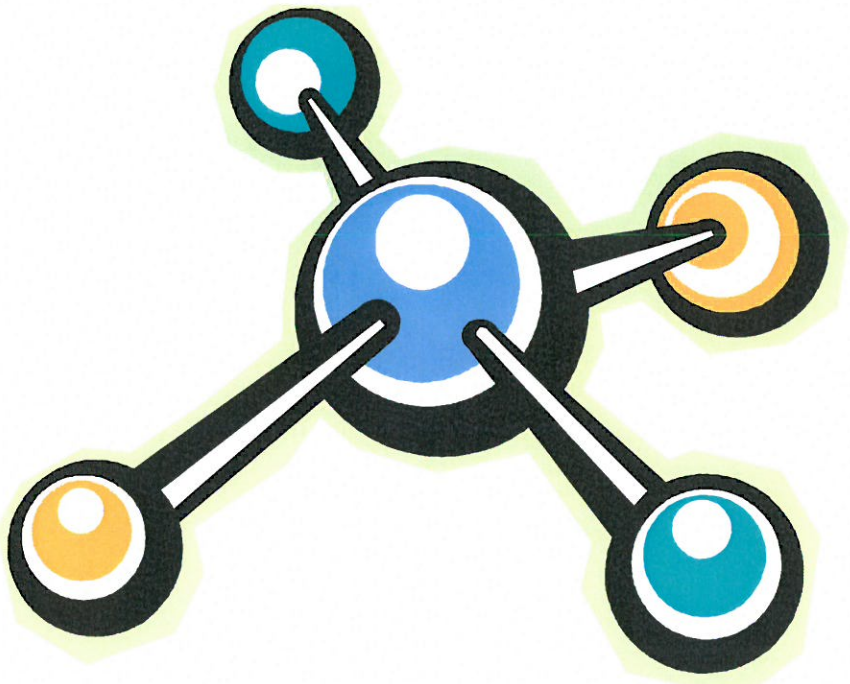
S1 Science

Model of Matter

Name .....

Class.....



CfE Topic 5 Model of matter Learning Outcomes

Having finished this topic

r y g

- ○ I can explain the difference between solids, liquids, and gases using particle drawings.
- ○ I can show through experiment that solids, liquids and gases expand when heated and contract when cooled.
- ○ I can explain particle movement and can use the words diffusion and dissolving correctly.
- ○ I can explain the role energy plays when changes of state take place; particularly in relation to the water cycle.
- ○ I can use the words solute, solvent and solution when talking about dissolving a solid in a liquid.
- ○ I can explain the use of different solvents in everyday use. E.g. nail varnish remover.
- ○ I can show some one how to do a fair experiment and explain the importance of a fair experiment.
- ○ I can use the word saturated to describe a solution correctly.

During this topic

r y g

- ○ I have shared my ideas with others in my group about what our world is made of.
- ○ I have taken part in experiments which show particles can move.
- ○ I have drawn a line graph. With no help.
  With the help of pre drawn axis.
- ○ I have investigated the effectiveness of different solvents.
- ○ I have carried out experiments to test solubility
- ○ I have used information to identify if a substance is soluble or insoluble.

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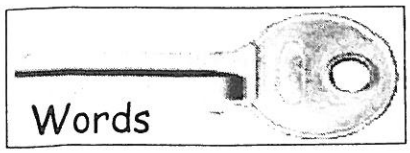


CfE Topic 5 Model of Matter V1

During this topic I must fill in the missing words for each of the key words below.

Condensation
When a gas loses energy and changes to a .....

Contract
When a substance gets ..... . This happens when the substance is cooled.

Diffusion
When particles from one substance ..... through another substance.

Evaporation
When a ..... gains energy and changes into a gas.

Expand
When a substance gets bigger . This happens when the substance is ....

Extraction
Taking something ..... of a substance.

Freeze
To change a ..... into a ..... .

Matter
The word for describing what our world is made of. There are three types of matter. ....., ... , ...

Melt
To change a ..... into a ..... .

Particles
The "bits" that make up a substance. Atoms could be described as ..... .

Saturated solution
A ..... which cannot dissolve any more stuff (solute) at that temperature.

Solute
What dissolves in a ..... to make a solution.

Solution

What is made when a ..... is dissolved in a solvent. Solid sugar dissolved in water would be a sugar solution.

Solvent

The liquid that "stuff" (solute) is ..... in to make a solution.

State

Solid, ... , or ..... .

CfE unit 5 Model of Matter

Lesson 1 "Walk about talk about" question helpsheet.

What is our world made of?

Describe our world.

What science words do we know that describe the things around us?

How do we tell things (matter) apart in our world?

Is all matter the same?

Can matter be changed?

How many ordinary words can your group think of for matter?

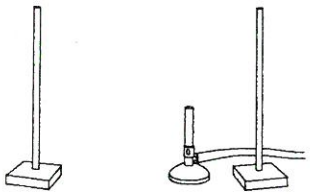
7b Warming solids, liquids and gases

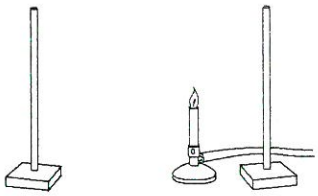
Extra Help

Name _____ Class _____

- Draw in what the wire and weights looked like:

before heating ***after heating***



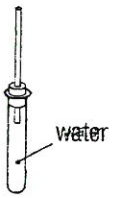


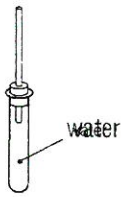
- Look at your results again.
  What do you think happens to electricity cables in hot and cold weather?
  Draw in what the cables might look like:

in winter ***in summer***

- Draw in the water level on the glass tube:

before heating ***after heating***





- Fill in the spaces below using the words in the box.

expanded	hands	warmer	bubbles

I used my h _ _ _ _ _ to warm up the flask. When the air in the flask got w _ _ _ _ _ _ it expanded. When it e _ _ _ _ _ _ _ _ the air came out of the flask down the glass tube. I know this because I saw b _ _ _ _ _ _ _ coming from the end of the glass tube.

- Fill in the spaces below using the words in the box.

smaller	contract	bigger	expand

If something expands it gets b _ _ _ _ _ _ . If something contracts it gets s _ _ _ _ _ _ _ .

If you heat gases, liquids and solids they e _ _ _ _ _ _ . If you cool gases, liquids and solids down they c _ _ _ _ _ _ _ _ .

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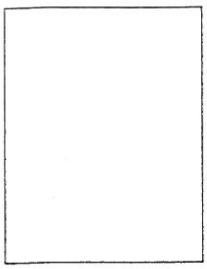
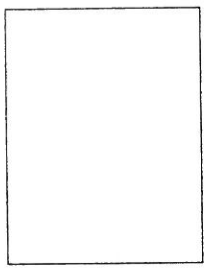
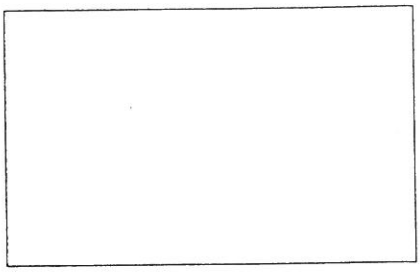
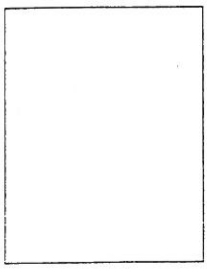
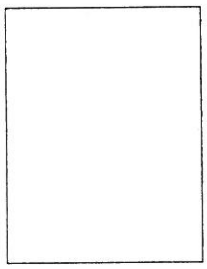
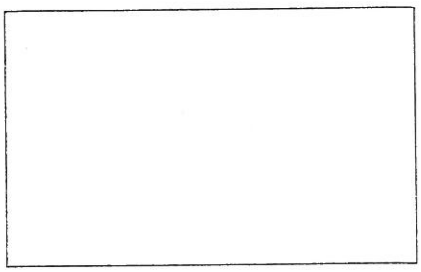
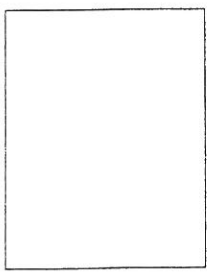
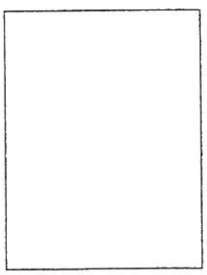
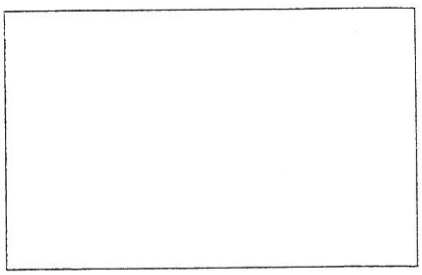
7e Solids, liquids, gases – a summary 2

Help Sheet

Name _____ Class _____

	Description of the substance	Description of the particles
Solids		 
	● _____ ● _____ ● _____	● _____ ● _____
Liquids		 
	● _____ ● _____ ● _____ ● _____	● _____ ● _____ ● _____
Gases		 
	● _____ ● _____ ● _____ ● _____	● _____ ● _____ ● _____

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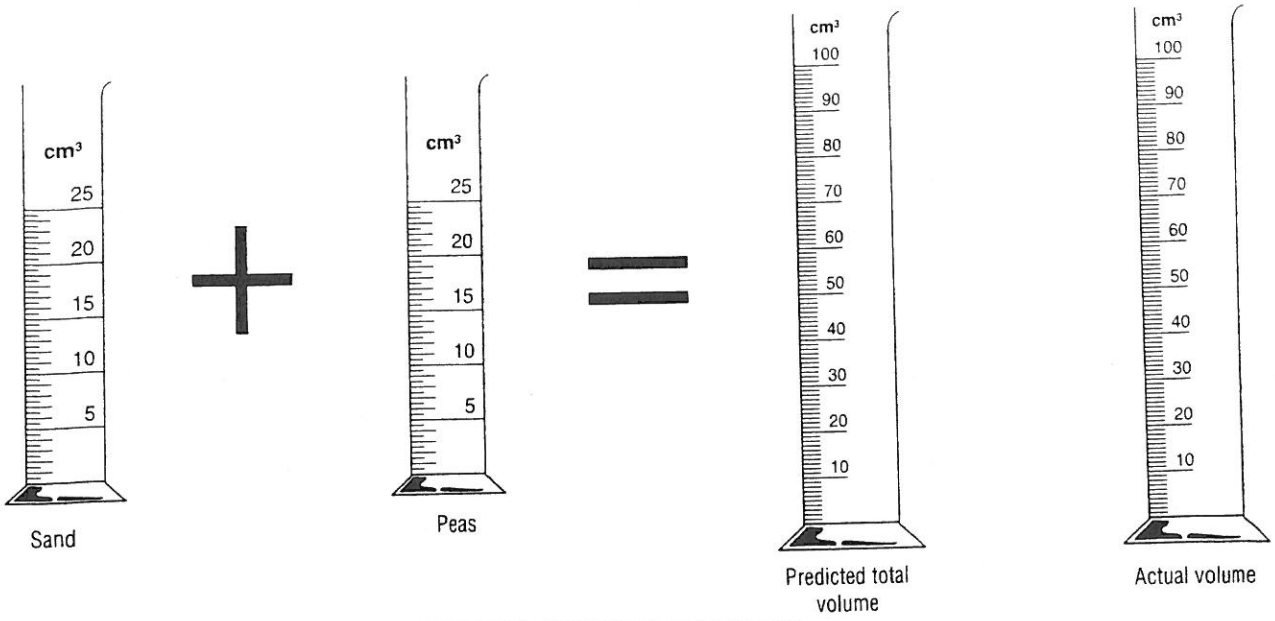
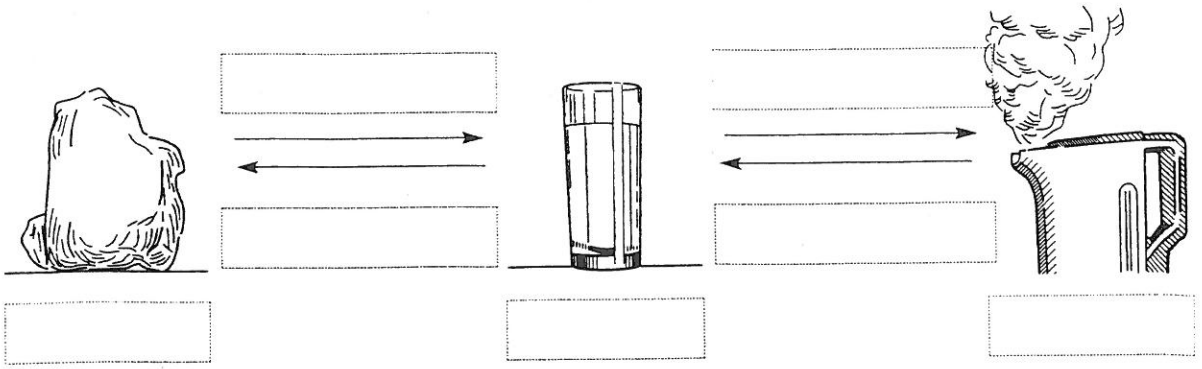
Lost in spaces?



Changing state

boil (or evaporate)	melt	freeze	condense

liquid	solid	gas



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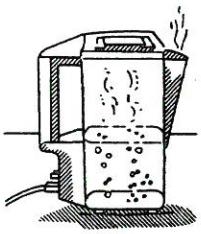
29e Making a cup of tea

Help Sheet

Name _____ Class _____

- Fill in the spaces below using the words in the box.

moving slowly	**moving more quickly**	**steam**	**diffuse**	**soluble**
insoluble	**close together**	**far apart**	**dissolve**	**mix**



Boiling the water

Water particles in cold water are m _ _ _ _ _ _ s _ _ _ _ _ _ around each other and bump into each other.

Water particles in boiling water are m _ _ _ _ _ _ m _ _ _ _ q _ _ _ _ _ _ _ _.

Water particles in s _ _ _ _ _ are f _ _ _ a _ _ _ _ _ and moving very fast.

Brewing the tea

Hot water particles move about quickly and bump into the tea leaves.

The particles in the tea leaves are held c _ _ _ _ _ t _ _ _ _ _ _ _ _.

The moving water particles break some of the tea particles off the leaves. These tea particles d _ _ _ _ _ _ _ _ _ in the water to give it a flavour.

Some particles in tea leaves are i _ _ _ _ _ _ _ _ _ _ and stay in the water as a solid.

Adding milk and sugar

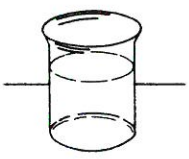
Sugar is s _ _ _ _ _ _ _ in water so it dissolves.

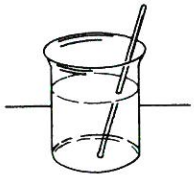
The particles of milk m _ _ _ with the water and tea.

The particles are still moving quickly and bumping into each other. This causes the sugar and milk to d _ _ _ _ _ _ _ throughout the cup.

Dissolving

- Fill in the spaces using the words **solution**, **solvent** and **solute**.





Sugar (s _ _ _ _ _ _) + water (s _ _ _ _ _ _ _) ⟶ sugar (s _ _ _ _ _ _ _ _)

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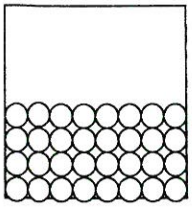
A stain remover

Think about:

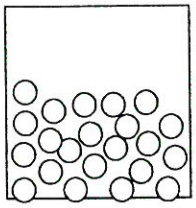
- Which solvent is best at removing stains?
- How will you make it a ***fair test***?

CfE Model of Matter Summary

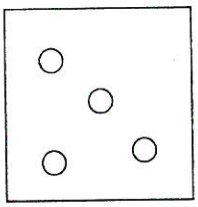
Solid



Liquid



Gas

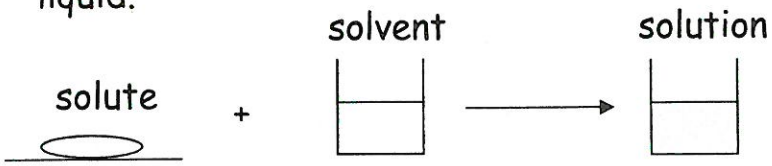


Particles in **solids** are packed c..... together. The particles vibrate according to how much energy they have. Particles in a **liquid** are usually more s..... out, they move ..... as they have more energy. **Gas** particles are far ..... . Their particles have most energy.

When solids, liquids and gases are heated they e..... . The opposite of expansion is .....

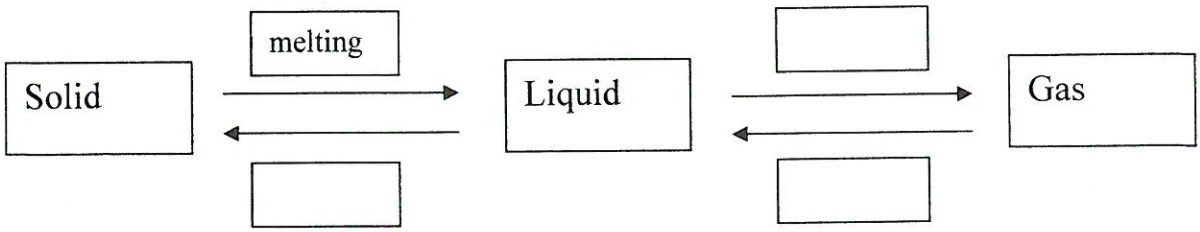
Diffusion is when gas particles .... and fill the space available to them.

A solution is made when a solid liquid or gas **dissolves** in (usually) a liquid.



A saturated solution is one which will not let any more solute dissolve at that temperature.

Melting, Freezing, Boiling (Changing state)



When a solid change to a liquid their particles ..... energy.
When a liquid changes to a ..... the liquid particles take in energy.

Our world contains natural r..... from which we can extract useful .....eg salt from sea water, i..... from iron ore.

Topic: _____ Name: _____

Result: /15

S1/S2 Target Setting Sheet

For each of the following, rate how you feel you performed by ticking the appropriate box.

Behaviour					
Drawing diagrams / graphs					
Homework					
Working with other pupils					
Using sentences					
Doing experiments					
Revising for tests					
Following instructions					

From your responses to the areas listed above pick out two strengths and write down **why** they are strengths.

1.

2.

From your responses to the areas listed above pick out two areas which you think you could improve on.

1.

2.

In this topic I enjoyed _____ .

In this topic I didn't enjoy _____ .

Teacher's signature: Parent's signature: