

Exercise walk-through

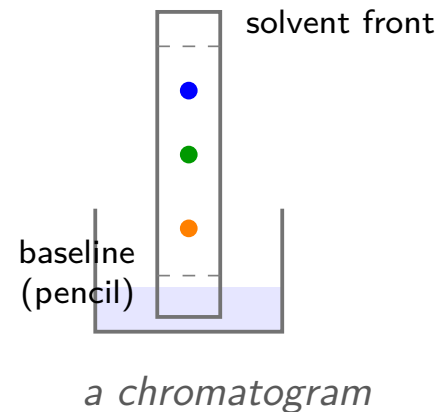
12.2

Acid–base titrations

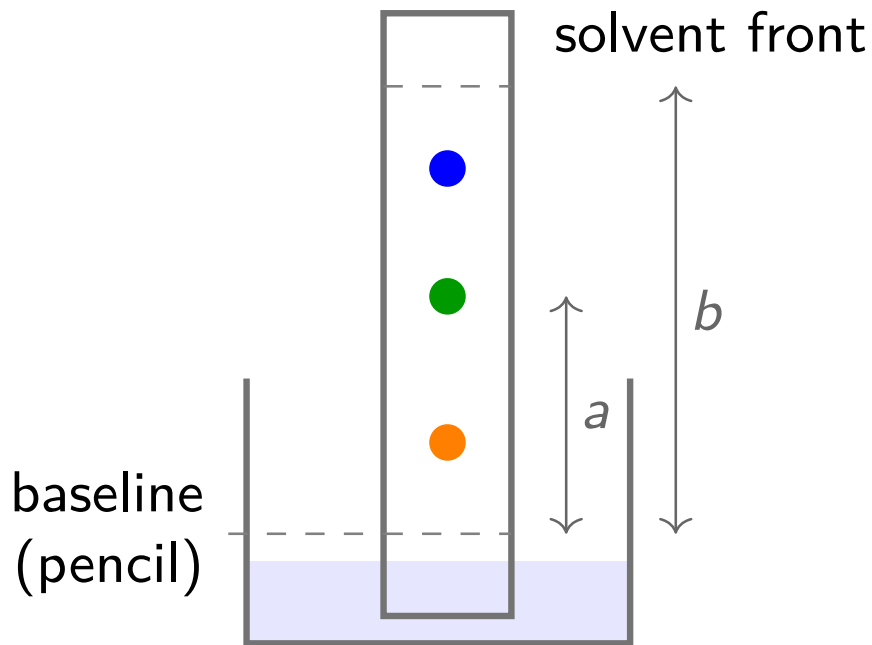
IGCSE Chemistry

What we will cover

- 1 Apparatus & key words
- 2 Titration
- 3 Chromatography
- 4 Separation & purification
- 5 Tests for ions
- 6 Tests for gases & flames



Chromatography



Paper chromatography

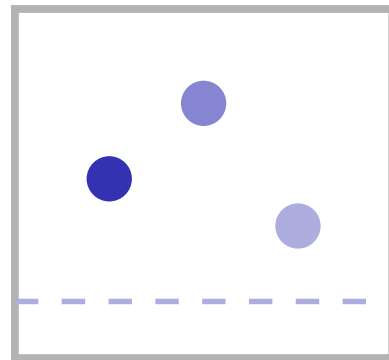
separates a soluble mixture as the solvent rises.

$$R_f = \frac{\text{spot distance}}{\text{solvent distance}}$$

A pure substance gives **one** spot.

Check yourself

- 1 What is the end-point of a titration?
- 2 How many spots does a pure substance give?
- 3 What reagent tests for a chloride ion?
- 4 What flame colour does sodium give?



Answers 1. where the indicator just changes colour 2. one 3. silver nitrate (after nitric acid) 4. yellow

Exercises 2.1·2.2

2.1 Name the apparatus used to measure the fixed volume into the flask. [1]

2.2 State what the end-point of a titration shows. [1]

Exercises 2.1·2.2

2.1 Name the apparatus used to measure the fixed volume into the flask. [1]

2.1

- the fixed volume into the flask is measured with a **(volumetric) pipette**
-

2.2 State what the end-point of a titration shows. [1]

2.2

- the end-point shows the reaction is **exactly complete**

Exercise 3.1

3.1 The solution added from the burette is run in:

[1]

☐

A all at once

B slowly, until the indicator just changes colour

C until the flask overflows

D without an indicator

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[1]

☐

A all at once

B slowly, until the indicator just changes colour

C until the flask overflows

D without an indicator

3.1 B

- the burette solution is run in **slowly, until the indicator just changes colour**
- A, C and D would miss the end-point

Exercise 3.2 (a)

3.2 A student titrates sodium hydroxide against hydrochloric acid.

(a) Describe how they would carry out the titration.

[3]

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(a) Describe how they would carry out the titration.

[3]

(a)

- pipette a fixed volume of NaOH into the flask and add indicator
- add acid from the burette **slowly**, swirling
- stop when the indicator **just changes colour** and read the burette

Exercise 3.2 (b)

3.2 A student titrates sodium hydroxide against hydrochloric acid.

(b) Explain why a few drops of indicator are added.

[1]

Exercise 3.2 (b)

3.2 A student titrates sodium hydroxide against hydrochloric acid.

(b) Explain why a few drops of indicator are added.

[1]

(b)

- the indicator shows the **end-point** by changing colour