

**What should I already know?**

- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

What will I know by the end of the unit?

- defining acids and alkalis in terms of neutralisation reactions
- the pH scale for measuring acidity/alkalinity; and indicators
- reactions of acids with metals to produce a salt plus hydrogen
- reactions of acids with alkalis to produce a salt plus water

Vocabulary

Acid	A substance that has a pH less than 7.
Alkali	A solution of a base. An alkali is a substance which has a pH of more than 7.
Base	A substance which neutralises an acid to form a salt and water. A base that dissolves in water is an alkali.
Concentration	A number of particles in a certain volume of a substance.
Correlation	How well sets of data are linked; high correlation shows a strong link between data.
corrosive	Reacts with materials and makes them dissolve.
hydroxide	OH ion present in all alkalis.
Indicator	Chemical that is a different colour in an alkali and an acid.
Irritant	Something that irritates or reddens skin.
Litmus	Indicator solution
Neutral	A substance is neither an acid or an alkali.
pH	Measure of acidity/alkalinity, on a scale 0 to 14
Universal indicator	Mixture of dyes which change colour depending on strength of alkaline or acidic solution.



Key information

Acids and bases






Acids, bases and alkalis are found in the laboratory and at home. Acids and bases can neutralise each other. A base that can dissolve in water is also called an alkali.

Dilute acids

Strong acids such as hydrochloric acid, sulfuric acid and nitric acid are laboratory acids that have been mixed with a lot of water before putting them out for use.

Concentrated acids are acids mixed with very little water. They are much more dangerous than dilute acids. Concentrated acids are **corrosive**. They can attack metals and destroy skin if spilled.

Weak acids

Image	Source	Acid
	Vinegar	Ethanoic acid
	Fizzy drinks	Carbonic acid
	Tea	Tannic acid
	Vitamin C	Ascorbic acid
	Lemons	Citric acid

Key information

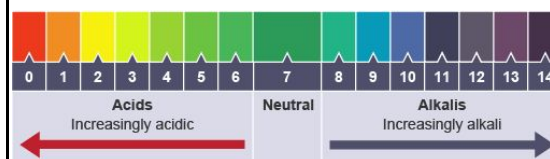
Bases v alkalis

A base is a substance that can react with acids and neutralise them. Bases are usually:

metal oxides, such as copper oxide metal hydroxides, such as sodium hydroxide, or metal carbonates, such as calcium carbonate.

Litmus paper is usually more reliable, and comes as red litmus paper and blue litmus paper. The table shows the colour changes it can make.

	Red litmus	Blue litmus
Acidic solution	Stays red	Turns red
Neutral solution	Stays red	Stays blue
Alkaline solution	Turns blue	Stays blue

Universal indicator**Neutralisation**

metal oxide + acid → a salt + water

metal carbonate + acid → a salt + water + carbon dioxide

metal hydroxide + acid → a salt + water

Useful Websites

<https://www.bbc.co.uk/bitesize/guides/z89jq6f/revision/1>
<https://www.bbc.co.uk/bitesize/guides/zyn3b9q/revision/1>