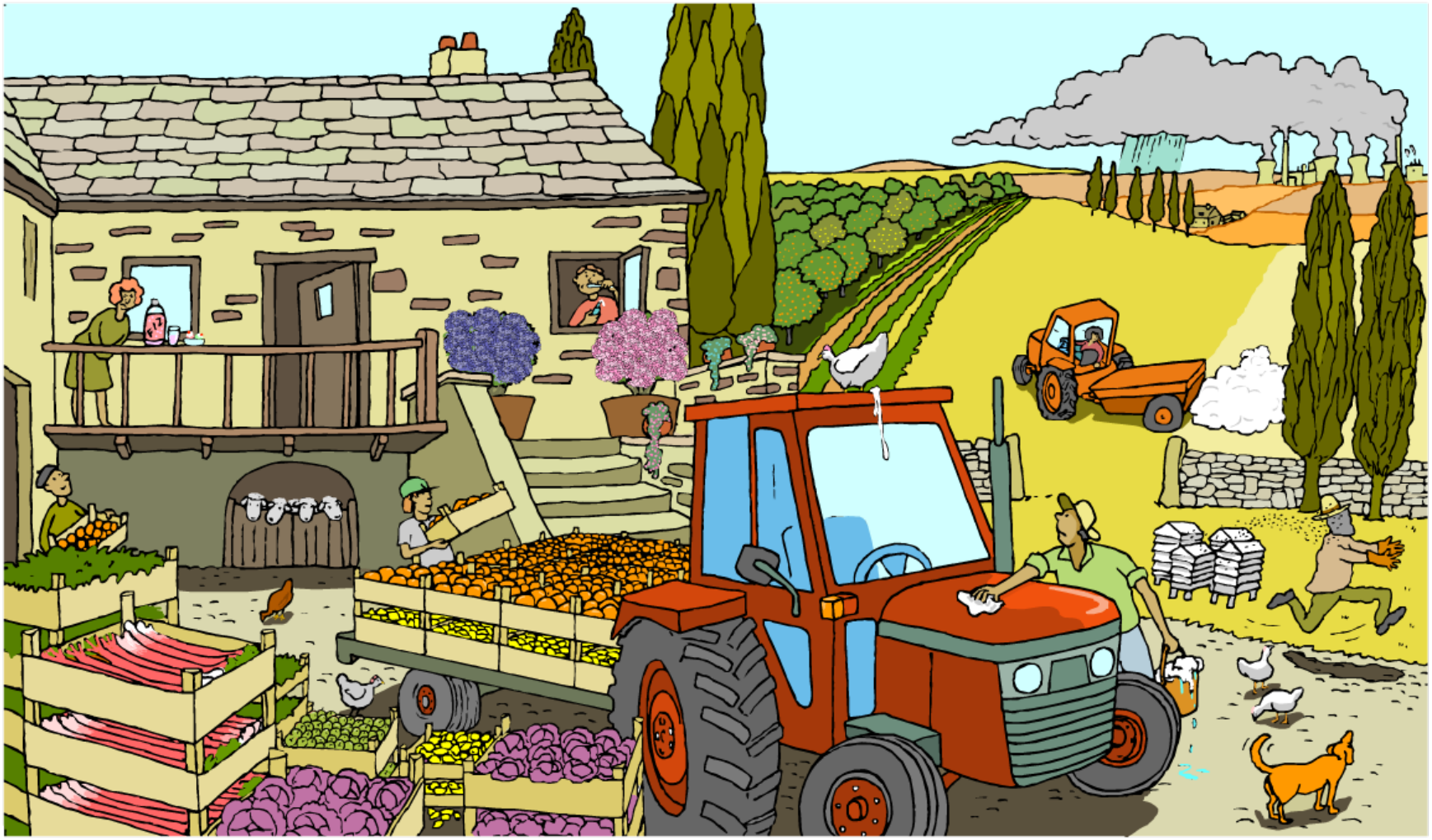
Neutralization

Acids and alkalis

How many examples of acids and alkalis can you find?



Acids: true or false?

Are these statements about acids true or false?

1.	Weak acids, like vinegar, taste sweet.	
2.	Strong acids are corrosive and can 'eat away' at metal, stone and flesh.	
3.	Acids turn blue litmus paper blue.	
4.	Acids have a pH of more than 7.	
5.	Acids can be neutralized with alkalis.	

true false

?

solve

Alkalis: true or false?

Are these statements about alkalis true or false?

1.	Strong alkalis are caustic.	
2.	Alkalis feel soapy and are used in household cleaning products.	
3.	Alkalis turn red litmus paper red.	
4.	Alkalis have a pH of less than 7.	
5.	Alkalis can be neutralized with acids.	

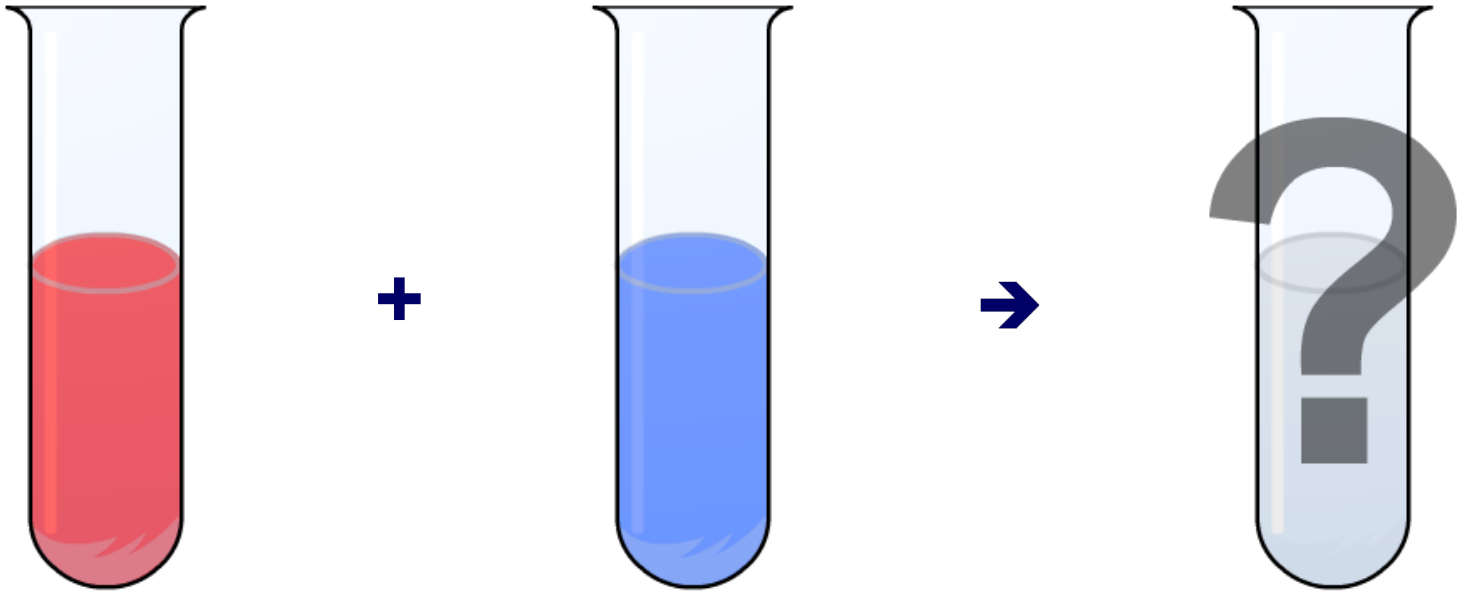
true false

?

solve

Mixing an acid and an alkali

What happens when an acid and an alkali are mixed?



acid **alkali**

Mixing an acid and an alkali causes a **chemical reaction**.

How could you check that a chemical reaction has taken place?

Mixing acids and alkalis

What happens to pH when an alkali is added to an acid?

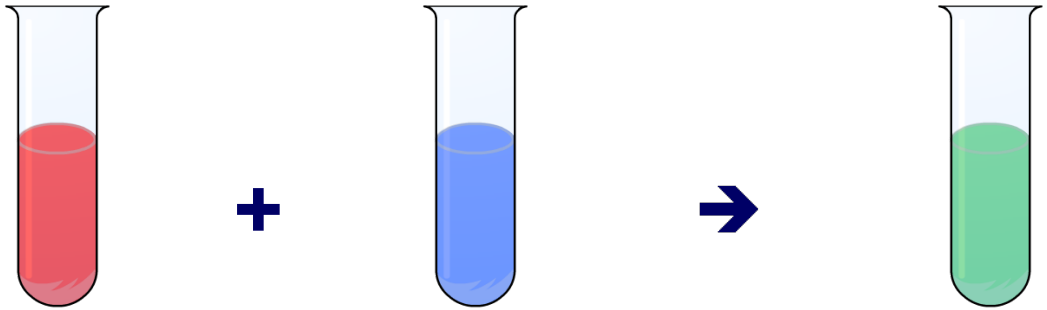
How is pH affected when an alkali is added to an acid?

Click "**play**" to find out.

What is neutralization?

The chemical reaction between an acid and an alkali is called **neutralization**.

What is the pH value of the mixture of a salt and water?



acid + **alkali** → **salt + water**

The mixture of salt and water is neutral, so its pH is 7.

The chemical reaction between an acid and an alkali can be written as:

acid + alkali → salt + water

Neutralizing stings

Bee stings are acidic.

Which safe household substances could you use to treat a bee sting?

Wasp stings are alkaline.

Which safe household substances could you use to treat a wasp sting?

Indigestion remedies

The acid in your stomach that helps you break down your food is called hydrochloric acid. It has a pH of between 1 and 2.

Indigestion and heartburn are caused by an excess of acid in your stomach.

Indigestion remedies such as Milk of Magnesia contain antacids, like magnesium oxide and calcium carbonate.

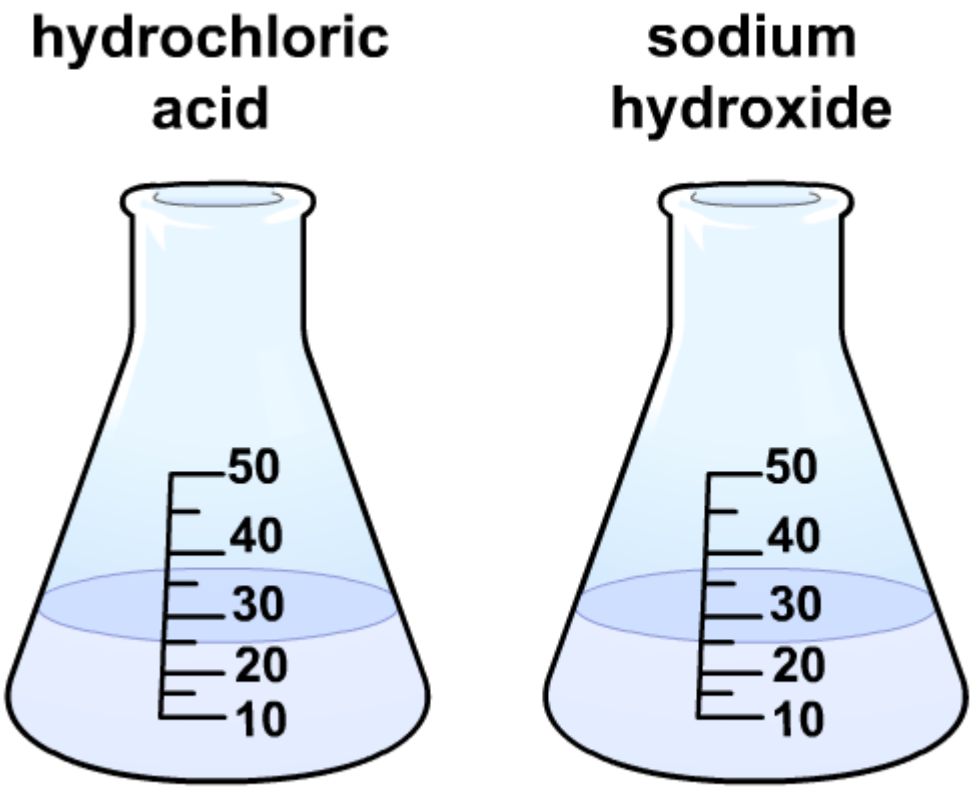
What do you think antacids do to the acid in your stomach?

Separating a salt

How can a salt be separated from water?

How could you separate the salt from the water in a solution?

Click "**play**" to find out.



Making salts

The salt produced by a neutralization reaction depends on the acid and the alkali used.

Sodium chloride is produced by the reaction between hydrochloric acid and sodium hydroxide.

hydrochloric acid + **sodium hydroxide** → **sodium chloride** + **water**

Which acid and which alkali would be needed to make the salt potassium chloride?

hydrochloric acid + **potassium hydroxide** → **potassium chloride** + **water**

Naming salts

- When an alkali reacts with **hydrochloric acid**, the salt produced is a **chloride**.
- When an alkali reacts with **sulfuric acid**, the salt produced is a **sulfate**.
- When an alkali reacts with **nitric acid**, the salt produced is a **nitrate**.

Which acid would be needed to make these salts?

1. copper nitrate

2. magnesium chloride

3. sodium sulfate

Making salts: word equations

Complete these word equations:

hydrochloric acid + potassium hydroxide → potassium chloride + water

sulfuric acid + sodium hydroxide → sodium sulfate + water

nitric acid + potassium hydroxide → potassium nitrate + water

Making salts: completing equations

Complete the word equations for neutralization

hydrochloric acid + lithium hydroxide → A + water

hydrochloric acid + B → iron chloride + water

sulfuric acid + magnesium hydroxide → magnesium sulfate + C

sulfuric acid + calcium hydroxide → D + water

E + sodium hydroxide → sodium nitrate + water

calcium sulfate

?

C

solve

Making salts: symbol equations

Complete these symbol equations:

hydrochloric acid	+	potassium hydroxide	→	potassium chloride	+	water
HCl	+	KOH	→	KCl	+	H_2O

nitric acid	+	potassium hydroxide	→	potassium nitrate	+	water
HNO_3	+	KOH	→	KNO_3	+	H_2O

sulfuric acid	+	magnesium hydroxide	→	magnesium sulfate	+	water
H_2SO_4	+	$Mg(OH)_2$	→	Na_2SO_4	+	$2H_2O$