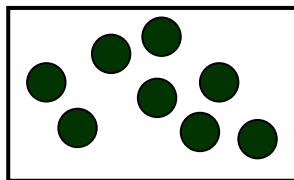


## S2 Chemistry Summary Sheet

1. Everything is made from about 100 elements.
2. An **element** is a substance made up of one kind of atom only.



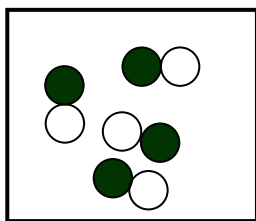
an element

3. **Atoms** are very small particles from which everything is made.
4. Elements are found in the **periodic table**.
5. Columns in the periodic table are known as **groups**.
6. Rows in the periodic table are known as **periods**.
7. Every element is represented by a symbol. Some elements only have a capital letter for a symbol, while others have two letters, e.g., Mg, C, Pt etc.
8. Elements are arranged according to their atomic number in the periodic table.

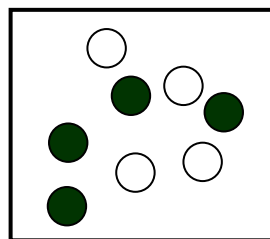
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9. A chemical reaction always produces one or more new substances.
10. A chemical reaction is always accompanied by a change in energy.
11. **Effervescence** means bubbling and fizzing.
12. A **precipitate** is a solid which forms by the reaction of two liquids.
13. A **mixture** occurs when substances come together without reacting. They are easily separated.

14. A **compound** is formed when substances come together and react. Compounds are made of two or more different kinds of elements joined together.



a compound



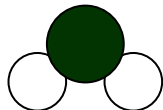
a mixture of elements

### 15. Naming Compounds:

If the compound ends in **-ide** then there are only two elements present, e.g. copper sulphide contains the elements copper and sulphur.

If the compound ends in **-ate** or **-ite** then it contains more than two elements one of which is oxygen, e.g., copper sulphate contains the elements copper, sulphur and oxygen. **-ates** contain more oxygen than **-ites**.

16. A **molecule** is a group of atoms which are joined together:



a molecule of a compound



a molecule of an element

17. A **solution** is formed when a solute dissolves in a liquid solvent.

18. A **solute** is a substance which dissolves.

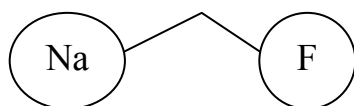
19. A **solvent** is the liquid in which a solute dissolves.

20. A **soluble** substance is one that dissolves.

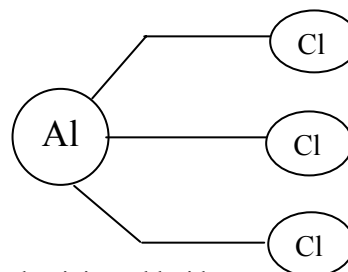
21. An **insoluble** substance is one that does not dissolve.

22. **Valency** is the number of bonds an atom can make.

23. Valency pictures show atoms using all their bonds to join up into molecules:



sodium fluoride



aluminium chloride

24. A **formula** uses symbols and numbers to represent the same thing as a valency picture, e.g., NaF or AlCl<sub>3</sub>.

25. An element's valency depends upon its position in the periodic table.

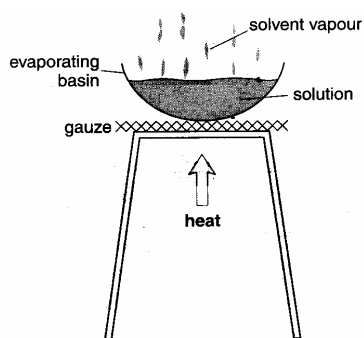
<b>Group</b>	1	2	3	4	5	6	7	0
<b>Valency</b>	1	2	3	4	3	2	1	0

26. **Filtration** can be used to separate an insoluble solid from a liquid.

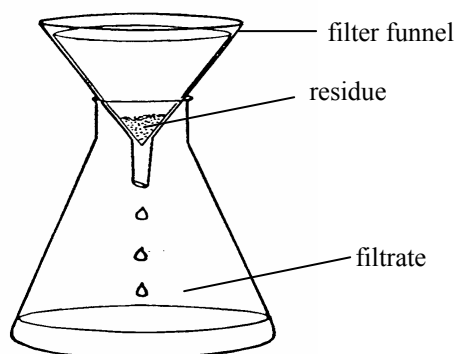
27. A **filtrate** is the liquid which passes through the filter paper.

28. A **residue** is the solid left in the filter paper after filtration.

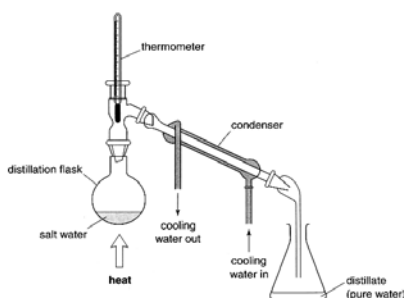
29. **Evaporation** can be used to isolate a soluble solid from a liquid.



evaporation



30. **Distillation** can be used to separate two liquids with different boiling points.



31. **Chromatography** can be used to separate tiny quantities of dissolved substances.

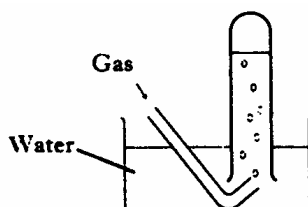
32. The **pH scale** gives a measure of how acidic solutions are.

33. pH paper is used to give an indication of acidity.

<b>Substance</b>	<b>pH</b>	<b>Observed Colours</b>
<b>Acid</b>	Less than 7	Red, orange
<b>Neutral</b>	7	Yellow
<b>Alkali</b>	Greater than 7	Green, Blue, Purple

34. Common laboratory acids include hydrochloric acid, nitric acid and sulphuric acid; common laboratory alkalis include sodium hydroxide, limewater and ammonia solution.

35. Common household acids include lemon juice and vinegar; common household alkalis include oven cleaner and traditional soap.
36. Properties, e.g., appearance, melting point, solubility are used to describe a substance.
37. **State** indicates whether a substance is a solid, liquid or gas.
38. Insoluble gases may be collected using the following apparatus:



39. **Testing gases:**

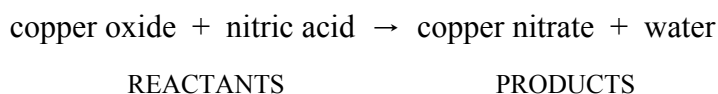
- Carbon dioxide turns lime water chalky.
- Hydrogen burns with a “pop”.
- Oxygen re-lights a glowing splint.

40. **Flame Tests.** Certain metal compounds cause colour when held in a flame.

41. Substances that react together in a chemical reaction are called **reactants**.

42. Substances formed by a chemical reaction are called **products**.

43. A chemical reaction can be written as a **word equation**, e.g.,



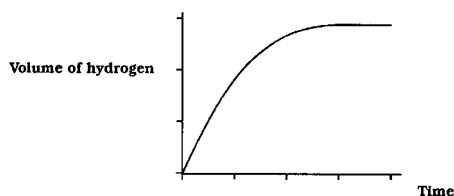
44. The rate of a reaction can be measured by the change in quantity of reactants or products.

45. **Rate of reaction:**

- The higher the temperature the faster the reaction.
- The higher the concentration the faster the reaction.
- The larger the surface area (powder) the faster the reaction.

46. **Collision theory** states that chemical reactions occur when particles collide together.

47. Reaction graphs:



As the steepness of the curve increases the rate of reaction also increases, i.e., more collisions of particles are taking place.

48. A **catalyst** is a substance which speeds up the rate of reaction but is left unchanged at the end of the reaction.

49. A biological catalyst is called an **enzyme**.