Mixtures and separation – Checkpoint Primary chemistry

1. No.4

The table shows different ways to separate mixtures.

Tick (✓) the boxes to show how each mixture is separated.

mixture	magnetic attraction	add water then filter	sieve the mixture	evaporate all the liquid
salt solution				
salt and sand				
lumps of iron and iron powder				
iron and sand				
copper powder and steel powder				

[5]

2. No.2

Mixtures are separated using different methods.

Draw a line between each **mixture** and its correct **separation method**.

mixture	separation method
	dissolve in water and filter
iron powder and aluminium powder	use a magnet
sand and salt	burn the mixture
salt solution	evaporate the mixture
sand and water	melt the mixture
lumps of marble and powdered marble	sieve the mixture
	filter the mixture

[5]

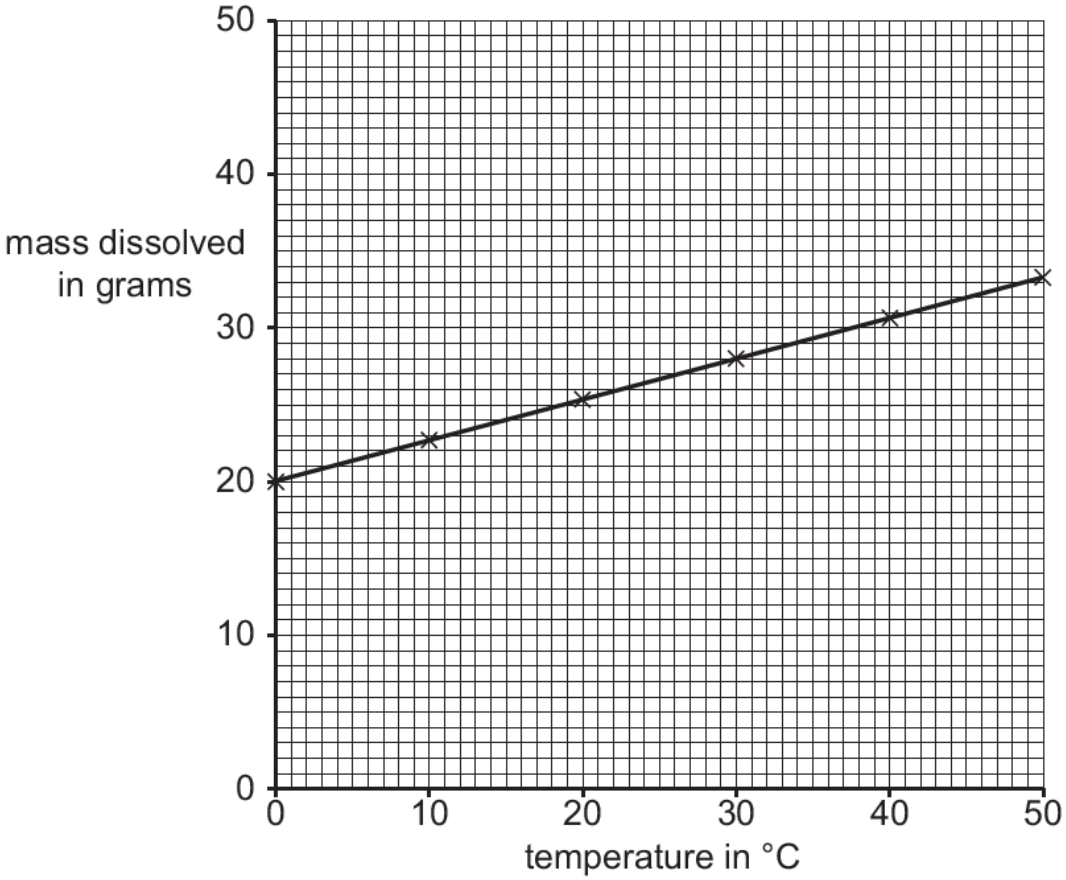
3. No.16

Rajiv dissolves a fertiliser in water.

He records the mass of fertiliser that dissolves in 5 cm^3 of water.

Rajiv makes measurements at 6 different temperatures.

He shows his results in a graph.



(a) Rajiv wants to make his results more reliable.

Suggest **two** ways he can make his results more reliable.

1 .....

2 .....

[2]

(b) Describe the pattern of his results.

.....

..... [1]

(c) What mass of fertiliser is dissolved in 5 cm^3 of water at 30 °C?

..... g [1]

(d) Predict the mass of fertiliser that dissolves at 60 °C.

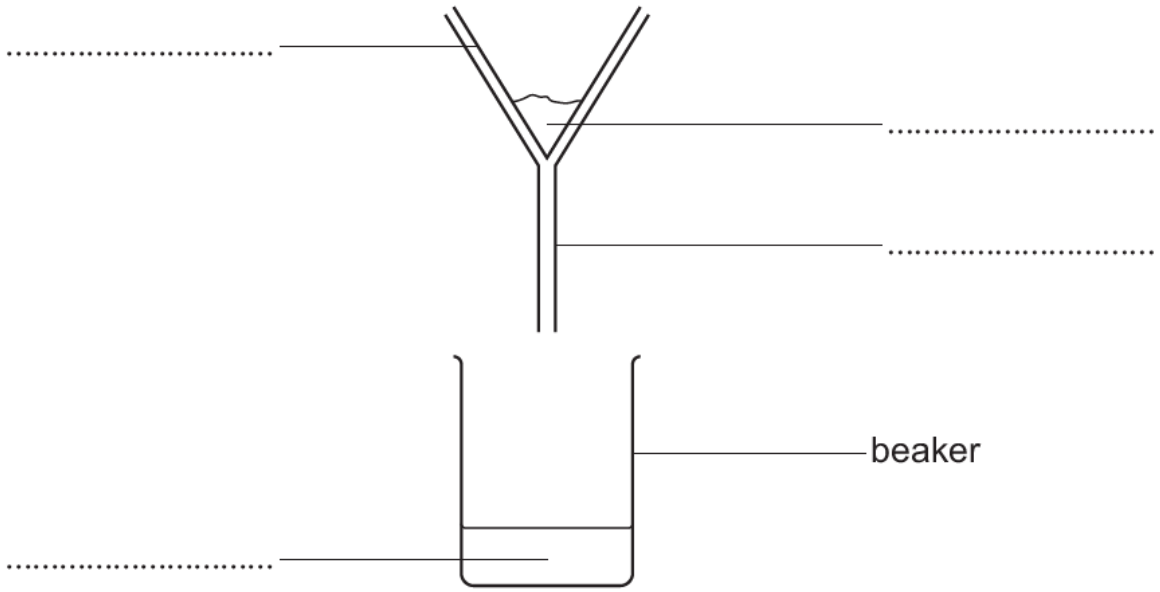
..... g [1]

4. No.4

Filtering separates an insoluble solid from water.

Look at the diagram.

It shows the result of filtering a mixture of an insoluble solid and water.



Complete the labels on the diagram.

[4]

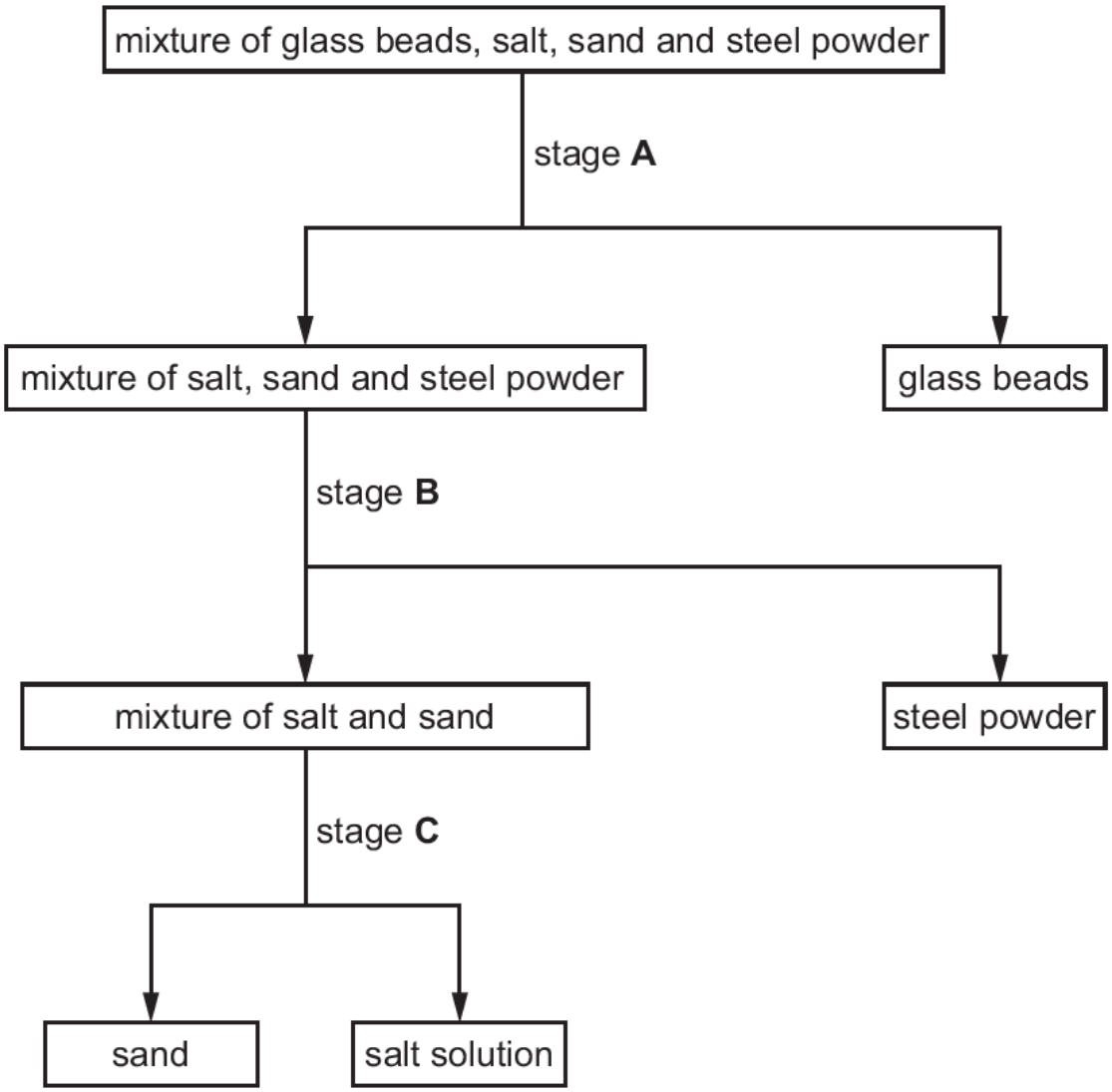
5. No.3

Blessy has a mixture of glass beads, salt, sand and steel powder.

The glass beads are much bigger than the particles of sand and steel.

She separates this mixture to get glass beads, salt solution, sand and steel.

Look at the flow chart describing how she separates the mixture.



(a) What is the name of the process used in stage **A**?

..... [1]

(b) Describe what Blessy does in stage **B**.

.....

..... [1]

6. No.2

The table shows information about two substances.

substance	property	
	does it dissolve in water?	does it dissolve in ethanol?
salt	yes	no
sugar	yes	yes

Blessy wants to separate a mixture of salt and sugar.

(a) She tries to use a magnet to separate the substances.

This does **not** work.

Explain why using a magnet does **not** work.

.....

..... [1]

(b) Blessy adds water to some of the mixture.

She stirs the mixture and then filters it.

Explain why this does **not** separate the mixture of salt and sugar.

.....

..... [1]

(c) Blessy separates the remaining mixture of salt and sugar.

Describe what she does.

.....

.....

..... [2]

7. No.2

Oliver has three different mixtures.

- copper powder and steel powder
- copper powder and zinc lumps
- sand and water

He wants to separate each mixture.

Complete the table to show the method he uses to separate each mixture.

mixture	method of separating
copper powder and steel powder	
copper powder and zinc lumps	
sand and water	

[3]

8. No.15

Mike adds solids to water.

(a) He adds 1g of **sugar** to 100 cm^3 of water.

He stirs the mixture.

What does he observe?

..... [1]

(b) Mike adds 1g of **salt** to 100 cm^3 of water.

He stirs the mixture.

It is a solution.

What colour is the solution?

..... [1]

(c) Mike filters the salt solution.

The salt is **not** separated from the water.

Explain why.

.....

..... [1]

(d) Describe how Mike can separate salt from water.

.....

.....

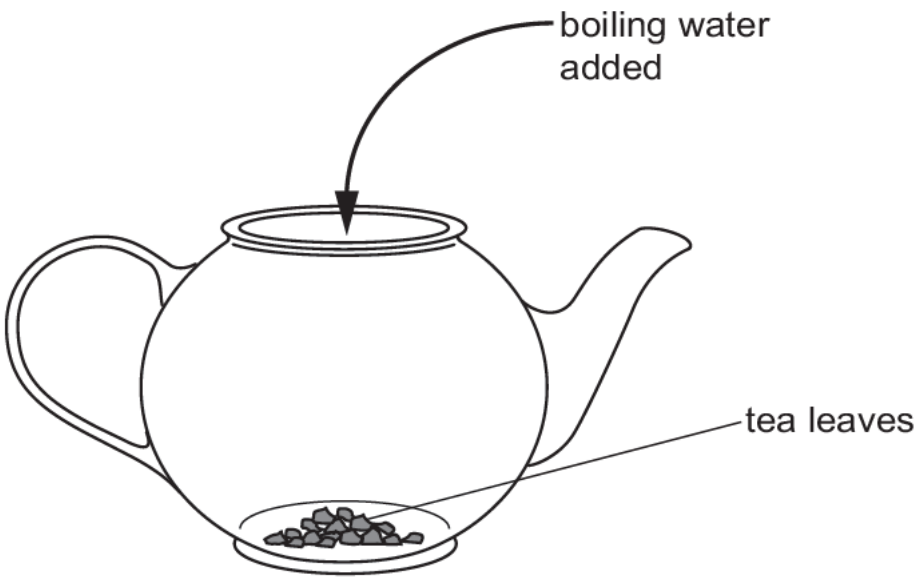
..... [2]

9. No.10

Oliver makes tea.

He adds boiling water to the tea leaves.

A brown solution is made.



(a) Suggest why the boiling water becomes brown.

.....

[1]

(b) Oliver wants to keep the brown solution but separate it from the tea leaves.

He uses sieving.

Explain why sieving works.

.....

.....

[2]

(c) Suggest one **other** way to separate the brown solution from the tea leaves.

.....

[1]

10. No.8

The table shows the properties of some substances.

substance	state at room temperature	colour	soluble in water
chalk	solid	white	no
copper sulfate	solid	blue	yes
gasoline	liquid	colourless	no
iron sulfate	solid	green	yes
magnesium sulfate	solid	white	yes

(a) Which substances are insoluble in water?

.....

[1]

(b) Lily wants to separate a mixture of copper sulfate and iron sulfate.

She adds water to the mixture and stirs it thoroughly.

She then filters this mixture.

Explain why this mixture is **not** separated.

.....

.....

[1]

(c) Lily mixes gasoline and water.

Suggest what she sees.

.....

.....

[1]

11. No.20

The table shows the properties of some substances.

substance	state at room temperature	colour	soluble in water
chalk	solid	white	no
copper sulfate	solid	blue	yes
gasoline	liquid	colourless	no
iron sulfate	solid	green	yes
magnesium sulfate	solid	white	yes

(a) Which substances are insoluble in water?

.....[1]

(b) Rajiv mixes gasoline and water.

Suggest what he would see.

.....

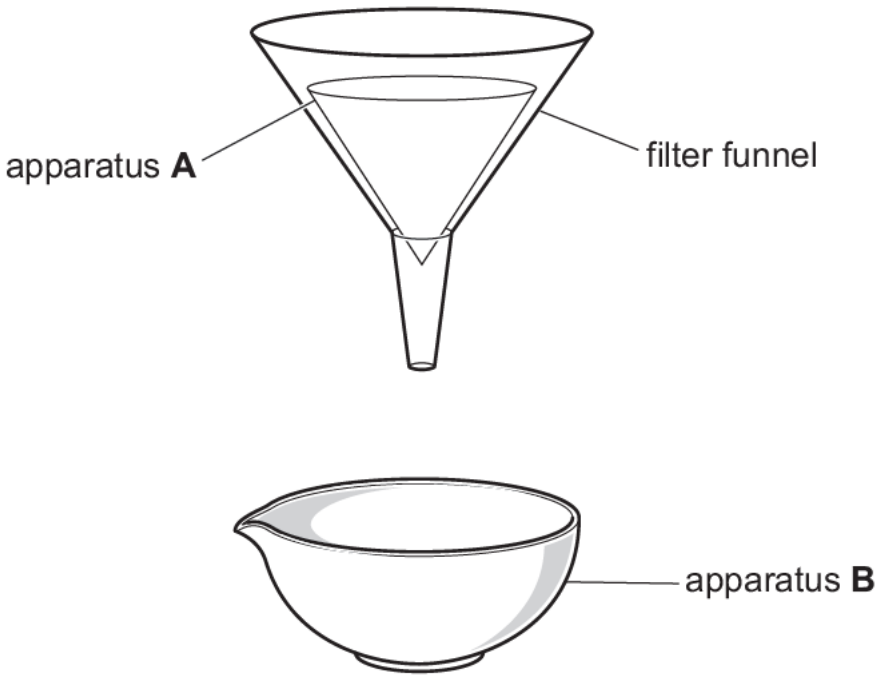
.....[1]

12. No.4

Carlos has a mixture of sand, salt and water.

He wants to separate the mixture.

Here is some of the apparatus that Carlos uses.



(a) What is the name of apparatus **A**?

..... [1]

(b) What is the name of apparatus **B**?

..... [1]

(c) Explain how you separate the mixture of sand, salt and water.

.....

.....

.....

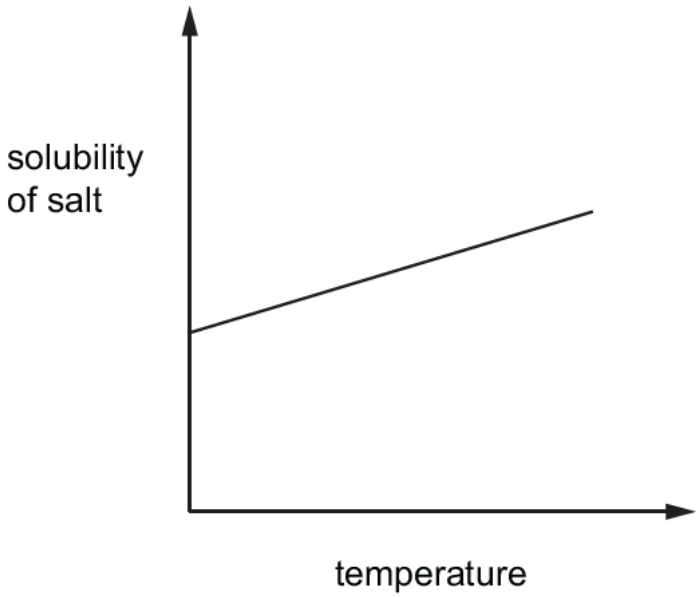
.....

..... [3]

13. No.17

Rajiv investigates the solubility of some substances using the internet.

(a) He finds a line graph about the solubility of salt.



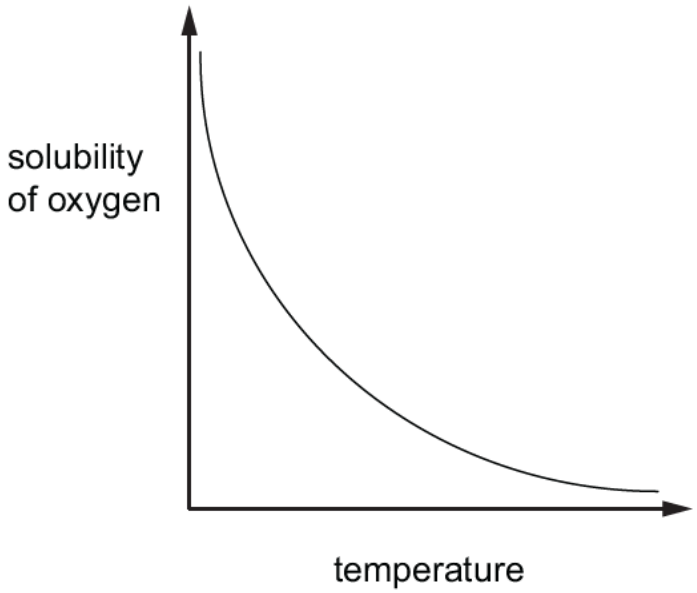
Rajiv makes a conclusion.

Complete his conclusion.

As the temperature ..... the solubility of salt

..... . [1]

(b) He finds a line graph about the solubility of oxygen.



Rajiv makes a conclusion.

Complete his conclusion.

As the temperature ..... the solubility of oxygen

..... . [1]

14. No.20

Each of the following words is connected with dissolving.

Draw a line between the **word** and its correct **meaning**.

word	**meaning**
solute	a mixture of a dissolved solid and a liquid
solution	the liquid that dissolves a solid
solvent	the solid that dissolves in a liquid

[2]

15. No.12

The table shows the properties of some substances.

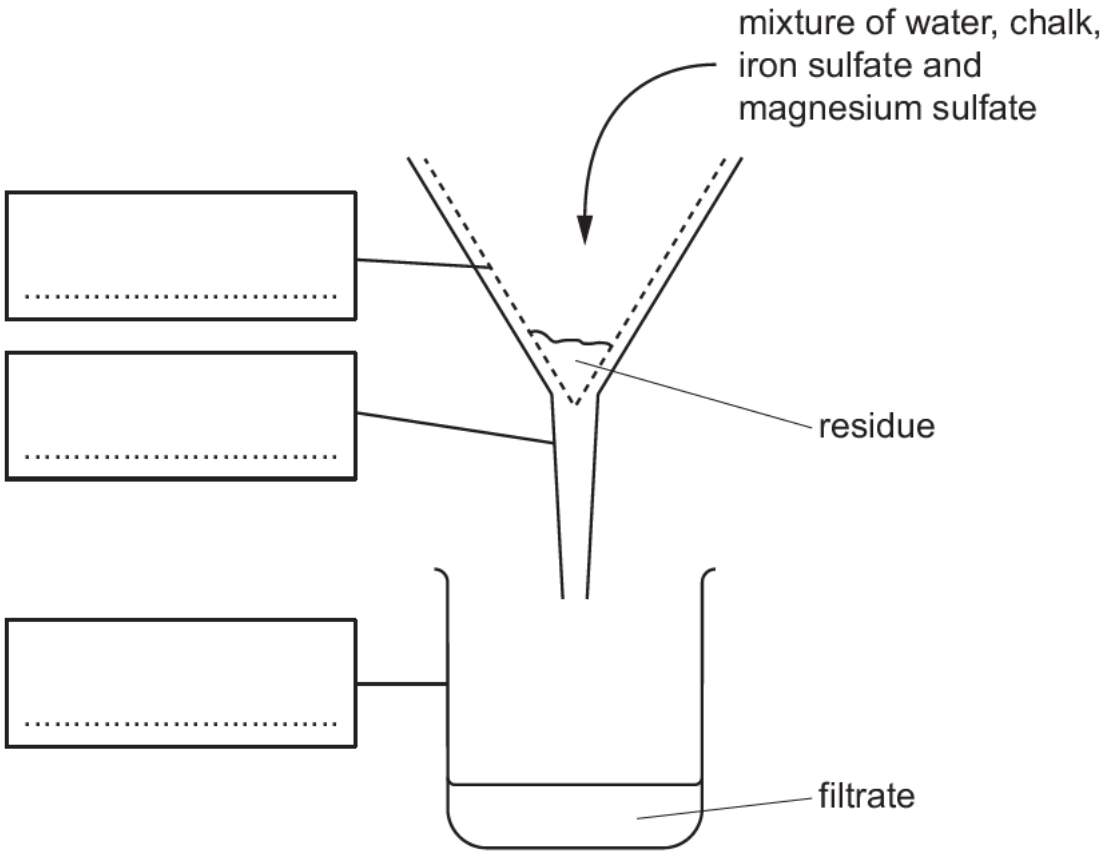
substance	state at room temperature	colour	does the substance dissolve in water?
chalk	solid	white	no
iron sulfate	solid	green	yes
magnesium sulfate	solid	white	yes

Hassan has a mixture of chalk, iron sulfate and magnesium sulfate.

He wants to separate the mixture.

He adds the mixture to water and stirs it thoroughly.

He then filters this mixture using this apparatus.



(a) Complete the labels on the diagram of the apparatus.

[3]

(b) Which substance is found in the **residue**?

..... [1]

16. No.14

Complete the crossword puzzle.

The first letter of each answer has been done for you.

Clues

1 across

Salt **d** _ _ _ _ _ _ _ _ in water.

3 across

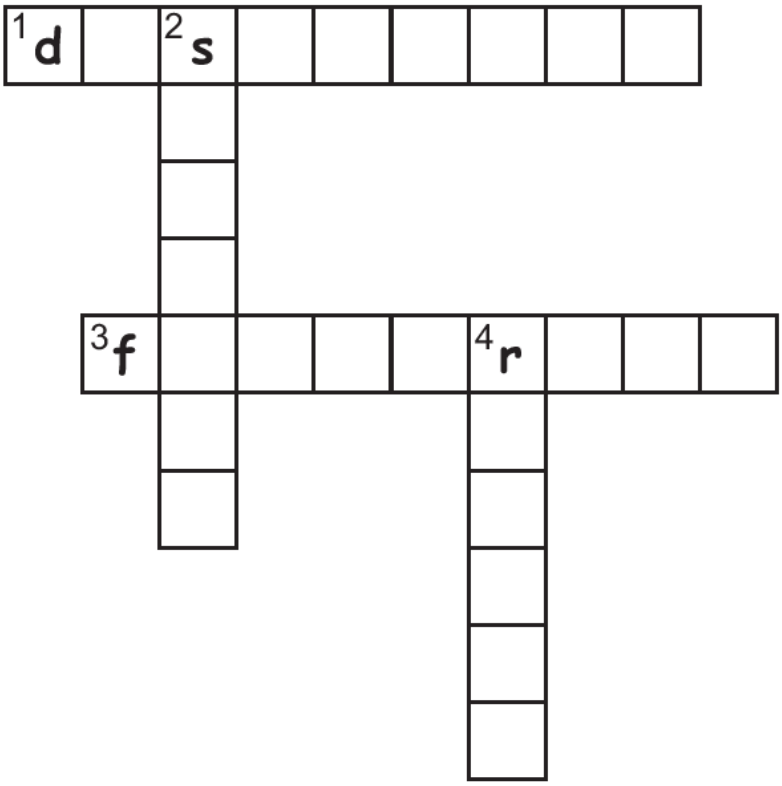
Sand can be separated from water by **f** _ _ _ _ _ _ _ _.

2 down

Sand and stones can be separated by **s** .

4 down

Bubbles of gas can be seen when bicarbonate of soda **r** _ _ _ _ _ with vinegar.



[4]

17. No.2

Lily is separating a mixture of chalk and water.

This diagram shows the equipment she uses.

Label the diagram.

Choose your labels from

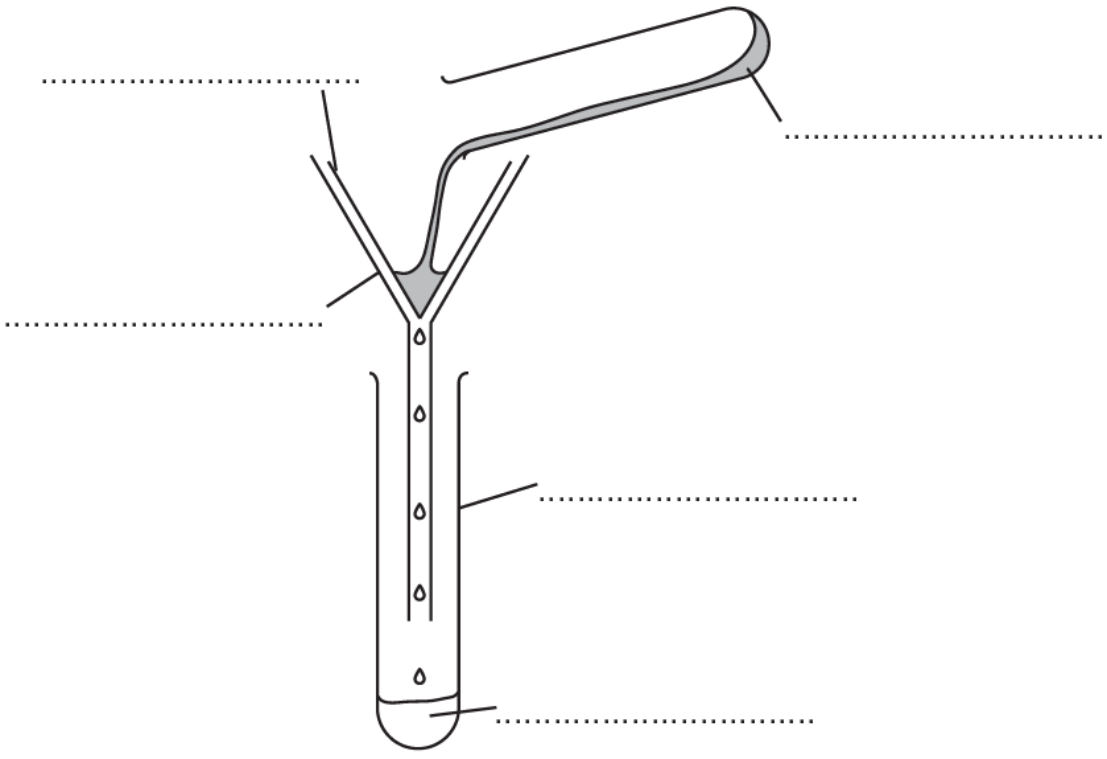
chalk and water

filter funnel

filter paper

filtrate

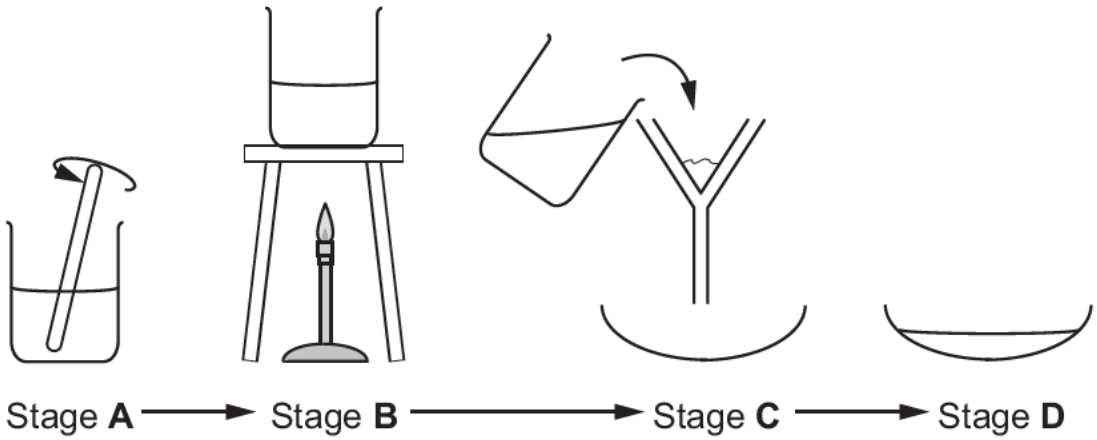
test-tube



[3]

18. No.10

Ahmed separates a mixture of salt and sand.



(a) Why is water added to the mixture at stage **A**?

.....[1]

(b) Which substance in the mixture is insoluble?

.....[1]

(c) Why is the mixture gently heated in stage **B**?

.....[1]

(d) Which substance is left on the filter paper in stage **C**?

.....[1]

19. No.15

The table shows the properties of some solids.

solid	solubility in water	is it magnetic?	is it a lump or a powder?
copper	insoluble	no	lump
salt	soluble	no	powder
steel	insoluble	yes	powder

Jamila has a mixture of copper, salt and steel.

Describe how she can separate the copper from the mixture.

.....

.....

Explain why the separation works.

.....

..... [2]