

3.1 - Acids, Alkalis and Indicators

Acid	A solution with a pH lower than 7 .
Alkali	A solution with a pH higher than 7 .
Neutral	A solution with a pH of exactly 7 .
pH Scale	A scale from 0 to 14 that is used to measure how acidic or alkaline a solution is.
Indicator	A chemical that changes colour to show whether a solution is acidic , alkaline or neutral .
Universal Indicator	A dark green indicator that changes a wide range of colours depending on the pH .
Red Litmus Paper	An indicator paper that turns blue in alkali .
Blue Litmus Paper	An indicator paper that turns red in acid .
pH Probe and Meter	Used to measure pH electronically . More accurate than an indicator.

3.2 - The pH Scale

pH	Substance	Colour with Universal Indicator	Everyday Examples
0-3	Strong Acid	Red or Orange	Stomach acid, battery acid, lemon juice, vinegar.
4 - 6	Weak Acid	Orange or Yellow	Tomatoes, bananas, coffee, acid rain.
7	Neutral	Green	Water
8 – 10	Weak Alkali	Blue	Toothpaste, washing up liquid, baking soda.
11 - 14	Strong Alkali	Dark Blue or Purple	Oven cleaner, drain cleaner, bleach.

3.3 - Common Laboratory Acids and Bases

Acids	hydrochloric acid - HCl
	sulphuric acid – H₂SO₄
	nitric acid – HNO₃
Bases	metal hydroxides e.g. sodium hydroxide - NaOH
	metal oxides e.g. magnesium oxide - MgO
	metal carbonates e.g. calcium carbonate - CaCO₃

3.4 - Neutralisation Reactions

Base	A substance that will neutralise an acid . (Soluble bases are known as alkalis .)
Neutralisation	A reaction between an acid and an alkali/base which forms a neutral solution .
Neutralisation Word Equations	metal hydroxide + acid -> salt + water
	metal oxide + acid -> salt + water
	metal carbonate + acid -> salt + water + carbon dioxide
Rules for Naming the Salt	1. First part comes from the metal in the base .
	2. Second part comes from the acid . hydrochloric acid -> chloride nitric acid -> nitrate sulphuric acid -> sulphate
Test for Carbon Dioxide Gas	Bubble the gas through limewater – it will turn cloudy .
Making Salt Crystals	1. Add the base to the acid until no more will react.
	2. Filter the mixture to remove any unreacted base .
	3. Heat gently to evaporate some of the water then leave to crystallise .

Year 7 Science Cycle 3 – Sheet 3 Acids & Alkalis

