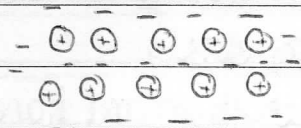
Metallic bonding

- occurs between metals.
- metals ~~atoms~~ ions arrange themselves in regular layers called a lattice - -giant lattice of positive ions surrounded by a sea of electrons.
- outer electrons are free to move.

e.g.

Gold Au



Acids

Hydrochloric Acid	H^+Cl^-	HCl	Ethanoic Acid = CH_3COOH
Sulphuric Acid	$H^+SO_4^{2-}$	H_2SO_4	
Nitric Acid	$H^+NO_3^-$	HNO_3	

The rate of a chemical reaction tells us how fast the reactants are turned into products. Measuring the rate of a reaction:

- If a gas is made - measure how much the mass is decreased by.
- Measuring the volume of gas evolved with time.
- If an insoluble solid (precipitate) is produced we can measure the light transmitted through the solution.

Rate of Reaction = $\frac{\text{amount of reactant used / or product formed}}{\text{time}}$.

temperature, surface area, concentration / pressure and the presence of a catalyst all affect the rate of reaction.

Reactions can only take place when the particles that make up the reactions come together. They need to collide with enough energy otherwise they will not ~~collide~~ react. This is known as collision theory. The smallest amount of energy that particles must have before they react is known as the activation energy.

The effect of temperature: increasing the temperature will always increase the rate of reaction as the particles move more quickly.

When a substance is heated explain why it increases the rate of reaction.

When a substance is heated, energy is transferred to the particles in the substance. They move faster, meaning they collide more with more energy. More collisions increases the rate of reaction.