Key Facts - 8A- Chemical Reactions

1. A chemical reaction is where the atoms in reactants are rearranged to make different products.
2. In a word equation, the reactants go on the left. The products go on the right. There is an arrow in-between.
3. Signs showing a chemical reaction:
    - New products form
    - A gas is released
    - Change in colour
    - Change in pH
    - Change in temperature
    - Change in energy
4. Thermal decomposition is the breakdown of a compound, using heat.
5. A displacement reaction is when a more reactive chemical takes the place of the less reactive chemical in the compound. For example:

Magnesium + zinc sulfate -----> magnesium sulfate + zinc

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6. Some common chemicals:

HCl = Hydrochloric acid
NaOH= Sodium hydroxide
H_2SO_4= Sulfuric acid
$CuSO_4$= Copper sulfate

7. When metals react with an acid a gas is given off. The metal also disappears. The general formula is:

Metal + acid → salt + hydrogen

8. The name of the salt depends on the metal and the acid. The first part of the name comes from the metal. The second part of the name comes from the type of acid.

Type of acid	Name of salt
Hydrochloric	Chloride
Sulfuric	Sulfate

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9. Neutralisation is where an acid and a base react together to make a salt and water. These products are neutral.

Acid + base → salt + water

10. The name of the salt depends on the metal and the acid. The first part of the name comes from the metal in the base. The second part of the name comes from the type of acid. Water is always made. For example:

Sulfuric acid + copper oxide -----> copper sulfate + water

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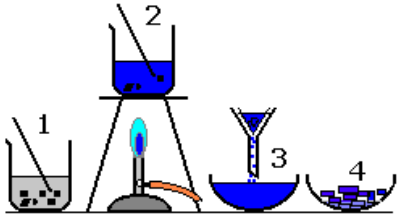
11. To make copper sulfate crystals:
    - Add sulphuric acid and copper oxide to a beaker.
    - Heat the mixture for 1 minute. Do not boil.
    - Filter the mixture to remove excess copper oxide
    - Pour the filtrate into an evaporating dish. Leave the water to evaporate. Copper sulfate crystals will be left.



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12. For a reaction to happen, the particles need to collide with enough energy to start the reaction. This is called the activation energy.

13. You can increase the rate of reaction in three ways:
    - Increasing the temperature to make the particles move faster
    - Increasing the surface area of the reactants
    - Increasing the concentration of the reactants
14. Larger pieces have a smaller surface area. Smaller pieces have a larger surface area.

15. Rate of reaction = $\frac{\text{volume of gas made } (cm^3)}{\text{time taken (s)}}$