



## Chemical Formula Key

Positive ions	Formula	Combining Power
Ammonium ion	$\text{NH}_4^+$	1
Hydrogen ion	$\text{H}^+$	1
Potassium ion	$\text{K}^+$	1
Sodium ion	$\text{Na}^+$	1
Copper ion	$\text{Cu}^{2+}$	2
Magnesium ion	$\text{Mg}^{2+}$	2
Aluminium ion	$\text{Al}^{3+}$	3

Negative ions	Formula	Combining Power
Acetate ion	$\text{CH}_3\text{COO}^-$	1
Chloride ion	$\text{Cl}^-$	1
Hydroxide ion	$\text{OH}^-$	1
Nitrate ion	$\text{NO}_3^-$	1
Carbonate ion	$\text{CO}_3^{2-}$	2
Sulfate ion	$\text{SO}_4^{2-}$	2
Phosphate ion	$\text{PO}_4^{3-}$	3

***Determine the formula of the following compounds with the help of the cut-out model sheet.***

No	Chemical	Formula
1	copper carbonate	
2	copper sulfate	
3	copper chloride	
4	potassium nitrate	
5	potassium hydroxide	
6	potassium chloride	
7	aluminium phosphate	
8	aluminium chloride	
9	magnesium carbonate	
10	magnesium sulfate	
11	magnesium chloride	
12	sodium carbonate	
13	sodium phosphate	
14	sodium sulfate	
15	sodium nitrate	
16	sodium hydroxide	

No	Chemical	Formula
17	sodium chloride	
18	ammonium nitrate	
19	ammonium hydroxide	
20	ammonium chloride	
<i>Brackets are need if the number of polyatomic groups is greater than one.</i>		
21	aluminium sulfate	
22	aluminium nitrate	
23	aluminium hydroxide	
24	copper hydroxide	
25	copper nitrate	
26	ammonium carbonate	
27	ammonium phosphate	
28	ammonium sulfate	
29	magnesium nitrate	
30	magnesium phosphate	

No	Chemical	Formula
31	magnesium hydroxide	
<i>By convention organic groups like the acetate ion are written first. The metal ion is written last. This reflects the structural formula.</i>		
32	potassium acetate	
33	ammonium acetate	
34	sodium acetate	
<i>Match the hydrogen ions in the cut-out model with the correct groups.</i>		
35	water	
36	hydrochloric acid	
37	nitric acid	
38	sulfuric acid	
39	carbonic acid	
40	phosphoric acid	
41	acetic acid	

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Ammonium ion	$\text{NH}_4^+$	1
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Sodium ion	$\text{Na}^+$	1
Copper ion	$\text{Cu}^{2+}$	2
Magnesium ion	$\text{Mg}^{2+}$	2
Aluminium ion	$\text{Al}^{3+}$	3

Negative ions	Formula	Combining Power
Acetate ion	$\text{CH}_3\text{COO}^-$	1
Chloride ion	$\text{Cl}^-$	1
Hydroxide ion	$\text{OH}^-$	1
Nitrate ion	$\text{NO}_3^-$	1
Carbonate ion	$\text{CO}_3^{2-}$	2
Sulfate ion	$\text{SO}_4^{2-}$	2
Phosphate ion	$\text{PO}_4^{3-}$	3

## ANSWERS

No	Chemical	Formula
1	copper carbonate	$\text{CuCO}_3$
2	copper sulfate	$\text{CuSO}_4$
3	copper chloride	$\text{CuCl}_2$
4	potassium nitrate	$\text{KNO}_3$
5	potassium hydroxide	$\text{KOH}$
6	potassium chloride	$\text{KCl}$
7	aluminium phosphate	$\text{AlPO}_4$
8	aluminium chloride	$\text{AlCl}_3$
9	magnesium carbonate	$\text{MgCO}_3$
10	magnesium sulfate	$\text{MgSO}_4$
11	magnesium chloride	$\text{MgCl}_2$
12	sodium carbonate	$\text{Na}_2\text{CO}_3$
13	sodium phosphate	$\text{Na}_3\text{PO}_4$
14	sodium sulfate	$\text{Na}_2\text{SO}_4$
15	sodium nitrate	$\text{NaNO}_3$
16	sodium hydroxide	$\text{NaOH}$

No	Chemical	Formula
17	sodium chloride	$\text{NaCl}$
18	ammonium nitrate	$\text{NH}_4\text{NO}_3$
19	ammonium hydroxide	$\text{NH}_4\text{OH}$
20	ammonium chloride	$\text{NH}_4\text{Cl}$
<i>Brackets are need if the number of polyatomic groups is greater than one.</i>		
21	aluminium sulfate	$\text{Al}_2(\text{SO}_4)_3$
22	aluminium nitrate	$\text{Al}(\text{NO}_3)_3$
23	aluminium hydroxide	$\text{Al}(\text{OH})_3$
24	copper hydroxide	$\text{Cu}(\text{OH})_2$
25	copper nitrate	$\text{Cu}(\text{NO}_3)_2$
26	ammonium carbonate	$(\text{NH}_4)_2\text{CO}_3$
27	ammonium phosphate	$(\text{NH}_4)_3\text{PO}_4$
28	ammonium sulfate	$(\text{NH}_4)_2\text{SO}_4$
29	magnesium nitrate	$\text{Mg}(\text{NO}_3)_2$
30	magnesium phosphate	$\text{Mg}_3(\text{PO}_4)_2$

No	Chemical	Formula
31	magnesium hydroxide	$\text{Mg}(\text{OH})_2$
<i>By convention organic groups like the acetate ion are written first. The metal ion is written last. This shows the structural formula.</i>		
32	potassium acetate	$\text{CH}_3\text{COOK}$
33	ammonium acetate	$\text{CH}_3\text{COONH}_4$
34	sodium acetate	$\text{CH}_3\text{COONa}$
<i>Match the hydrogen ions in the cut-out model with the correct groups.</i>		
35	water	$\text{H}_2\text{O}$
36	hydrochloric acid	$\text{HCl}$
37	nitric acid	$\text{HNO}_3$
38	sulfuric acid	$\text{H}_2\text{SO}_4$
39	carbonic acid	$\text{H}_2\text{CO}_3$
40	phosphoric acid	$\text{H}_3\text{PO}_4$
41	acetic acid	$\text{CH}_3\text{COOH}$