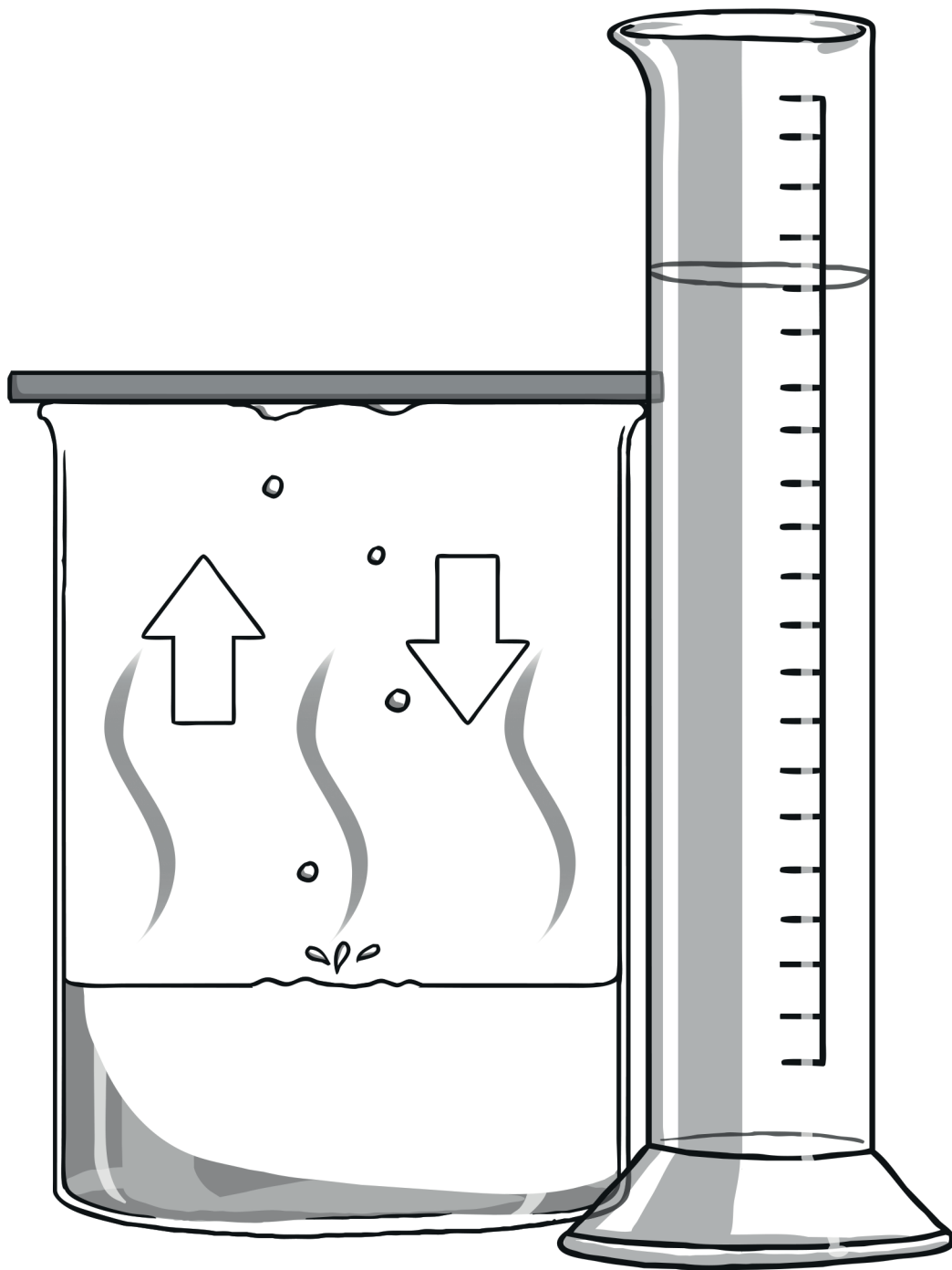


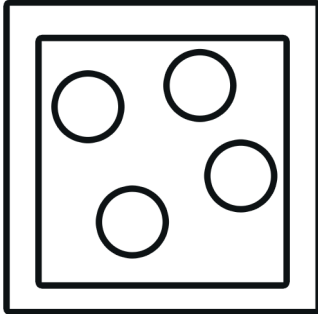
Changing and Separating Materials



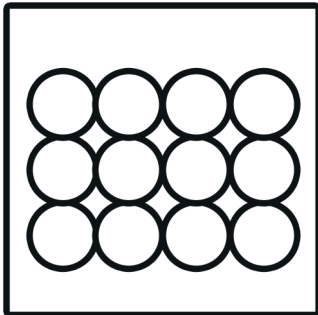
Solid, Liquid or Gas?

Label the diagrams below as solid, liquid or gas.

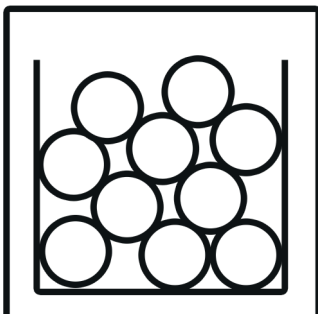
Draw a line from the diagrams to the correct descriptions below.



The molecules are held together with strong bonds. They don't move very easily so they can keep their own shape and size.



The molecules are free to move around. They can spread around an open space quickly and freely. They can't keep their shape unless they are kept in a sealed container.



The molecules have weaker bonds. They can move around slightly so they can flow. They can't keep their shape unless they're in a container.

Soluble or Insoluble

Will the materials in the table below dissolve in water?

Test the materials and complete the table.

Material	Does it dissolve?
sand	
chalk	
flour	
rice	
coffee granules	
sugar	
salt	
gravy	

What does soluble mean?

What does insoluble mean?

Classify the materials you tested into the correct category:

Soluble	Insoluble

Heating: Reversible or Irreversible?

Heat the materials below and complete the tables below.

Material	Description <u>before</u> heating	Will the change be reversible?
chocolate		
wax		
cheese		
plasticine		
butter		
egg		

Material	Description <u>after</u> heating	Was the change reversible?
chocolate		
wax		
cheese		
plasticine		
butter		
egg		

Saturation

Add one spoonful of sugar to some water and stir.

Add one spoonful of salt to some water and stir.

Continue adding spoonfuls of sugar/salt until no more will dissolve.

Record your results below.

How many spoonfuls dissolved in the water?

_____ spoonfuls of sugar dissolved in the water

_____ spoonfuls of salt dissolved in the water

When the water dissolved the sugar it made _____

When the water dissolved the salt it made _____

When water cannot dissolve any more sugar or salt we say that it is _____

The water dissolved more _____ than _____ before it became _____

sugar

salt

solution

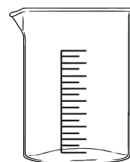
saturated

Temperature and Dissolving

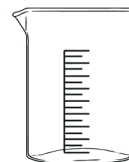
Does the temperature of water affect the speed of dissolving?

Put 3 spoonfuls of sugar in a jar of cold/warm/hot water and time how long it takes to dissolve. Carry out 3 tests, one for each temperature and time how long it takes for the sugar to dissolve.

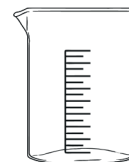
Which temperature water do you think will dissolve the sugar fastest?



cold water



warm water



hot water

cold water __ °C	warm water __ °C	hot water __ °C

Repeat the tests to make the results more reliable.

cold water __ °C	warm water __ °C	hot water __ °C

Find the average time for each temperature.

cold water __ °C	warm water __ °C	hot water __ °C

Conclusion

How does the temperature of the water affect the time it takes the sugar to dissolve?

Separating Mixtures

Draw a line from the process to its correct description.

Evaporating and Condensing

Separates insoluble solids from liquids

Decanting

Separates two liquids which have different 'weights'

Magnetism

Separates different sized solids

Filtering

Separates soluble solids from liquids

Sieving

Separates iron and steel from non-magnetic materials

Write in the process used to separate each mixture.

Mixture	Process
salt + water	
sugar + water	
rice + pasta shapes	
sand + water	
flour + rice	
paperclips + sawdust	

What I Know About Changing and Separating Materials