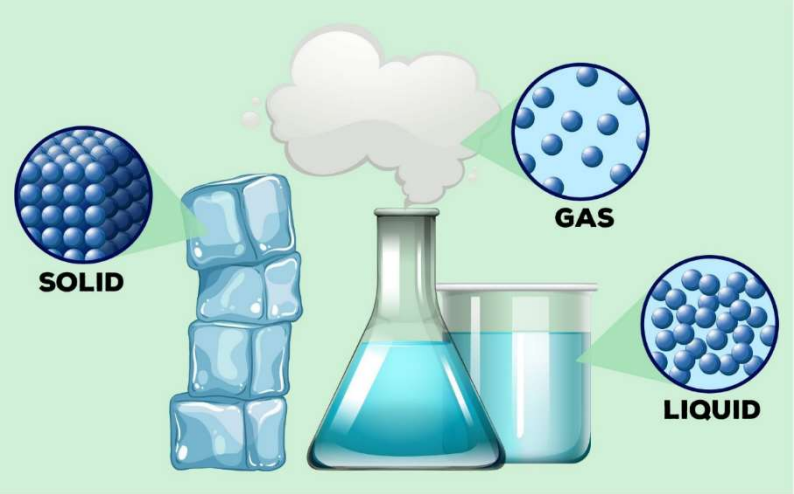
Kirkcaldy High School



S1 Science

Matter

Name:_____

Class:_____

Teacher:_____

Education Scotland Experiences, and Outcomes

SCN 3-05a: By contributing to experiments and investigations, I can develop my understanding of models of matter and can apply this to changes of state and the energy involved as they occur in nature.

SCN 3-16b: I have taken part in practical investigations into solubility using different solvents and can apply what I have learned to solve everyday practical problems.

Topic Evaluation

Experience and Outcomes	Date Completed (dd/mm/yy)	Evaluation How happy are you with it? (☺ ? ☹)
I can identify solids and liquids by their properties and give everyday examples of each.		
I can describe the particles in a solid, liquid and gas.		
I can describe the properties of solids, liquids and gases.		
I can describe the properties of a non-Newtonian fluid.		
I can explain changes of state.		
I can explain the water cycle using my knowledge of changes of states.		
I can explain the terms soluble and insoluble.		
I can separate dirt from water using filtration.		
I can separate salt from water using evaporation.		
I can separate coloured dyes using chromatography.		

Date: _____

States of Matter

Starter

What's the difference between the objects below?

Learning Intentions

- To identify solids and liquids by their properties and give everyday examples of each.
- To describe the particles in a solid, liquid and gas.

Tick me at the end if ***you***

Success Criteria

☐ I can identify solids and liquids by their properties and give everyday examples of each.

☐ I can describe the particles in a solid, liquid and gas.

States of Matter

_____ is anything which has a mass and occupies a space.

There are three main states of matter:

- _____
- _____
- _____

Activity: Classify items as solids, liquids and gases.

Solid	Liquid	Gas

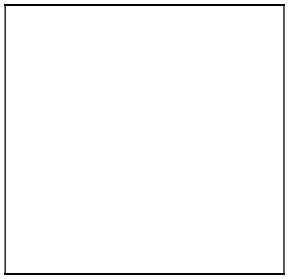
Extension:

Think of some examples of your own and add them to your table.

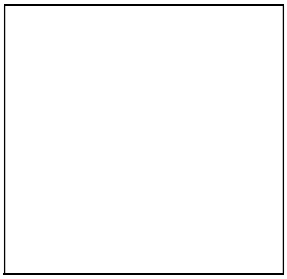
Particles

All matter is made from tiny _____ called _____.

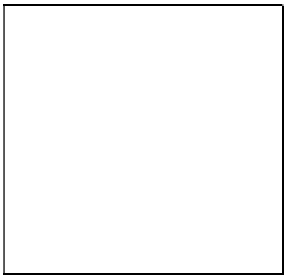
Particles are always _____.



Solid



Liquid



Gas

Date: _____

Properties of solids, liquids and gases

Starter

1. Draw the particle arrangement of a solid, liquid and gas.

Solid	Liquid	Gas

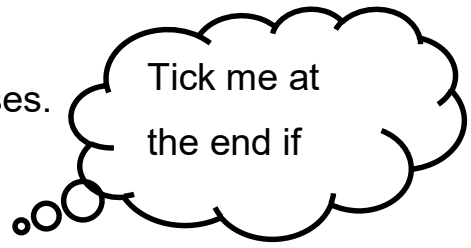
2. Describe how the particles in a solid, liquid and gas move.

_____

_____

Learning Intentions

- To describe the properties of solids, liquids and gases.



Success Criteria

☐ I can describe the properties of solids, liquids and gases.

Properties of solids liquids and gases

Aim:

_____

_____

	Change Volume? (be compressed)	**Change shape?**	**Flow?**
Solid			
Liquid			
Gas			

Date: _____

Solid or Liquid?

Starter

Are these substances solid, liquid or gas? Explain your thinking.

Paint

Jelly

Custard

Learning Intentions

- To describe the properties of a non-Newtonian fluid.

Tick me at the end if ***you***

Success Criteria

☐ I can describe the properties of a non-Newtonian fluid.

Making Slime - Cornflour and Water

Aim:

_____

_____

Method: *(What did you do?)*

Results: *(What did you observe?)*

Conclusion: *(What did you find out?)*

Date: _____

Changing States

Starter

The three states of matter are solid, liquid and gas.

1. Name a solid _____
2. Name a liquid _____
3. Name a gas _____
4. Describe how solids, liquids and gases are different _____

   _____
5. Name something that behaves like a solid and a liquid. _____

Learning Intentions

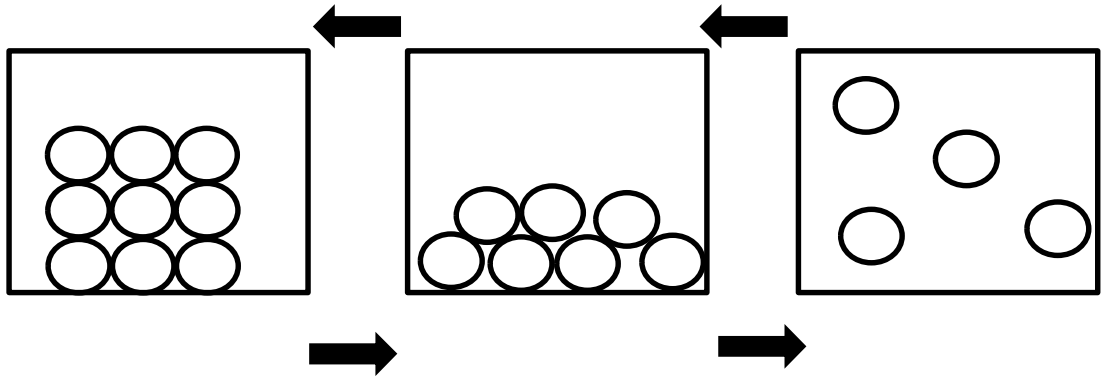
- To explain changes of state.

Tick me at the end if ***you***

Success Criteria

☐ I can explain changes of state.

Changing States



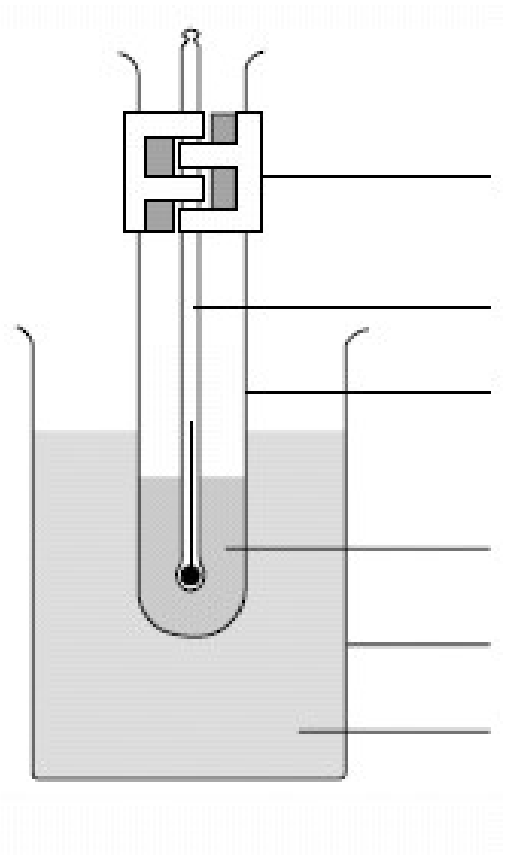
Stearic Acid Experiment

Aim:

_____

_____

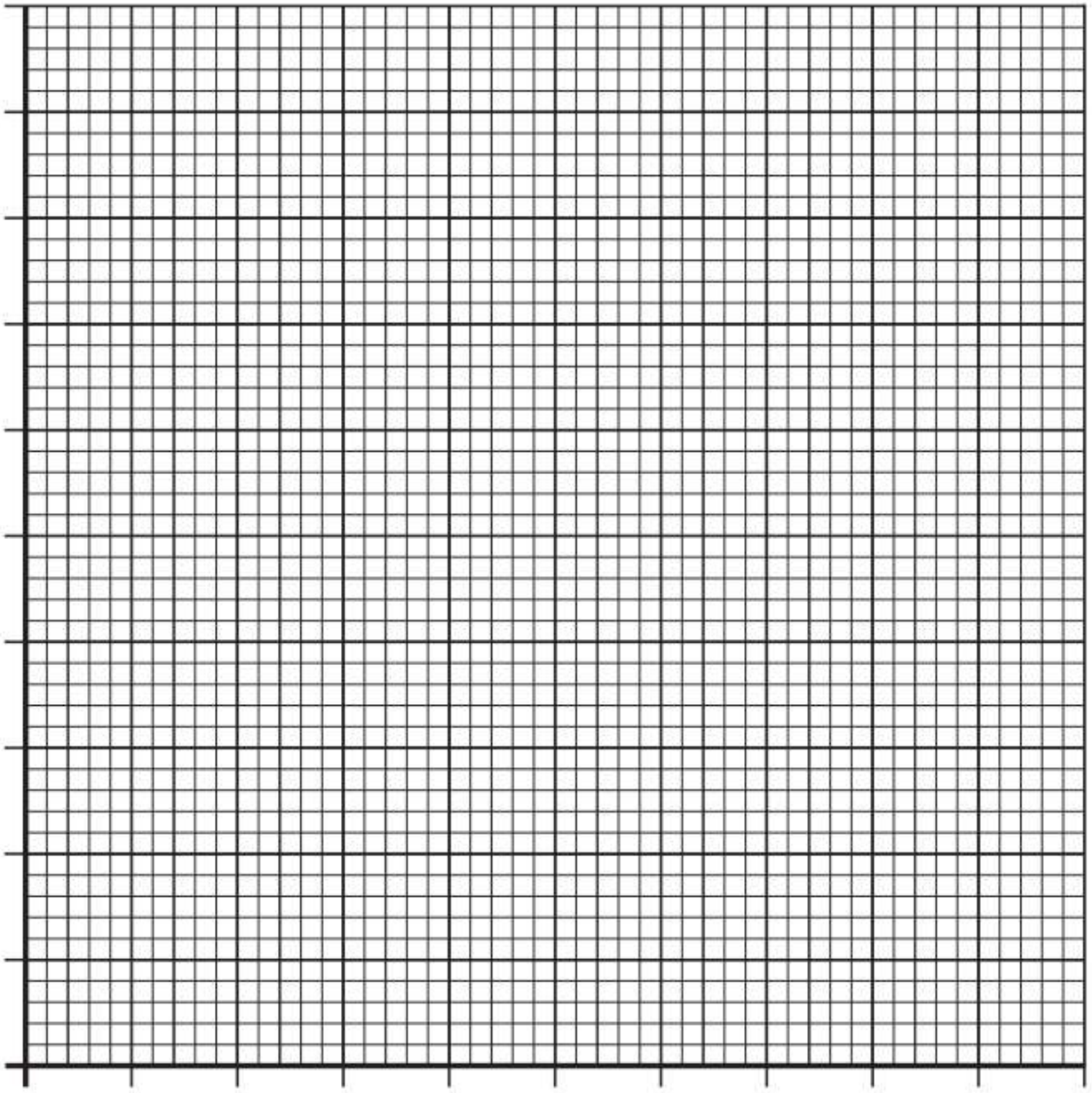
Method: *(Label the diagram)*



Results:

Time (minutes)	Temperature (°C)	State (Solid/ Liquid/ Solid and Liquid)

Graph:



Conclusion:

The stearic acid changed from a _____ to a _____ at _____.

Evaluation: *(how can we improve our experiment?)*

_____

_____

Date: _____

The Water Cycle

Starter

1. What temperature does ice melt? _____
2. What temperature does water boil? _____
3. What can you remember about the water cycle from primary school?

   _____

Learning Intentions

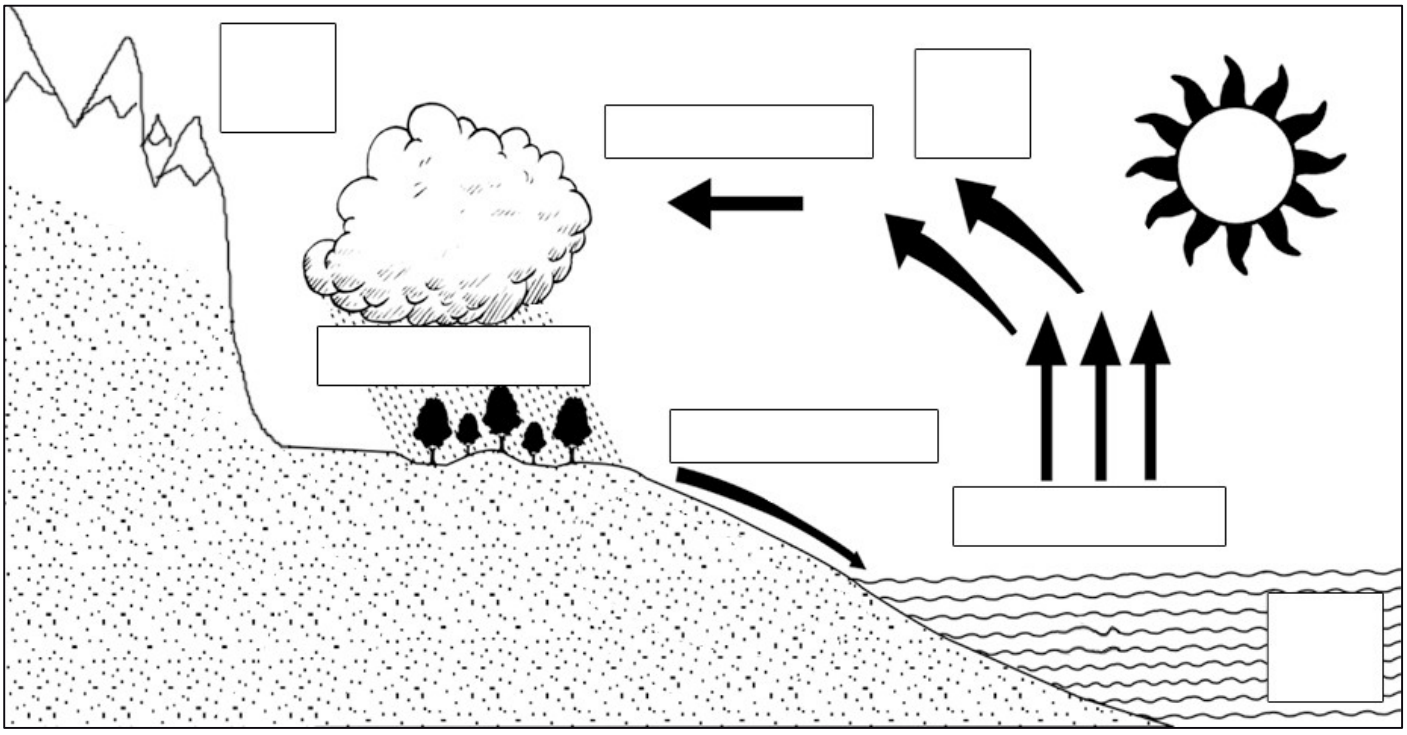
- To explain the water cycle using my knowledge of changes of states.

Success Criteria

Tick me at the end if

- ❑ I can explain the water cycle using my knowledge of changes of states.

The Water Cycle



Date: _____

Solubility

Starter

1. What is meant by the term "**soluble**"?

   _____

   _____

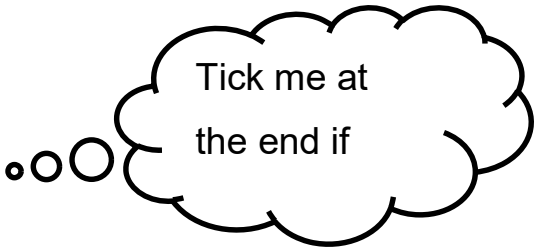
2. How do we know if a substance is soluble?

   _____

   _____

Learning Intentions

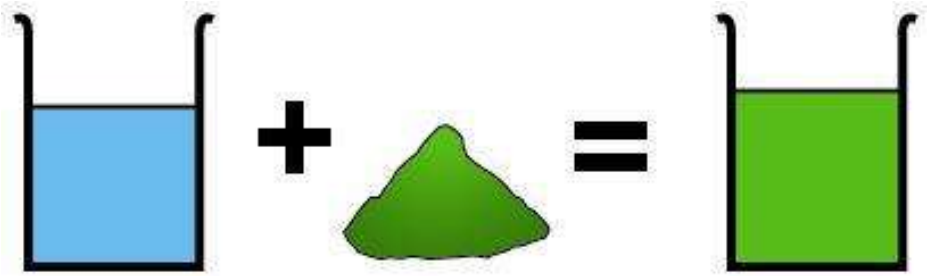
- To explain the terms "soluble" and "insoluble".



Success Criteria

- ❑ I can explain the terms soluble and insoluble.

Solubility



Example: _____

Activity: Match the statements with the words below:

solute solution solvent soluble

The liquid in which a solute dissolve: _____

The substance that dissolves in a liquid to form a solution: _____

The product formed when a solute has dissolved in a solvent: _____

Describes a substance which can dissolve in a solvent: _____

Not all substances are soluble. A substance which cannot dissolve in a solvent is_____. Example: Sand is insoluble in water.

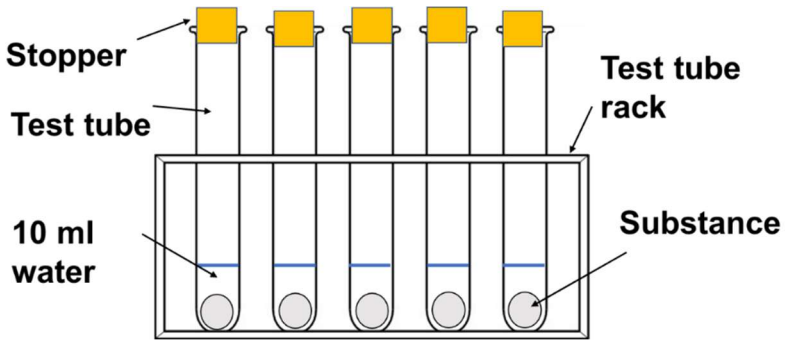
Solubility Experiment

Aim:

_____

_____

Method:



Results:

Substance	What did you see?	Soluble in Water?
sodium carbonate		
sodium chloride		
sucrose		
flour		
calcium carbonate		
copper chloride		

Conclusion: *Answer your aim. Which substances are soluble? Which substances are insoluble?*

_____

_____

Evaluation: *What went well? How could you improve you experiment?*

_____

_____

Date: _____

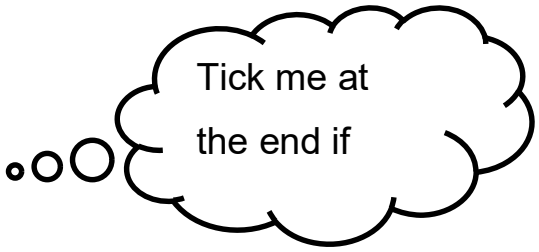
Separation Techniques – Filtration

Starter

1. What do these words mean?
    a. Soluble _____
    b. Insoluble _____
2. Name a substance which is soluble. _____
3. Name a substance which is insoluble. _____

Learning Intentions

- To learn how to separate dirt from water.



Success Criteria

- ❑ I can separate dirt from water.

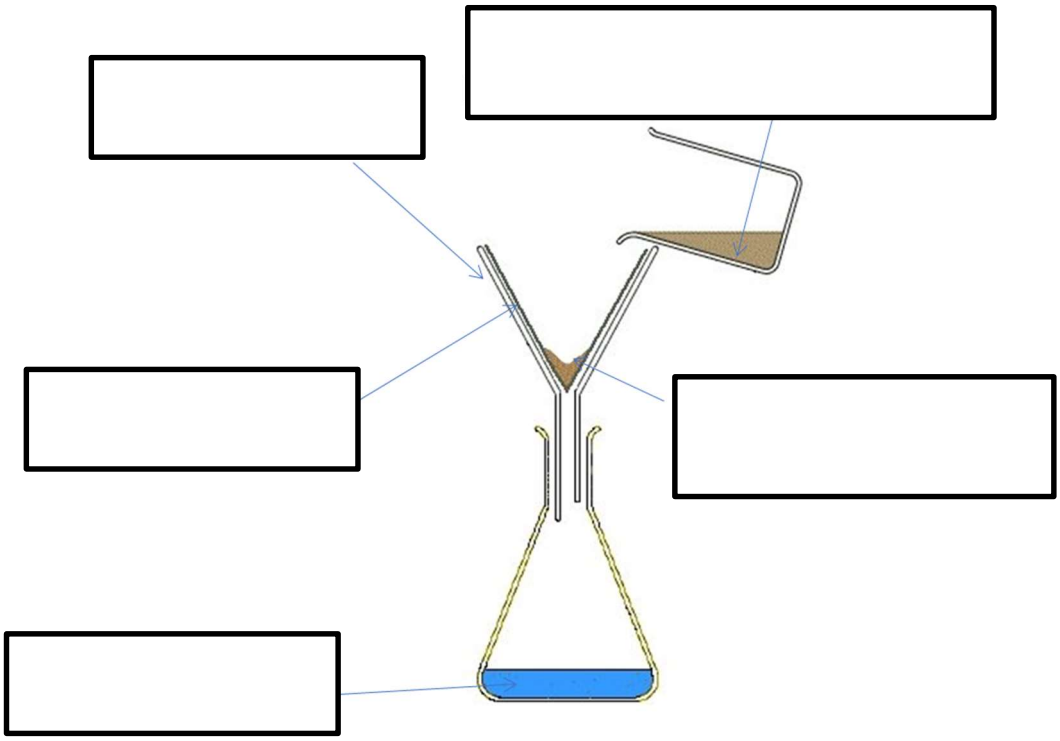
Separating Dirty Water

Aim:

_____

_____

Method:



Results: *What did you see?*

_____

_____

Conclusion: *How can you separate dirt from water (use the word soluble or insoluble)? What is this technique called?*

_____

_____

_____

Filtration

We use _____ to separate an insoluble solid from a liquid.

_____ is collected in the filter paper and the _____ is collected in the flask.

Date: _____

Separation Techniques – Evaporation

Starter

1. How would you separate **sand** from **sea water**? _____

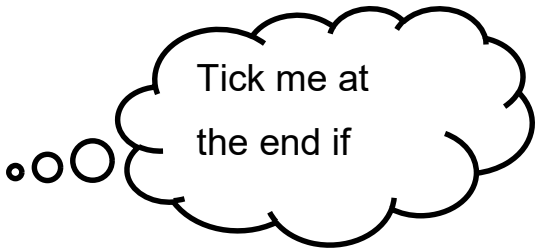
   _____

2. How would you separate **salt** from **sea water**? _____

   _____

Learning Intentions

- To learn how to separate salt from water.



Success Criteria

- ❑ I can separate salt from water.

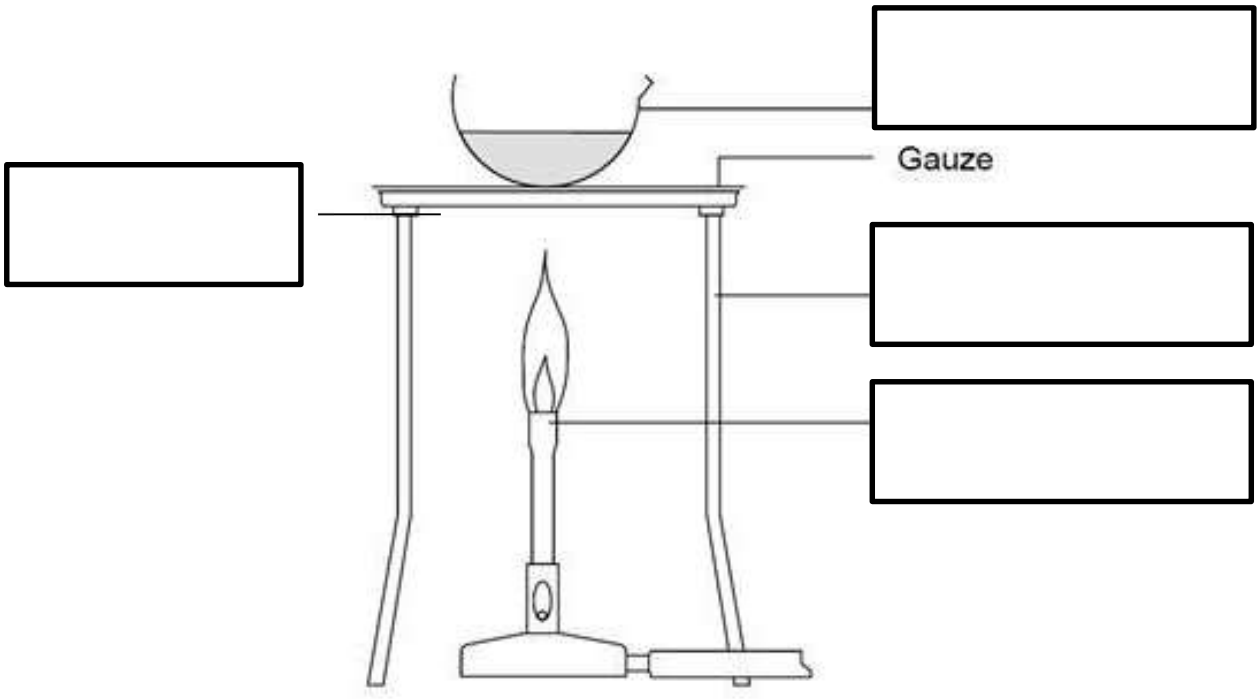
Evaporation

Aim:

_____

_____

Method:



Results: *What did you see?*

_____

_____

Conclusion: *How can you separate salt from water (use the word soluble or insoluble)? What is this technique called?*

_____

_____

_____

Evaporation

We use _____to separate soluble solids from solutions.

_____ evaporates and leaves behind the solid _____ in the evaporating dish.

Date: _____

Separation Techniques – Chromatography

Starter

1. Name the two separation techniques we have used _____

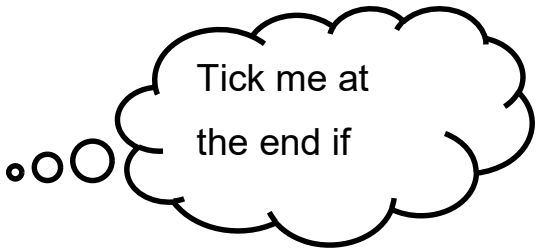
   _____

2. Choose one of these techniques and explain how it works_____

   _____

Learning Intentions

- To learn how to separate coloured dyes.



Success Criteria

- ❑ I can separate coloured dyes.

Chromatography

Chromatography means colour writing!

It is used to separate a mixture of coloured or non-coloured substances that are _____ in the same solvent.

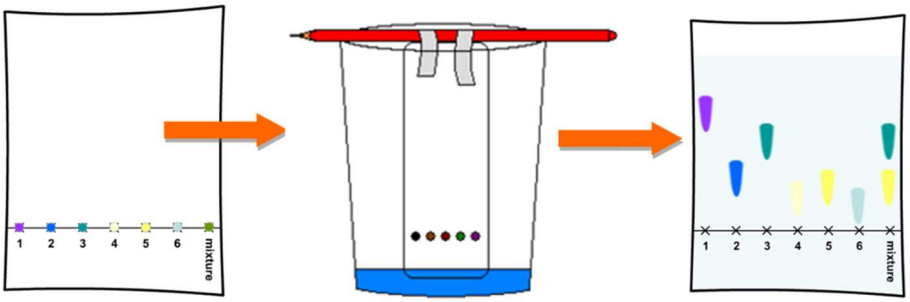
Chromatography Experiment 1

Aim:

_____

_____

Method:



Results: (*Describe what you saw)*

_____

_____

_____

_____

_____

Glue in chromatography paper here

Conclusion:

_____

_____

_____

_____

Chromatography Experiment 2

Aim:

_____

_____

Method:

Results: *(what did you see?)*

_____

_____

_____

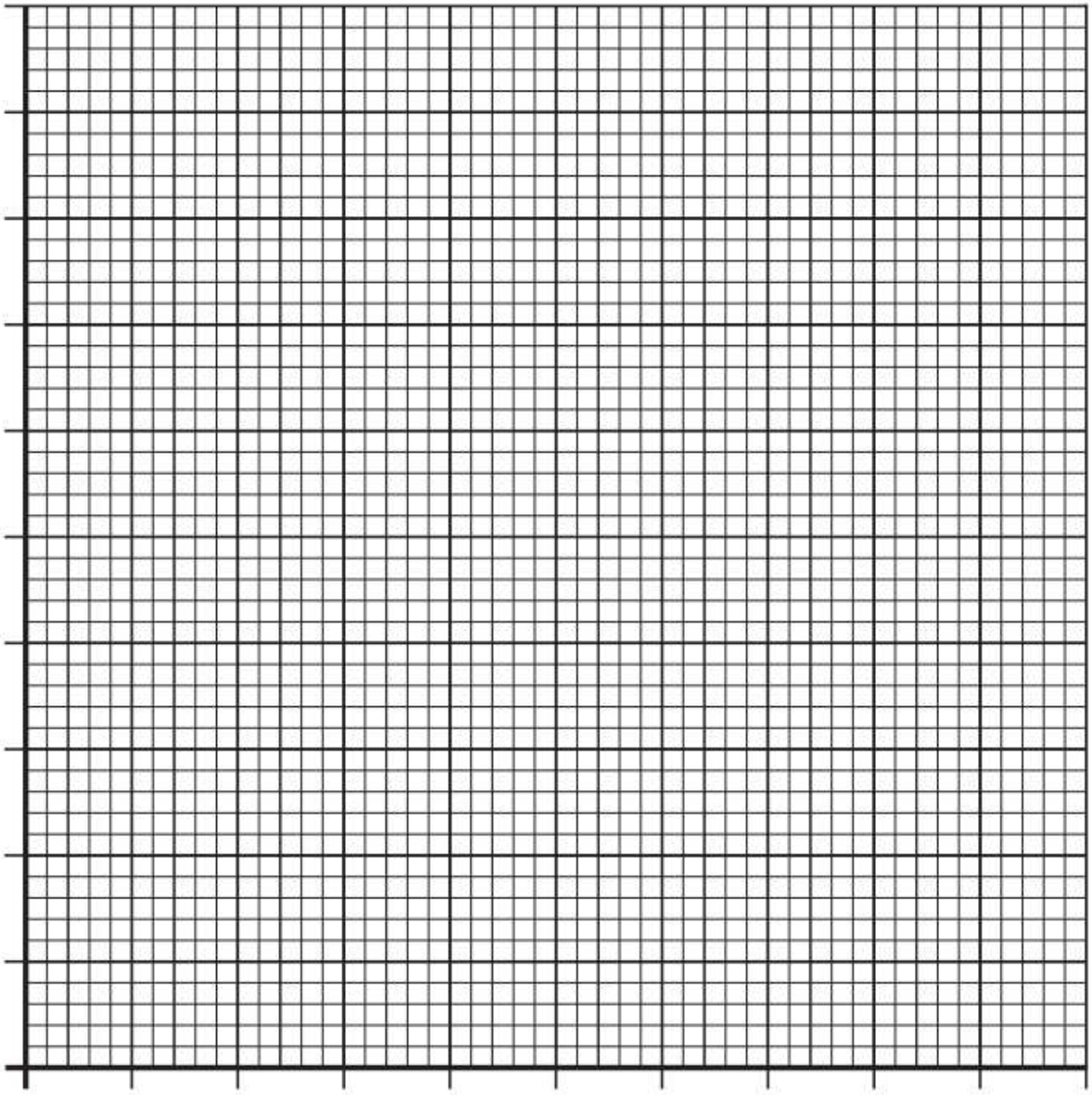
Conclusion: (W*hat did you find out? Answer your aim.)*

_____

_____

_____

Additional graph paper for numeracy tasks:



Extension Tasks

Word Search

L	F	I	O	S	P	N	N	Z	Z	U	U	O	E
L	P	R	T	E	E	A	A	L	I	Q	U	I	D
P	R	E	C	I	P	I	T	A	T	I	O	N	M
T	N	T	S	N	S	N	T	N	I	I	I	E	C
O	O	U	O	S	N	O	A	R	D	I	L	O	S
A	I	L	L	A	A	T	L	S	E	T	E	I	O
G	T	O	U	G	T	W	N	U	I	P	U	T	T
O	A	S	B	N	O	E	I	N	T	I	O	N	A
M	R	S	L	I	M	N	G	I	T	I	A	R	P
A	T	G	E	Z	S	N	V	N	S	P	O	N	P
T	L	T	V	E	S	O	L	V	E	N	T	N	G
T	I	L	A	E	I	N	R	U	N	O	F	F	I
E	F	P	A	R	T	I	C	L	E	S	R	I	N
R	T	T	O	F	E	B	O	I	L	I	N	G	L

ATOMS
BOILING
GAS
FREEZING
NONNEWTONIAN
MELTING
SOLID
SOLUTE
PROPERTIES
SOLUBLE
PRECIPITATION
PARTICLES
FILTRATION
RUNOFF
MATTER
SOLUTION
LIQUID
SOLVENT

Extra Questions:

1. What are the three common states of matter? _____

   _____
2. In which state of matter do particles have the most energy and move freely?

   _____
3. Which state of matter has a definite shape and volume?

   _____
4. What happens to the particles in a solid when it is heated?

   _____
5. Why does a gas take the shape and volume of its container?

   _____
6. What is the process called when a liquid turn into a gas?

   _____
7. When water freezes, what state of matter does it change into?

   _____
8. How is condensation different from evaporation?

   _____
9. What role does the Sun play in the water cycle?

   _____
10. What is filtration used for? Give an example.

    _____

Draw a comic strip on one of the topics. Ask your teacher for ideas.

Colouring Sheet