KS3 SCIENCE · CHEMISTRY

Acids and alkalis revision sheet

Name _____



1. Acids and alkalis around us

- **Acids** taste sour. Lemon juice, vinegar and fruit juices are acids.
- **Alkalis** feel soapy. Soap, toothpaste and many cleaners are alkalis.
- Strong acids and alkalis are **corrosive**: they destroy skin. Never touch or taste a chemical in the lab.
- If a chemical gets on your skin, wash it off with lots of water and tell your teacher.

2. Indicators

An indicator changes colour to show whether a liquid is an acid or an alkali.

INDICATOR	IN AN ACID	NEUTRAL	IN AN ALKALI
Litmus	Red	Purple	Blue
Universal indicator	Red, orange or yellow	Green	Blue or purple

Universal indicator also shows how strong the acid or alkali is. Litmus cannot.

3. The pH scale

← more acidic neutral more alkaline →



- The pH scale runs from **0 to 14**.
- **pH 7 is neutral.** Pure water is pH 7.
- **Below 7 is an acid.** The lower the number, the stronger the acid.
- **Above 7 is an alkali.** The higher the number, the stronger the alkali.
- Examples: stomach acid pH 1, lemon juice pH 2, toothpaste pH 9, bleach pH 13.



4. Neutralisation

acid + alkali → salt + water

- An acid and an alkali cancel each other out. This is **neutralisation**.
- As alkali is added to an acid, the pH rises towards 7.
- At pH 7 the solution is neutral and universal indicator is green.
- Too much alkali takes the pH past 7.

5. Making a salt



Step 1
Add alkali to the acid until it is neutral.



Step 2
Pour the solution into an evaporating basin.



Step 3
Heat it gently to evaporate some of the water.



Step 4
Leave it to cool. Crystals of salt form.

ACID	SALT IT MAKES	EXAMPLE WITH SODIUM HYDROXIDE
Hydrochloric acid	A chloride	Sodium chloride
Sulfuric acid	A sulfate	Sodium sulfate
Nitric acid	A nitrate	Sodium nitrate



6. Acids and metals

metal + acid → salt + hydrogen

- Many metals fizz in acid. The bubbles are **hydrogen** gas.
- Example: magnesium + hydrochloric acid → magnesium chloride + hydrogen.
- **Test for hydrogen:** hold a lit splint in the gas. It burns with a squeaky pop.

7. Using neutralisation



Indigestion tablets
Contain a base, which neutralises extra stomach acid.



Lime on fields
Lime is a base. It neutralises soil that is too acidic.



Toothpaste
Most toothpaste is slightly alkaline, so it helps to neutralise acid made by bacteria.

Key words

Acid: has a pH below 7

Alkali: has a pH above 7

Neutral: pH 7, neither acid nor alkali

Indicator: changes colour in acids and alkalis

Litmus: red in acid, blue in alkali

Universal indicator: shows a range of colours for pH

pH scale: runs from 0 to 14

Corrosive: can destroy skin and other materials

Neutralisation: an acid and an alkali cancelling out

Base: any substance that neutralises an acid

Salt: made when an acid is neutralised

Evaporation: a liquid turning into a gas

Crystals: solid salt left after evaporation

Hydrogen: gas made when a metal reacts with an acid

Sodium chloride: common table salt

Pictures are illustrations made for this sheet, not real photographs.