

The Periodic Table

Lesson 6 - Chemical Formulae

Science

Chemistry - Key Stage 3

Miss Willett



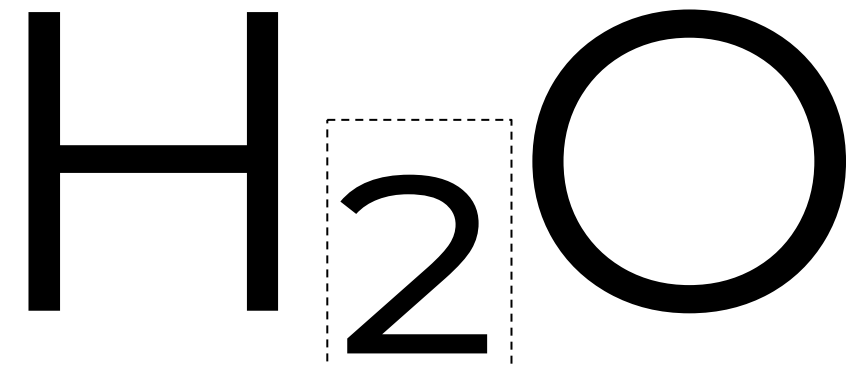
What have you learnt already?

1. What is a compound?
2. How are elements organised into groups?
3. Where are electrons found?



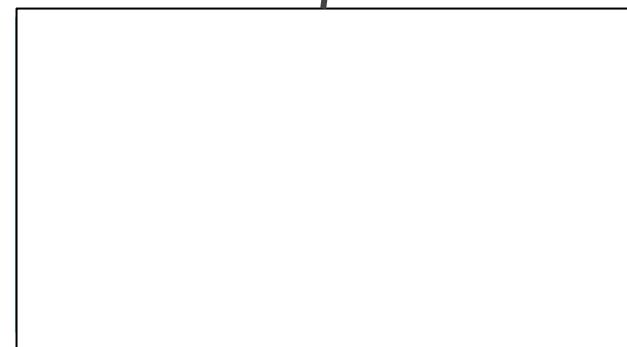
What does the formula tell us?

2 elements

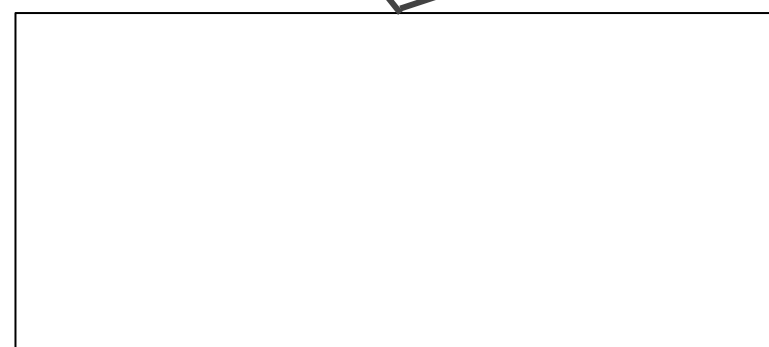


What does the formula tell us?

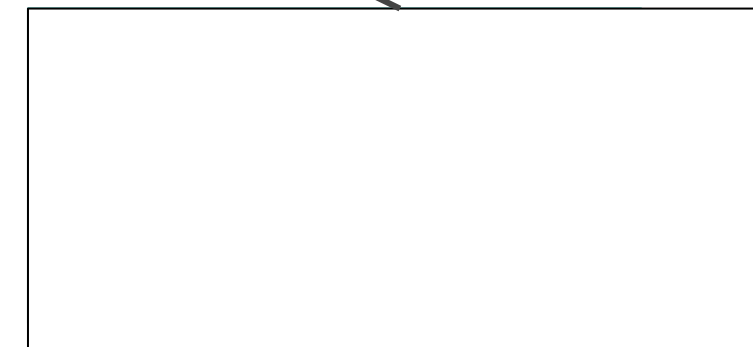
3 elements



An empty rectangular box with a thin black border, intended for identifying the first element in the chemical formula.



An empty rectangular box with a thin black border, intended for identifying the second element in the chemical formula.



An empty rectangular box with a thin black border, intended for identifying the third element in the chemical formula.



What does the formula tell us?

Water	H_2O	
Carbon Dioxide	CO_2	
	NaCl	
	Na_2S	
	CaCl_2	
		1 potassium 1 iodine
		1 Calcium, 1 carbon, 3 oxygen
		2 Aluminium, 3 Oxygen



Why aren't all compounds in a 1:1 ratio?

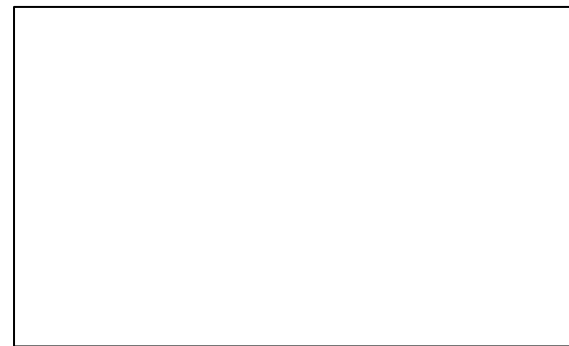
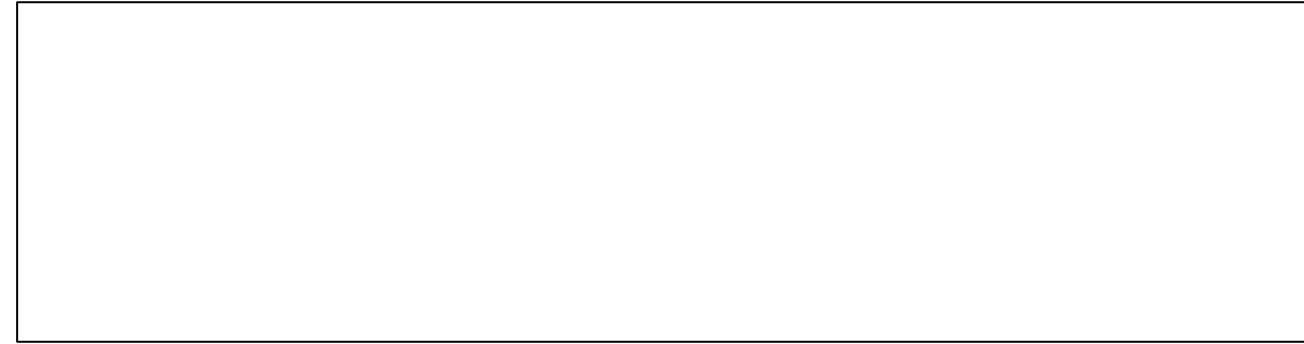
<div>↓</div> <div>1 H hydrogen 1</div>																		<div>↓</div> <div>4 He helium 2</div>
<div>↓</div> <div>7 Li lithium 3</div>	<div>9 Be beryllium 4</div>											<div>↓</div> <div>11 B boron 5</div>	<div>↓</div> <div>12 C carbon 6</div>	<div>↓</div> <div>14 N nitrogen 7</div>	<div>↓</div> <div>16 O oxygen 8</div>	<div>↓</div> <div>19 F fluorine 9</div>		<div>↓</div> <div>20 Ne neon 10</div>
<div>23 Na sodium 11</div>	<div>24 Mg magnesium 12</div>											<div>27 Al aluminum 13</div>	<div>28 Si silicon 14</div>	<div>31 P phosphorus 15</div>	<div>32 S sulfur 16</div>	<div>35.5 Cl chlorine 17</div>		<div>40 Ar argon 18</div>
<div>39 K potassium 19</div>	<div>40 Ca calcium 20</div>	<div>45 Sc scandium 21</div>	<div>48 Ti titanium 22</div>	<div>51 V vanadium 23</div>	<div>52 Cr chromium 24</div>	<div>55 Mn manganese 25</div>	<div>56 Fe iron 26</div>	<div>59 Co cobalt 27</div>	<div>59 Ni nickel 28</div>	<div>63.5 Cu copper 29</div>	<div>65 Zn zinc 30</div>	<div>70 Ga gallium 31</div>	<div>73 Ge germanium 32</div>	<div>75 As arsenic 33</div>	<div>79 Se selenium 34</div>	<div>80 Br bromine 35</div>		<div>84 Kr krypton 36</div>
<div>85 Rb rubidium 37</div>	<div>88 Sr strontium 38</div>	<div>89 Y yttrium 39</div>	<div>91 Zr zirconium 40</div>	<div>93 Nb niobium 41</div>	<div>96 Mo molybdenum 42</div>	<div>[97] Tc technetium 43</div>	<div>101 Ru ruthenium 44</div>	<div>103 Rh rhodium 45</div>	<div>106 Pd palladium 46</div>	<div>108 Ag silver 47</div>	<div>112 Cd cadmium 48</div>	<div>115 In indium 49</div>	<div>119 Sn tin 50</div>	<div>122 Sb antimony 51</div>	<div>128 Te tellurium 52</div>	<div>127 I iodine 53</div>		<div>131 Xe xenon 54</div>
<div>133 Cs cesium 55</div>	<div>137 Ba barium 56</div>	<div>139 La* lanthanum 57</div>	<div>178 Hf hafnium 72</div>	<div>181 Ta tantalum 73</div>	<div>184 W tungsten 74</div>	<div>186 Re rhenium 75</div>	<div>190 Os osmium 76</div>	<div>192 Ir iridium 77</div>	<div>195 Pt platinum 78</div>	<div>197 Au gold 79</div>	<div>201 Hg mercury 80</div>	<div>204 Tl thallium 81</div>	<div>207 Pb lead 82</div>	<div>209 Bi bismuth 83</div>	<div>[209] Po polonium 84</div>	<div>[210] At astatine 85</div>		<div>[222] Rn radon 86</div>
<div>[223] Fr francium 87</div>	<div>[226] Ra radium 88</div>	<div>[227] Ac* actinium 89</div>	<div>[267] Rf rutherfordium 104</div>	<div>[270] Db dubnium 105</div>	<div>[269] Sg seaborgium 106</div>	<div>[270] Bh bohrium 107</div>	<div>[270] Hs hassium 108</div>	<div>[278] Mt meitnerium 109</div>	<div>[281] Ds darmstadtium 110</div>	<div>[281] Rg roentgenium 111</div>	<div>[285] Cn copernicium 112</div>	<div>[286] Nh nihonium 113</div>	<div>[289] Fl flerovium 114</div>	<div>[289] Mc moscovium 115</div>	<div>[293] Lv livermorium 116</div>	<div>[293] Ts tennessine 117</div>		<div>[294] Og oganeson 118</div>



Using charges

Group / charge?

+3



Group 1

-2



Using charge to find formulae

1. Lithium chloride

Step 1: Which elements does it contain?

Step 2: What is the charge of each element?

Step 3: How many atoms of each element do you need to balance out the charge?

Step 4: Write the chemical formula

2. Lithium oxide

Step 1: Which elements does it contain?

Step 2: What is the charge of each element?

Step 3: How many atoms of each element do you need to balance out the charge?

Step 4: Write the chemical formula



Bringing it all together..

Compound Name	Elements contained	Charge of elements	Chemical Formula
Magnesium chloride	Magnesium chlorine	Mg = +2 Cl = -1	MgCl ₂
Potassium Chloride	Potassium, chlorine		
Potassium Iodide			
Calcium fluoride			
Aluminium chloride			

