

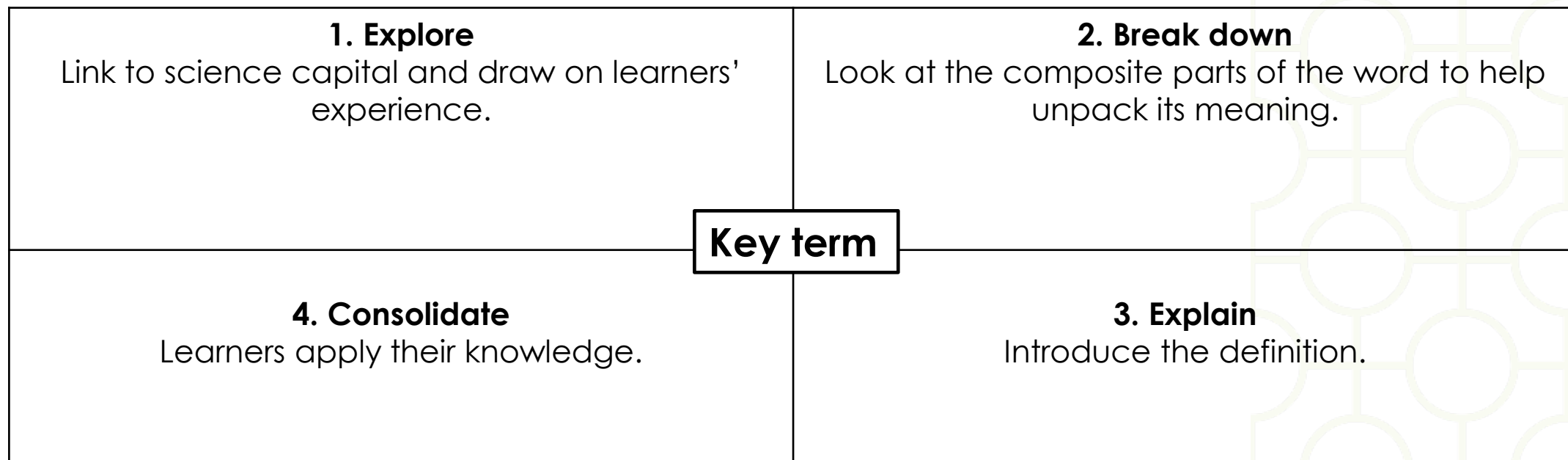
11–14 years  

Elements, compounds and mixtures: Frayer models

How to use Frayer models

Frayer models are a simple but effective way to develop learners' understanding of a new piece of vocabulary. You will see what your learners already know and identify any misconceptions they have.

There are four stages learners can work through, but you can adapt this model to best suit your learners. You can guide learners through all quadrants, but particularly quadrant 2 works best as a teacher-led discussion. Quadrant 3 might also need/benefit from some discussion.



Find more guidance, including tips, adaptations and further reading, in the teacher notes: rsc.li/42AcGmK



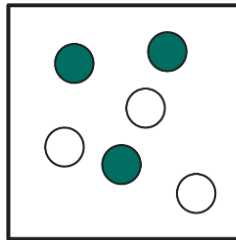
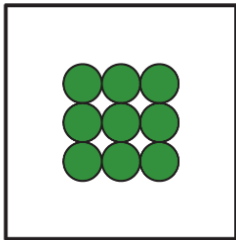
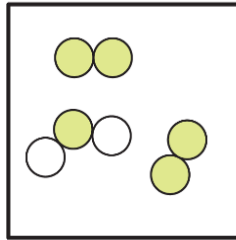
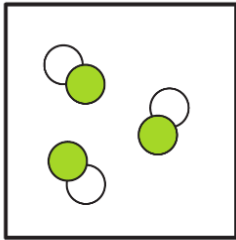
1. What does the word 'pure' mean to you?
Where have you come across this word before?

2. What do we know about the word 'pure'?

In classical Latin pūrus means 'clean or unmixed'.

pure substance

4. Which of the particle diagrams represent a 'pure substance' (choose all that apply)?



3. Write down what you think a 'pure substance' is.

Compare what you wrote with the definition (slide 7).



1. What does the word 'aqueous' mean to you?
Where have you come across this word before?

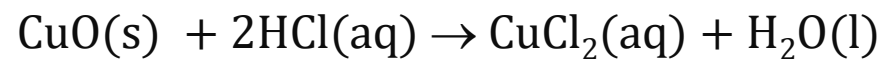
2. Break down the word 'aqueous'.

aqua

-OUS

aqueous

4. Which substance(s) are 'aqueous' in the chemical reaction shown below.



3. Write down what you think 'aqueous' means.

Compare what you wrote with the definition (slide 8).



1. What does the word 'condenser' mean to you?
Where have you come across this term or parts of this term before?

2. Break down the word 'condenser'.

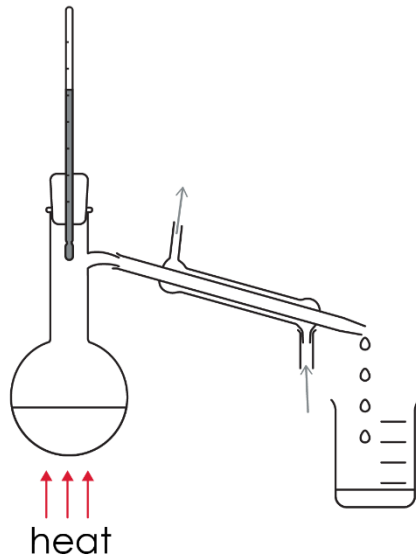
con-

-dense-

-er

condenser

4. The image shows apparatus set up for distillation. Circle the condenser.



3. Write down what you think a 'condenser' does.

Compare what you wrote with the definition (slide 9).



**1. What does the word chromatography mean to you?
Where have you come across this word (or parts of this word) before?**

2. Break down the word 'chromatography'.

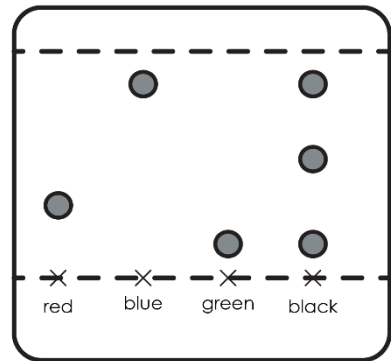
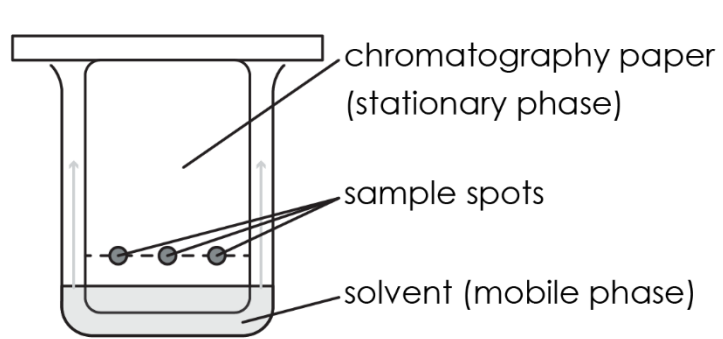
chroma-

-graphy

chromatography

4. A student uses chromatography to find the colours in a black ink.

What colours are in the black ink?



chromatography

chromatogram

3. Write down what you think chromatography means.

Compare what you wrote with the definition (slide 10).

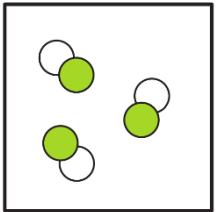
1. What does the word pure mean to you?
Where have you come across this word before?

2. What is the origin of the word pure?

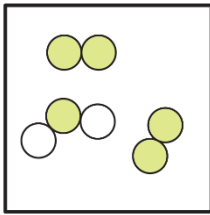
In classical Latin *pūrus* means 'clean' or 'unmixed'.

pure substance

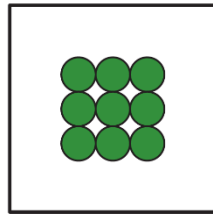
4. Which of the particle diagrams represent a pure substance (choose all that apply)?



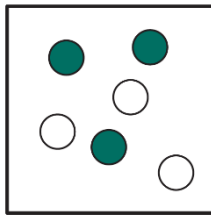
A pure compound



Not pure



A pure element



Not pure

3. Write down what you think key term means (below is the definition from the key terms list).

A substance that is just one compound or element with nothing else mixed in.

Encourage learners to compare their attempted definition with this one.

1. What does the word 'aqueous' mean to you?
Where have you come across this word before?

2. Break down the word 'aqueous'.

aqua

In classical Latin, *aqua* means 'water'.

-OUS

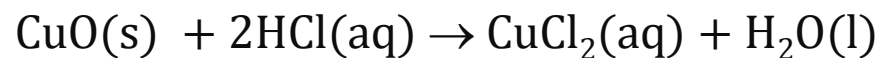
Borrowed from classical Latin, *-ōsus* meaning 'abounding in, full of, characterised by'.

aqueous

A substance full of water.

aqueous

4. Which substance(s) are 'aqueous' in the chemical reaction shown below.



Aqueous substances in the reaction are:

- HCl - hydrochloric acid
- CuCl₂ - copper chloride

3. Write down what you think key term means (below is the definition from the key terms list).

When a substance is dissolved in water; shown by the state symbol (aq).

Encourage learners to compare their attempted definition with this one.

1. What does the word 'condenser' mean to you?
Where have you come across this term or parts of this term before?

2. Break down the word 'condenser'.

con-

Prefix meaning 'with' or 'together'.

-dense-

A measure of the amount of matter in a set volume.

-er

A person or thing that performs an action.

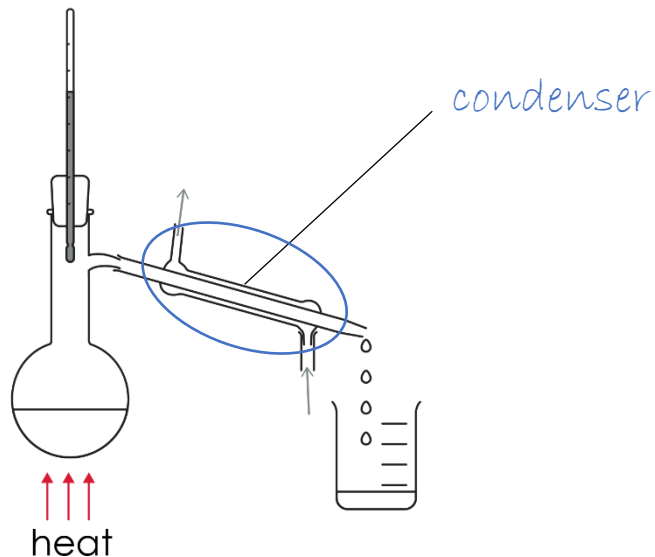
condenser

An object that brings together particles to form something that is more dense.

condenser

4. The image shows apparatus set up for distillation.

Circle the condenser.



3. Write down what you think key term means (below is the definition from the key terms list).

A glass tube used in distillation to condense a gas into liquid, by surrounding the tube with a continuous flow of cold water.

Encourage learners to compare their attempted definition with this one.

**1. What does the word chromatography mean to you?
Where have you come across this word (or parts of this word) before?**

2. Break down the word 'chromatography'.

chroma-
From the Greek khrōma meaning 'colour'.

-graphy
From the Greek -graphía', description of'.

chromatography
Description of the colours in a mixture.

chromatography

4. A student uses chromatography to find the colours in a black ink.

What colours are in the black ink?

The black ink consists of:

- blue ink*
- green ink*
- an unknown colour.*

3. Write down what you think key term means (below is the definition from the key terms list).

A method of separation based on how easily each substance is carried in a liquid that is moving through a porous solid, like paper.

Encourage learners to compare their attempted definition with this one.

1. Explore

Link to science capital and draw on learners' experience.

2. Break down/'what do we know about X?'

Look at composite parts of the word to help unpack its meaning.

Or invite learners to suggest what, as a class, they already know about the key term (with the help of a few bullet points).

4. Consolidate

Learners apply their knowledge.

**Select your
key term**

3. Explain

Introduce the definition.