

PERIODIC TABLE

Groups: Columns of the periodic table.

Periods: Rows of the periodic table.

The elements in a group all react in a similar way and sometimes show a pattern in reactivity. As you go down a group and across a period the elements show patterns in physical properties.

Metals are generally found on the left side of the table, non-metals on the right.

Group 1 contains reactive metals called alkali metals.

Group 7 contains non-metals called halogens.

Group 0 contains unreactive gases called noble gases.

**Keywords**

**Periodic table:** Shows all the elements arranged in rows and columns.

**Physical properties:** Features of a substance that can be observed without changing the substance itself.

**Chemical properties:** Features of the way a substance reacts with other substances.

|             | GROUP<br>1  | GROUP<br>2   | GROUP<br>3   | GROUP<br>4   | GROUP<br>5   | GROUP<br>6  | GROUP<br>7  | GROUP<br>0                                       |
|-------------|---|--|--|--|--|---|---|--|
| PERIOD<br>1 | H <sup>1</sup><br>Hydrogen<br>A <sub>r</sub> = 1    | <b>The Periodic Table</b>                            |  |  |  |   |   | He <sup>2</sup><br>Helium<br>A <sub>r</sub> = 4  |
| PERIOD<br>2 | Li <sup>3</sup><br>Lithium<br>A <sub>r</sub> = 7    | Be <sup>4</sup><br>Beryllium<br>A <sub>r</sub> = 9   | B <sup>5</sup><br>Boron<br>A <sub>r</sub> = 11       | C <sup>6</sup><br>Carbon<br>A <sub>r</sub> = 12    | N <sup>7</sup><br>Nitrogen<br>A <sub>r</sub> = 14    | O <sup>8</sup><br>Oxygen<br>A <sub>r</sub> = 16   | F <sup>9</sup><br>Fluorine<br>A <sub>r</sub> = 19   | Ne <sup>10</sup><br>Neon<br>A <sub>r</sub> = 20  |
| PERIOD<br>3 | Na <sup>11</sup><br>Sodium<br>A <sub>r</sub> = 23   | Mg <sup>12</sup><br>Magnesium<br>A <sub>r</sub> = 24 | Al <sup>13</sup><br>Aluminium<br>A <sub>r</sub> = 27 | Si <sup>14</sup><br>Silicon<br>A <sub>r</sub> = 28 | P <sup>15</sup><br>Phosphorus<br>A <sub>r</sub> = 31 | S <sup>16</sup><br>Sulphur<br>A <sub>r</sub> = 32 | Cl <sup>17</sup><br>Chlorine<br>A <sub>r</sub> = 35 | Ar <sup>18</sup><br>Argon<br>A <sub>r</sub> = 40 |
| PERIOD<br>4 | K <sup>19</sup><br>Potassium<br>A <sub>r</sub> = 39 | Ca <sup>20</sup><br>Calcium<br>A <sub>r</sub> = 40   |  |  |  |   |   |  |

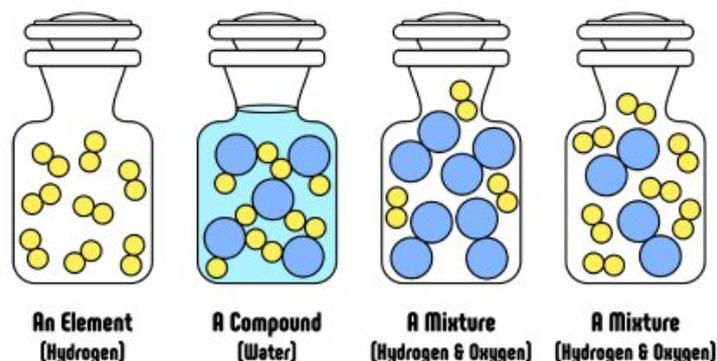
This shows the first 20 elements of the periodic table. Use it to answer the questions at the end of this knowledge organiser.

ELEMENTS

Some of the symbols are in the periodic table above...hydrogen, oxygen, nitrogen, carbon, iron (Fe), zinc (Zn), copper (Cu), sulfur, aluminium (Al), iodine (I), bromine (Br), chlorine, sodium, potassium and magnesium.

Most substances are not pure elements, but compounds or mixtures containing atoms of different elements. They have different properties to the elements they contain.

## Elements, Compounds and Mixtures



The individual beads are atoms (they are often drawn in different sizes and colours).

### Keywords

**Elements:** What all substances are made up of, and which contain only one type of atom.

**Atom:** The smallest particle of an element that can exist.

**Molecules:** Two to thousands of atoms joined together. Most non-metals exist either as small or giant molecules.

**Compound:** Pure substances made up of two or more elements strongly joined together.

**Chemical formula:** Shows the elements present in a compound and their relative proportions.

**Polymer:** A molecule made of thousands of smaller molecules in a repeating pattern. Plastics are man-made polymers, starch is a natural polymer.

### Simple Formula of Molecules

|        |  |
|--------|--|
| $H_2$  | Two hydrogen atoms joined to each other. Hydrogen.         |
| $H_2O$ | Two hydrogen atoms joined to a single oxygen atom. Water.  |
| $CO_2$ | One carbon atom joined to two oxygen atoms. Carbon Dioxide |

| Subject  | Year 8 Matter    |
|--|------------------|
| What is the symbol for magnesium?                                | Mg               |
| What is the symbol for sodium?                                   | Na               |
| Which element has the symbol Cl?                                 | Chlorine         |
| How many groups does the periodic table have?                    | 8                |
| Is a <u>period</u> of the Periodic Table horizontal or vertical? | Horizontal       |
| Name element number 8.   | Oxygen           |
| What is the symbol of element number 18.                         | Ar               |
| Which group is magnesium in?                                     | 2                |
| Name element 20.   | Calcium          |
| What is the symbol for the twentieth element?                    | Ca               |
| What is the mass of an atom of the twentieth element?            | 40               |
| Which group is the twentieth element in?                         | 2                |
| What would the mass of two hydrogen atoms be?                    | 2                |
| What would the mass of two oxygen atoms be?                      | 32               |
| What would the total mass of these atoms be - H, H and O?        | 18               |
| Key word - two or more different atoms joined together.          | Compound         |
| Key word - only one type of atom.                                | Element          |
| Key word - different elements and compounds not joined together. | Mixture          |
| What is a monomer?   | A small molecule |
| A long chain of molecules joined together is called what?        | A polymer        |

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| Key word - only one type of atom.                                |               |
| Key word - different elements and compounds not joined together. |               |
| What is a monomer?   |               |
| A long chain of molecules joined together is called what?        |               |

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