	→	FeCl <sub>3</sub>		
50.	Al <sub>2</sub> O <sub>3</sub>	+	NaOH	+	H <sub>2</sub> O	→	NaAl(OH) <sub>4</sub>

**WRITE IN THE CORRECT FORMULA THEN BALANCE THE CHEMICAL EQUATIONS**

Note: Many elements exist as diatomic molecules. ie. H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, F<sub>2</sub>, Cl<sub>2</sub>, Br<sub>2</sub>, I<sub>2</sub>

1.	Hydrogen	+	Oxygen	→	Water	
		+		→		
	<b>METALLIC OXIDE</b>	+	<b>WATER</b>	→	<b>BASE</b>	
2.	Sodium oxide	+	Water	→	Sodium hydroxide	
		+		→		
3.	Calcium oxide	+	Water	→	Calcium hydroxide	
		+		→		
4.	Potassium oxide	+	Water	→	Potassium hydroxide	
		+		→		
5.	Nitrogen	+	Hydrogen	→	Ammonia	
		+		→	NH <sub>3</sub>	
	<b>NON METALLIC OXIDE</b>	+	<b>WATER</b>	→	<b>ACID</b>	
6.	Carbon dioxide	+	Water	→	Carbonic acid	
		+		→	H <sub>2</sub> CO <sub>3</sub>	
7.	Sulfur dioxide	+	Water	→	Sulfurous acid	
		+		→	H <sub>2</sub> SO <sub>3</sub>	
8.	Sulfur trioxide	+	Water	→	Sulfuric acid	
		+		→	H <sub>2</sub> SO <sub>4</sub>	
9.	Nitrogen dioxide	+	Water	→	Nitric acid	+ Nitrous acid
		+		→	HNO <sub>3</sub>	+ HNO <sub>2</sub>
10.	Phosphorus pentoxide	+	Water	→	Phosphoric acid	
	P <sub>4</sub> O <sub>10</sub>	+		→	H <sub>3</sub> PO <sub>4</sub>	
11.	Hydrogen	+	Chlorine	→	Hydrogen chloride	
		+		→		
12.	Sulfuric acid	+	Sodium chloride	→	Hydrochloric acid	+ Sodium sulfate
		+		→		+

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13.	Iron	+	Oxygen	→	Iron(III) oxide		
		+		→			
14.	Aluminium	+	Fluorine	→	Aluminium fluoride		
		+		→			
15.	Lead (IV) oxide	+	Carbon	→	Lead	+	Carbon dioxide
		+		→		+	
16.	Magnesium hydroxide	+	Hydrochloric acid	→	Magnesium chloride	+	Water
		+		→		+	
17.	Potassium	+	Water	→	Potassium hydroxide	+	Hydrogen
		+		→		+	
18.	Iron	+	Sulfuric acid	→	Iron(II) sulfate	+	Hydrogen
		+		→		+	
19.			Hydrogen peroxide	→	Oxygen	+	Water
			H <sub>2</sub> O <sub>2</sub>	→		+	
20.	Lithium hydroxide	+	Carbon dioxide	→	Lithium carbonate	+	Water
		+		→		+	
21.	Copper sulfate	+	Iron	→	Iron sulfate	+	Copper
		+		→		+	
22.	Calcium bromide	+	Chlorine	→	Calcium chloride	+	Bromine
		+		→		+	
23.	Sulfuric acid	+	Barium hydroxide	→	Barium sulfate	+	Water
		+		→		+	
24.	Copper(II) sulfide	+	Hydrogen	→	Copper	+	Hydrogen sulfide
		+		→		+	
25.	Propane gas (L.P.G.)	+	Oxygen	→	Carbon dioxide	+	Water
	C <sub>3</sub> H <sub>8</sub>	+		→		+	

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ADVANCED CHEMICAL EQUATIONS					
26.	Iron(III) oxide	+	Carbon monoxide	→	Iron + Carbon dioxide
				→	
27.	Copper	+	Nitric acid	→	Nitrogen dioxide + Copper(II) nitrate + Water
				→	NO <sub>2</sub>
28.	Carbon dioxide	+	Water	→	Glucose + Oxygen
				→	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>
29.			Glucose	→	Carbon dioxide + Ethanol
				→	C <sub>2</sub> H <sub>5</sub> OH
30.	Calcium hypochlorite	+	Hydrochloric acid	→	Calcium chloride + Water + Chlorine
	Ca(ClO) <sub>2</sub>			→	
31.	Phosphorus pentachloride	+	Water	→	Phosphoric acid + Hydrogen chloride
	PCl <sub>5</sub>	+		→	H <sub>3</sub> PO <sub>4</sub>
32.	Iron(II,III) oxide	+	Carbon monoxide	→	Iron + Carbon dioxide
	Fe <sub>3</sub> O <sub>4</sub>	+	CO	→	
33.	Ammonia	+	Oxygen	→	Nitrogen monoxide + Water
	NH <sub>3</sub>			→	NO
34.	Copper	+	Nitric acid	→	Nitrogen monoxide + Copper(II) nitrate + Water
				→	NO
35.	Potassium permanganate + Hydrochloric acid	→			Manganese chloride + Potassium chloride + Chlorine + Water
	KMnO <sub>4</sub>			→	MnCl <sub>2</sub>