

# CAIE Chemistry IGCSE

## 7.1 The characteristic properties of acids and bases Flashcards

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What are the products when a dilute acid reacts with a metal?



What are the products when a dilute acid reacts with a metal?

Salt and hydrogen



What are the products when an acid reacts with a metal oxide?



What are the products when an acid reacts with a metal oxide?

Salt and water

Acid + Metal oxide  $\rightarrow$  Salt + Water



What are the products when an acid reacts with a metal hydroxide?



What are the products when an acid reacts with a metal hydroxide?

Salt and water

Acid + Metal hydroxide  $\rightarrow$  Salt + Water



What are the products when an acid reacts with a metal carbonate?





What are the products when an acid reacts with a metal carbonate?

Salt, water and carbon dioxide

Acid + Metal carbonate  $\rightarrow$  Salt + Water +  
Carbon dioxide



Why are metal oxides normally bases rather than alkalis?



Why are metal oxides normally bases rather than alkalis?

Metal oxides are normally insoluble.

Alkalis are soluble bases.



What is the name of the salt formed from magnesium and sulfuric acid?



What is the name of the salt formed from magnesium and sulfuric acid?

Magnesium sulfate



What is the name of the salt formed from zinc oxide and nitric acid?



What is the name of the salt formed from zinc oxide and nitric acid?

Zinc nitrate



What is the name of the salt formed from calcium carbonate and hydrochloric acid?





What is the name of the salt formed from calcium carbonate and hydrochloric acid?

Calcium chloride



What colour is methyl orange in acid and alkali?



What colour is methyl orange in acid and alkali?

Acid - Red

Alkali - Yellow



What colour is blue litmus paper in acid  
and alkali?



What colour is blue litmus paper in acid and alkali?

Acid - Turns **red**

Alkali - Stays blue



What colour is red litmus paper in acid  
and alkali?



What colour is red litmus paper in acid and alkali?

Acid - Stays red

Alkali - Turns **blue**



What colour is thymolphthalein in acid  
and alkali?





What colour is thymolphthalein in acid and alkali?

Acid - Stays colourless

Alkali - Changes from colourless to **blue**



What is the difference between a base  
and an alkali?



# What is the difference between a base and an alkali?

Bases are oxides and hydroxides of metals

Alkalis are bases that are soluble (dissolve in aqueous solution)

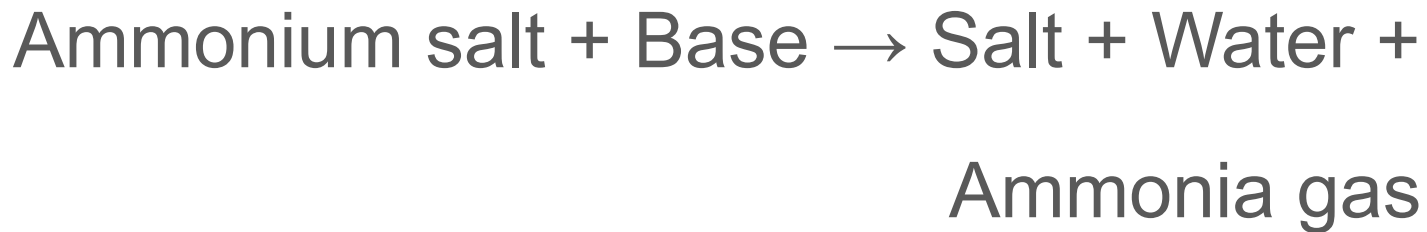


What are the products when a base reacts with an ammonium salt?



What are the products when a base reacts with an ammonium salt

Salt, water and ammonia gas



What do acids release in an aqueous solution?



# What do acids release in an aqueous solution?

H<sup>+</sup> ions



What do alkalis release in an aqueous solution?





What do alkalis release in an aqueous solutions?

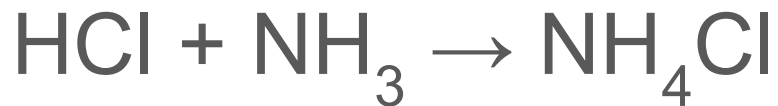
$\text{OH}^-$  ions



What is the chemical equation for the reaction between hydrochloric acid and ammonia?



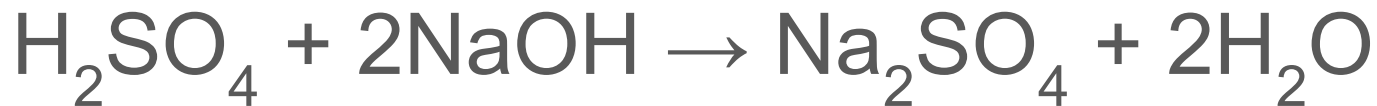
What is the chemical equation for the reaction between hydrochloric acid and ammonia?



What is the chemical equation for the reaction between sulfuric acid and sodium hydroxide?



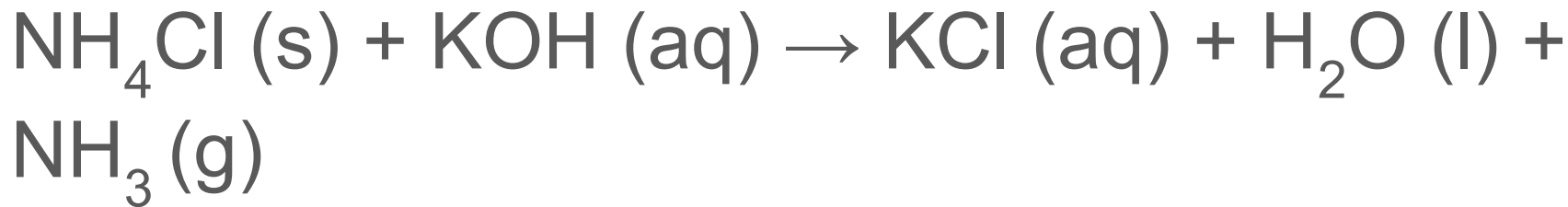
What is the chemical equation for the reaction between sulfuric acid and sodium hydroxide?



What is the chemical equation for the reaction between ammonium chloride and potassium hydroxide?



What is the chemical equation for the reaction between ammonium chloride and potassium hydroxide?



How is the relative acidity and alkalinity of a solution quantified?





How is the relative acidity and alkalinity of a solution quantified?

Using the pH scale



# How can pH be measured?



# How can pH be measured?

Universal indicator

pH probe



Which pH values describe an acid, alkali and neutral solution?



Which pH values describe an acid, alkali and neutral solution?

Acid:  $\text{pH} < 7$

Neutral:  $\text{pH} = 7$

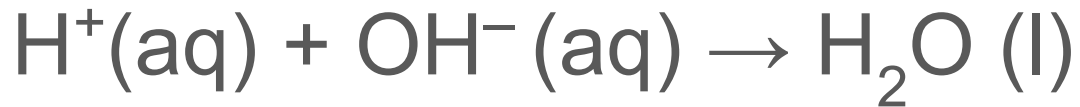
Alkali:  $\text{pH} > 7$



What is the chemical equation for the neutralisation reaction between an acid and base?



What is the chemical equation for the neutralisation reaction between an acid and base?



Define acids and bases in terms of  
proton transfer  
(extended only)





# Define acids and bases in terms of proton transfer (extended only)

- Protons are  $H^+$  ions.
- Acids are proton donors.
- Bases are proton acceptors.



What is the difference between a strong  
and weak acid?  
(extended only)



# What is the difference between a strong and weak acid? (extended only)

- The strength of the acid refers to the degree of ionisation (or dissociation).
- Strong acids are completely ionised in aqueous solutions (lots of  $\text{H}^+$  ions are released).
- Weak acids are only partially ionised in aqueous solutions (fewer  $\text{H}^+$  ions released).



Give an example of a strong acid and  
give the symbol equation for its  
dissociation  
(extended only)



Give an example of a strong acid and give the symbol equation for its dissociation (**extended only**)

Hydrochloric acid is a strong acid



Give an example of a weak acid and give  
the symbol equation for its dissociation  
(extended only)



Give an example of a weak acid and give the symbol equation for its dissociation (**extended only**)

Ethanoic acid is a weak acid

