



## The National Orthodox School /Shmaisani

**Subject: Science/ Chemistry**

**Name:**

**Writing chemical formulae**

**Date:**

**Grade-Section: 8CS**

A chemical formula is defined as a collection of chemical symbols that is used to show the elements present in any compound and its proportion.

<https://www.youtube.com/watch?v=p9iQ5Qn42DM>

**1. Complete the table; it will help you to answer later questions.**

Cations (positively charged)		
Name	Formula	Charge
Sodium	Na <sup>+</sup>	
Potassium	K <sup>+</sup>	1+
Magnesium		
Calcium	Ca <sup>2+</sup>	
Aluminium		
Copper (II)		
Zinc	Zn <sup>2+</sup>	2+

Anions (negatively charged)		
Name	Formula	Charge
Chloride	Cl <sup>-</sup>	
Bromide	Br <sup>-</sup>	
Oxide		
Hydroxide	OH <sup>-</sup>	
Nitrate		1-
Carbonate	CO <sub>3</sub> <sup>2-</sup>	
Sulphate		

Hydrochloric acid .....

Sulfuric acid .....

Nitric acid .....

2. Complete the table with the formulae formed by each pair of ions.

		Negative ion		
		Chloride	Bromide	Oxide
Positive ion	Potassium			
	Calcium		CaBr <sub>2</sub>	
	Aluminium			

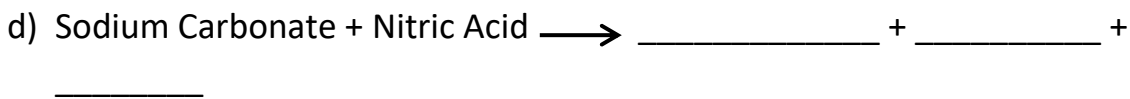
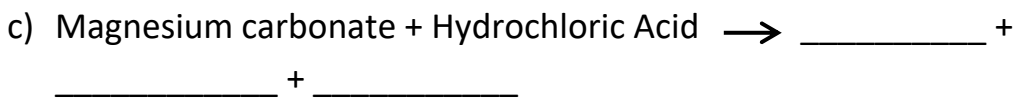
		Negative ion			
		Hydroxide	Nitrate	Carbonate	Sulphate
Positive ion	Sodium			Na <sub>2</sub> CO <sub>3</sub>	
	Magnesium		Mg(NO <sub>3</sub> ) <sub>2</sub>		
	Aluminium				

3. Write the chemical formula of these compounds:

Compound	Positive ion	Negative ion	Chemical formula
Lithium oxide			
Zinc nitrate			

<b>Calcium carbonate</b>			
<b>Sodium hydroxide</b>			
<b>Calcium chloride</b>			
<b>Copper oxide</b>			
<b>Silver nitrate</b>			
<b>Aluminium oxide</b>			
<b>Iron oxide</b>			
<b>Copper carbonate</b>			
<b>Zinc oxide</b>			
<b>Silver hydroxide</b>			
<b>Iron sulfate</b>			
<b>Silver carbonate</b>			

**4. Complete these equations, then rewrite each equation using the chemical formula (*no need to balance the equations*)**



1. Complete the table; it will help you to answer later questions.

Cations (positively charged)			Anions (negatively charged)		
Name	Formula	Charge	Name	Formula	Charge
Sodium	Na <sup>+</sup>	1+	Chloride	Cl <sup>-</sup>	-1
Potassium	K <sup>+</sup>	1+	Bromide	Br <sup>-</sup>	-1
Magnesium	Mg <sup>+2</sup>	+2	Oxide	O <sup>-2</sup>	-2
Calcium	Ca <sup>2+</sup>	+2	Hydroxide	OH <sup>-</sup>	-1
Aluminium	Al <sup>+3</sup>	+3	Nitrate	NO <sub>3</sub> <sup>-1</sup>	1-
Copper (II)	Cu <sup>+2</sup>	+2	Carbonate	CO <sub>3</sub> <sup>2-</sup>	-2
Zinc	Zn <sup>2+</sup>	2+	Sulphate	SO <sub>4</sub> <sup>-2</sup>	-2

iron Fe<sup>+2</sup> +2  
 silver Ag<sup>+1</sup> +1  
 Hydrochloric acid ..... HCl .....  
 Sulfuric acid ..... H<sub>2</sub>SO<sub>4</sub> .....  
 Nitric acid ..... HNO<sub>3</sub> .....

2. Complete the table with the formulae formed by each pair of ions.

		Negative ion		
		Chloride Cl <sup>-1</sup>	Bromide Br <sup>-1</sup>	Oxide O <sup>-2</sup>
Positive ion	Potassium K <sup>+1</sup>	KCl	KBr	K <sub>2</sub> O
	Calcium Ca <sup>+2</sup>	CaCl <sub>2</sub>	CaBr <sub>2</sub>	CaO
	Aluminium Al <sup>+3</sup>	AlCl <sub>3</sub>	AlBr <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>

		Negative ion			
		Hydroxide OH <sup>-1</sup>	Nitrate (NO <sub>3</sub> ) <sup>-1</sup>	Carbonate (CO <sub>3</sub> ) <sup>-2</sup>	Sulphate (SO <sub>4</sub> ) <sup>-2</sup>
Positive ion	Sodium Na <sup>+1</sup>	NaOH	NaNO <sub>3</sub>	Na <sub>2</sub> CO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
	Magnesium Mg <sup>+2</sup>	Mg(OH) <sub>2</sub>	Mg(NO <sub>3</sub> ) <sub>2</sub>	MgCO <sub>3</sub>	MgSO <sub>4</sub>
	Aluminium Al <sup>+3</sup>	Al(OH) <sub>3</sub>	Al(NO <sub>3</sub> ) <sub>3</sub>	Al <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub>	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>

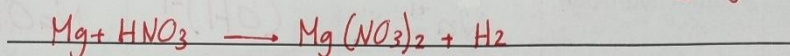
3. Write the chemical formula of these compounds:

Compound	Positive ion	Negative ion	Chemical formula
Lithium oxide	Li <sup>+1</sup>	O <sup>-2</sup>	Li <sub>2</sub> O
Zinc nitrate	Zn <sup>+2</sup>	(NO <sub>3</sub> ) <sup>-1</sup>	Zn(NO <sub>3</sub> ) <sub>2</sub>

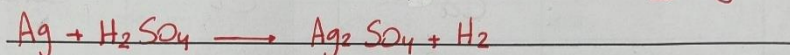
Calcium carbonate	$\text{Ca}^{+2}$	$(\text{CO}_3)^{-2}$	$\text{CaCO}_3$
Sodium hydroxide	$\text{Na}^{+1}$	$(\text{OH})^{-1}$	$\text{NaOH}$
Calcium chloride	$\text{Ca}^{+2}$	$\text{Cl}^{-1}$	$\text{CaCl}_2$
Copper oxide	$\text{Cu}^{+2}$	$\text{O}^{-2}$	$\text{CuO}$
Silver nitrate	$\text{Ag}^{+1}$	$(\text{NO}_3)^{-1}$	$\text{AgNO}_3$
Aluminium oxide	$\text{Al}^{+3}$	$\text{O}^{-2}$	$\text{Al}_2\text{O}_3$
Iron oxide	$\text{Fe}^{+2}$	$\text{O}^{-2}$	$\text{FeO}$
Copper carbonate	$\text{Cu}^{+2}$	$(\text{CO}_3)^{-2}$	$\text{CuCO}_3$
Zinc oxide	$\text{Zn}^{+2}$	$\text{O}^{-2}$	$\text{ZnO}$
Silver hydroxide	$\text{Ag}^{+1}$	$(\text{OH})^{-1}$	$\text{AgOH}$
Iron sulfate	$\text{Fe}^{+2}$	$(\text{SO}_4)^{-2}$	$\text{FeSO}_4$
Silver carbonate	$\text{Ag}^{+1}$	$(\text{CO}_3)^{-2}$	$\text{Ag}_2\text{CO}_3$

4. Complete these equations, then rewrite each equation using the chemical formula (*no need to balance the equations*)

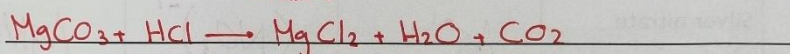
a) Magnesium + Nitric Acid  $\longrightarrow$  magnesium nitrate + hydrogen



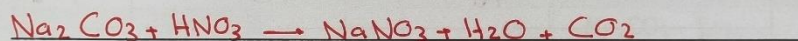
b) Silver + sulfuric Acid  $\longrightarrow$  silver sulfate + hydrogen



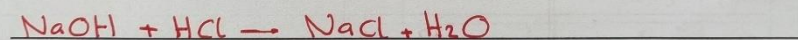
c) Magnesium carbonate + Hydrochloric Acid  $\longrightarrow$  magnesium chloride + water + carbon dioxide



d) Sodium Carbonate + Nitric Acid  $\longrightarrow$  sodium nitrate + water + carbon dioxide



e) Sodium Hydroxide + Hydrochloric Acid  $\longrightarrow$  sodium chloride + water



f) Magnesium Oxide + Sulfuric Acid  $\longrightarrow$  magnesium sulfate + water

