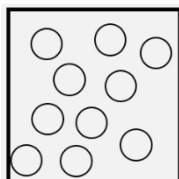


Elements

1. All substances are composed of atoms
2. Elements are made from only **one type of atom**.

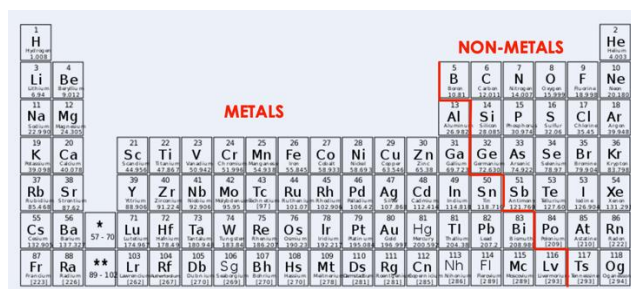


e.g. this diagram shows an element because it is made from only one type of atom.

3. There are about 100 different elements
4. An atom is the smallest part of an element that can exist
5. Elements have specific physical and chemical properties
6. **Physical properties** = state, appearance, smell, magnetic, etc.
7. **Chemical properties** = what it reacts with and how reactive it is

Periodic Table

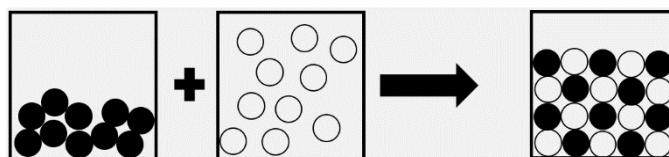
8. Elements are organised in the Periodic Table
9. The Periodic Table is organised into periods and groups
10. **Groups** are vertical columns
11. **Periods** are horizontal rows
12. Elements in a group have similar chemical properties
13. **Metals** are on the left hand side of the 'staircase' and **non-metals** are on the right hand side of the 'staircase'.



Compounds

14. Compounds are formed from elements by chemical reactions
15. Chemical reactions always involve the production of one or more new substances

e.g. in the diagram below there are two elements that when they react together, make a new compound

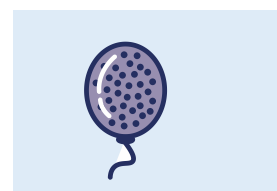


liquid element gas element solid compound

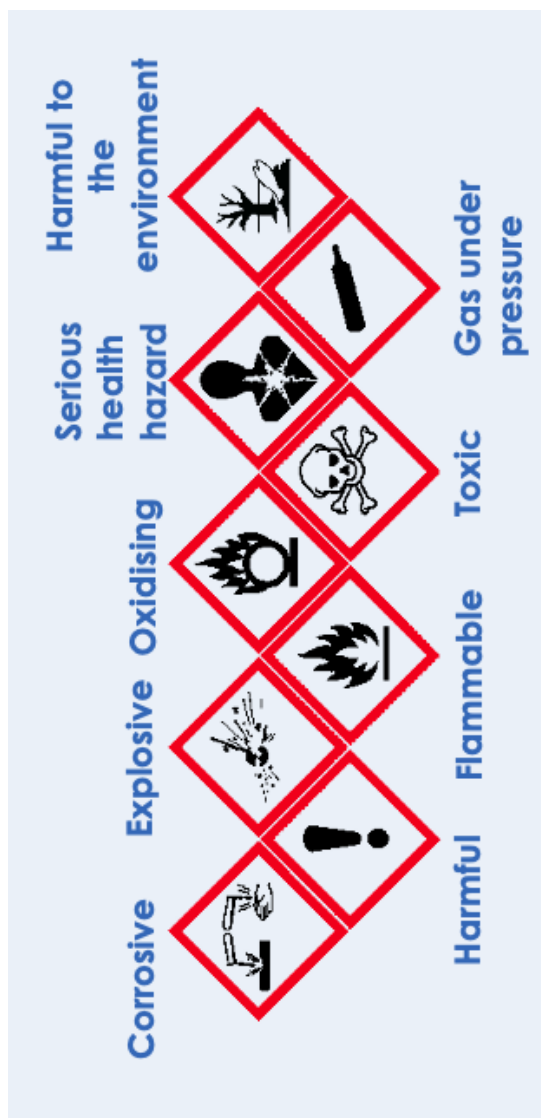
16. A compound contains two or more elements chemically joined together in fixed proportions
17. A compound has different properties from the elements it's composed
18. Compounds can only be separated into elements by chemical reactions
19. A **molecule** is two or more non-metal atoms chemically joined together – this can be an element (e.g. H₂) or a compound (e.g. H₂O)

Naming compounds

20. There are rules to follow when naming compounds:
 - a. Usually the metal goes first and the non-metal goes second
 - b. If a metal and a non-metal react, the name of the non-metal ends in **-ide**
 - c. For some compounds, if there are a different number of atoms we add in '**mono**' for 1, '**di**' for 2 and '**tri**' for 3
 - d. If the compound names ends in **-ate** then it usually contains three elements, including a non-metal and oxygen



Hazard symbols



Chemical formulae

21. Each element is represented by a chemical symbol.

e.g. Iron = Fe, oxygen = O, magnesium = Mg, gold = Au

22. The chemical formula of a molecule or compound tells you which elements and how many atoms of each are in one molecule

23. The small subscript number after an element symbol is the number of atoms of that element are in one molecule

e.g. In HNO_3 there is 1 atom of hydrogen, 1 atom of nitrogen and 3 atoms of oxygen per molecule.

