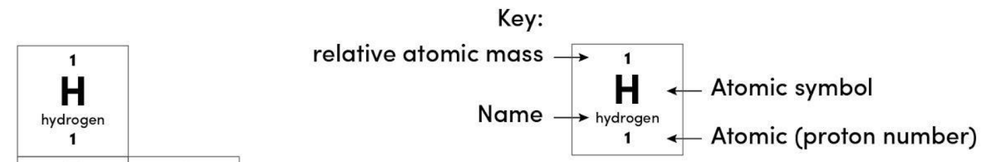
Testing for positive ions Worksheet

Separate Science - Chemistry - Key Stage 4

C8 Chemical Analysis

Mr Robbins

Periodic Table of Elements



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 organesson 118

* The lanthanides (atomic numbers 58 - 71) and the Actinides (atomic numbers 90 - 103) have been omitted.

Relative atomic masses for **Cu** and **Cl** have not been rounded to the nearest whole number.

1. What is the name for positive ions?
2. A student has a solution of calcium chloride. What colour will its flame test be?
3. What will happen if sodium hydroxide is added dropwise?
4. Write a balanced symbol equation for the reaction.
5. A student has a sample of copper nitrate. What colour will its flame test be?
6. What will happen if sodium hydroxide is added dropwise?
7. Write a balanced symbol equation for the reaction.

Answers

1. Cations
2. Orange-red flame
3. White precipitate will form
4. $CaCl_2$ (aq) + 2NaOH (aq) → $Ca(OH)_2$ (s) + 2NaCl (aq)
5. Green flame
6. Blue precipitate will form
7. $Cu(NO_3)_2$ + 2NaOH (aq) → $Cu(OH)_2$ (s) + $2NaNO_3$ (aq)

Independent task

1. Why did we dip the wire in hydrochloric acid?
2. Why do we need to use a roaring flame?
3. Complete the table

Ion	Colour of flame
Copper	
Lithium	
Calcium	
Sodium	
Potassium	

Independent task

1. What state do metal hydroxides often have?
2. What word do we use to describe when a solid appears from mixing two solutions?
3. Which metal hydroxide dissolves when excess sodium hydroxide is added?
4. Complete the table

Substance	Colour of precipitate with NaOH
Aluminium	
Iron (II)	
Calcium	
Copper	
Iron (III)	
Magnesium	

Symbol equations - Your turn

Copper chloride + Sodium hydroxide → _____ + Sodium chloride

$CuCl_2$ (aq) +_____ (aq) → _____$(OH)_2$ (s) + 2 NaCl (aq)

Symbol equations - Your turn

Aluminium chloride + Sodium hydroxide → Aluminium hydroxide + Sodium chloride

_____ (aq) +NaOH (aq) → _____$(OH)_3$ (s) + 3 NaCl (aq)

Independent task

1. Write the word equation for the reaction between magnesium bromide solution and sodium hydroxide
2. Write a balanced symbol equation for the same reaction above
3. What colour will the precipitate be?