

# 4.2 REACTIONS OF ACIDS

Salt produced depends on the acid used and positive metal ions

Hydrochloric acid produces chlorides, sulfuric acid produces sulfates, nitric acid produces nitrates

E.g.  
Zinc + sulfuric acid → Zinc sulfate + hydrogen

## Reactions with metals

Produce salts and hydrogen

## Redox reactions

Identify which species are oxidised and which are reduced

## Strong and weak acids

Strong acids completely ionise in water

E.g. Hydrochloric acid, nitric acid, sulfuric acid

Weak acids only partially ionise in water

E.g. ethanoic acid and citric acid

As the pH decreases by one unit, the hydrogen ion concentration of the solution increases by a factor of 10

Strength is different to concentration – concentration refers to amount of substance

## pH scale

Measure of acidity/alkalinity of a solution

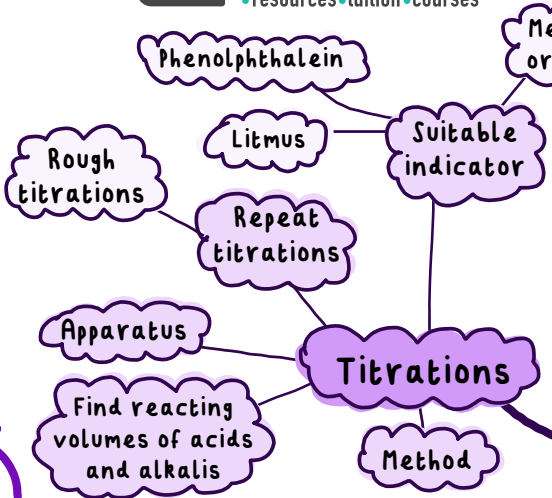
Ranges from 0–14

Acids have pH < 7, alkalis have pH > 7

pH 7 is neutral

Universal indicator or pH probe

**AQA**



Metal carbonates react with acids to produce salt, water and carbon dioxide

Metal oxides and hydroxides react with acids to form a salt and water

Ionic equation of neutralisation

## Neutralisation

## Reactions with alkalis and bases

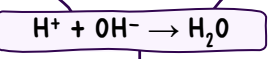
React acids with insoluble bases to form soluble salts

Excess solid added, filter excess, crystallise product

E.g. to make copper chloride, react copper oxide with hydrochloric acid

Acids form H<sup>+</sup> ions in water

Alkalis form OH<sup>-</sup> ions in water



**KEY**

'Chemistry only' written in clouds.

'Higher only' written in yellow.