

**Science: Periodic Table**

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| 1. Key words | |
| Element | A substance that cannot be broken down into other substances. |
| Compound | A substance made up of atoms of two or more elements, strongly joined together. |
| Atom | The smallest part of an element that can exist. |
| Molecule | A group of two or more atoms, strongly joined together. |
| Chemical symbol | A one- or two-letter code for an element that is used by scientists in all countries. |

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| 1. Elements and compounds | | | |
| **Name** | Hydrogen | Oxygen | Water |
| **Element or compound** | Element | Element | Compound |
| **Properties** | Gas at room temperature. | Gas at room temperature. | Liquid at room temperature. |
| **Formula** | H2 | O2 | H2O |
| **Description** | 2 Hydrogen atoms joined together | 2 Oxygen atoms joined together | 2 Hydrogen atoms joined to 1 Oxygen atom |

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| 1. Properties of metals and non-metals | |
| **Metals** | **Non-metals** |
| Shiny | Dull |
| High melting points | Low melting points |
| Good conductors of electricity | Poor conductors of electricity |
| Good conductors of heat | Poor conductors of heat |
| High density | Low density |
| Malleable and ductile | Brittle |

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| 1. Basic periodic table structure | |
| Home Learning with BBC Bitesize - KS3 Secondary Science for Year 9 ... | |
| Red | Metals |
| Yellow | Non-metals |
| Groups | Columns in the Periodic Table, they go downwards |
| Periods | Rows in the Periodic Table, they go sideways |
| Discovery | The modern periodic table is based on the model proposed by Dmitri Mendeleev at the end of the 19th century |

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| 1. Element Symbols | | | |
| Element symbols are used so that people in any country can understand which chemicals are used in a reaction | | | |
| Element | Symbol | Element | Symbol |
| Hydrogen | H | Oxygen | O |
| Magnesium | Mg | Copper | Cu |
| Zinc | Zn | Sodium | Na |
| Aluminium | Al | Carbon | C |



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| 1. Word Equations |
| Word equations represent the formation of compounds during a reaction |
| **Burning magnesium in air:**  Magnesium + Oxygen 🡪 Magnesium oxide  **Reacting hydrochloric acid and magnesium**  Magnesium + hydrochloric acid 🡪 Magnesium chloride + Hydrogen |

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| 1. Structure of the atom | | |
|  | **Key word** | **Definition** |
| 1 | Nucleus | The centre of an atom. Contains protons and neutrons |
| 2 | Proton | A positively charged particle found in the nucleus |
| 3 | Neutron | A neutral particle found in the nucleus. Has no charge |
| 4 | Electron | A negatively charged particle found in energy levels (shells) around the nucleus |
| 4  1  2  3 | | |

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| 1. Group 1 elements – Alkali Metals | | | |
| Elements | Physical properties | Chemical properties | Patterns |
| Li, Na, K, Rb, Cs, Fr | * Lower density than other metals * Softer than other metals | * Very Reactive | * Reactivity increases down the group * Melting and boiling point decreases down the group |

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| 1. Group 7 elements – Halogens | | | |
| Elements | Physical properties | Chemical properties | Patterns |
| F, Cl, I, Br | * Does not conduct electricity | * Very Reactive * A more reactive halogen will take the place of a less reactive halogen in a compound. | * Reactivity decreases down the group * Melting and boiling point increases down the group |

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| Challenge Questions | |
| 1 | Which elements have the chemical symbols of Ca, Cl, Li and He? |
| 2 | Gold is not very reactive. Describe why gold is sometimes used in electronics, but is not used to build bridges |
| 3 | Why was Mendeleev’s model of the periodic table accepted by scientists? |
| 4 | Explain why the reactivity of alkali metals increases down the group |