

Exercise walk-through

The characteristic properties of acids and bases ■ 7.1

eXercise

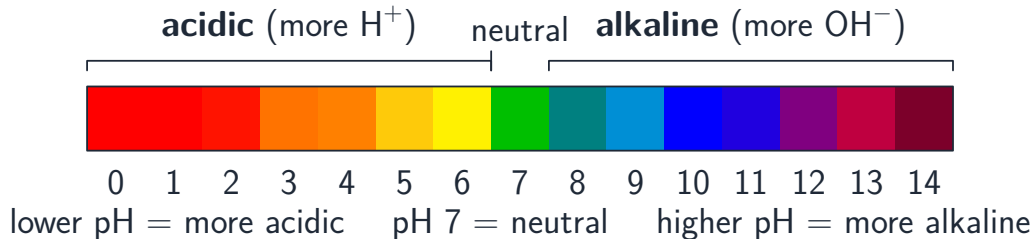
You must be able to

- give the three reactions of acids and the reaction of bases
- use indicator colours and the pH scale
- explain strong vs weak in terms of dissociation

Method — pH and acid strength

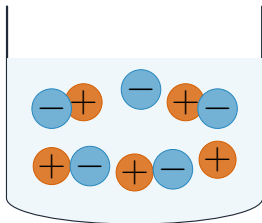
■ acid + metal $\rightarrow$ salt + hydrogen; acid + carbonate $\rightarrow$ salt + water + CO₂ .

Method — pH and acid strength

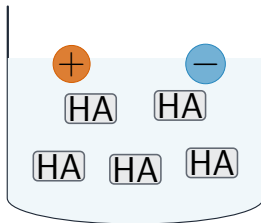


The pH scale coloured like universal indicator

Method — pH and acid strength



strong acid
fully split into
ions (e.g. HCl)



weak acid
mostly molecules,
few ions (e.g.
ethanoic acid)

A strong acid fully split into ions; a weak acid mostly molecules

Practice 2.1 ■ 1 mark

Give the products when an acid reacts with a carbonate.

Solution 2.1

Method: pH and acid strength

Worked steps

a salt + water + carbon dioxide **B1**.

Practice 2.2 ■ 1 mark

State the colour of litmus in an alkali.

Solution 2.2

Worked steps

blue **B1**.

Exam-style 3.1 ■ 1 mark

A solution with a pH of 2 is:

A strongly alkaline

B neutral

C weakly acidic

D strongly acidic

Solution 3.1

A strongly alkaline

B neutral

C weakly acidic

D strongly acidic



Worked steps

D. pH 2 is strongly acidic.

Exam-style 3.2 ■ 2 marks

Hydrochloric acid is a strong acid and ethanoic acid is a weak acid.

- (a) Explain the difference between a strong and a weak acid.
- (b) Write an equation showing the dissociation of hydrochloric acid in water.

Solution 3.2

Method: pH and acid strength

Worked steps

(a) a strong acid is fully dissociated (split into ions) in water **M1**; a weak acid is only partly dissociated **A1**.

(b) $\text{HCl}(aq) \rightarrow \text{H}^+(aq) + \text{Cl}^-(aq)$ **B1**.

Exam-style 3.3 ■ 2 marks

Magnesium reacts with dilute sulfuric acid. Name the two products.

Solution 3.3

Worked steps

magnesium sulfate **B1**; hydrogen **B1**.