

Combined Science - Chemistry - Key Stage 4

Observations from Acid Base Reactions

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Periodic Table of Elements

Key:

relative atomic mass

1

H

hydrogen

1

Atomic symbol

Atomic (proton number)

1 H hydrogen 1																	4 He helium 2
7 Li lithium 3	9 Be beryllium 4											11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10
23 Na sodium 11	24 Mg magnesium 12											27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulfur 16	35.5 Cl chlorine 17	40 Ar argon 18
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[97] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[267] Rf rutherfordium 104	[270] Db dubnium 105	[269] Sg seaborgium 106	[270] Bh bohrium 107	[270] Hs hassium 108	[278] Mt meitnerium 109	[281] Ds darmstadtium 110	[281] Rg roentgenium 87	[285] Cn copernicium 112	[286] Nh nihonium 113	[289] Fl flerovium 114	[289] Mc moscovium 115	[293] Lv livermorium 116	[293] Ts tennessine 117	[294] Og oganesson 118

Source: Oak



Ion charges

Positive ions	
Formula	Charge
Group 1	+
Group 2	2+
NH ₄	+
Cu	2+
Zn	2+
Fe	2+
Al	3+

Negative ions	
Formula	Charge
SO ₄	2-
NO ₃	-
Cl	-
PO ₄	3-



Q1

Compare the reactions of calcium oxide and calcium carbonate with sulfuric acid, comment on both the **products** of the reaction and the **observations** that would be made.

calcium oxide (s) + sulfuric acid (aq) → calcium sulfate (aq) + water (l)

calcium carbonate (s) + sulfuric acid (aq) → calcium sulfate (aq) + water (l) +
carbon dioxide (g)

What's the same?

In both reactions

What's different?

In the reaction with calcium carbonate



Q2

Work out the formulae of the named salts below. Use the scaffold provided and ion charges sheet

1. Lithium chloride
2. Zinc sulfate
3. Aluminium nitrate
4. Ammonium sulfate
5. Aluminium sulfate

Formula of ion		
Charge of ion		
Number of each ion in the salt		
Salt formula		



Q1 answers

What's the same?

In both reactions

- Salt and water are produced
- The salt calcium sulfate is produced
- You will see the solid disappear

What's different?

In the reaction with calcium carbonate

- Carbon dioxide is also produced
- You will see bubbles



Q2 answers

Work out the formulae of the named salts below

1. LiCl
2. ZnSO_4
3. $\text{Al}(\text{NO}_3)_3$
4. $(\text{NH}_4)_2\text{SO}_4$
5. $\text{Al}_2(\text{SO}_4)_3$

