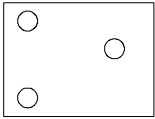
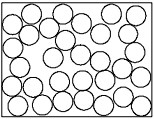


Particle model of solids, liquids and gases/solutions

1. (a) E D A B C 1
- all five letters must be in the correct order*
- (b) to measure volume 1
- accept 'to make sure they used the same volume of water in each beaker'*
accept 'to measure amount of water'
*accept 'to measure the volume of salt **or** sugar'*
*'to measure salt **or** sugar' is insufficient*
- (c) any **one** from 1
- they used the same volume of water
- accept 'they used the same amount of water'*
accept 'they stirred the same number of times'
accept 'they stirred at the same speed'
accept 'they stirred for the same time'
'they stirred it' is insufficient
- (d) (i) any **one** from 1
- you might not get the same mass each time
 - you will not know how much was added
- accept 'you might not get the same amount of salt **or** sugar'*
*accept 'it is not precise **or** a measurement'*
accept answers which suggest that using a spatula is not a precise measurement
- (ii) any **one** from 1
- measure the mass
 - measure the number of grams
- accept 'measure weight' **or** 'weigh it'*
accept 'use a balance or scales'
accept 'use grams'

accept 'use a measuring cylinder'
accept 'level it with a knife'

	(e)	from 1–31 inclusive		1	
					[6]
2.	(a)	very high melting point	<i>answers may be in either order</i>	1	
		good conductor of heat	<i>do not accept 'good conductor'</i>	1	
	(b)	(i) good conductor of electricity	<i>do not accept 'good conductor'</i>	1	
		(ii) can be compressed		1	[4]
3.	(a)	any one from		1	
		• it describes how they will carry out their investigation	<i>accept a description which identifies a factor to be kept constant</i>		
		• it has more information or detail	<i>accept 'the second plan includes apparatus to be used or a measurement or a comparison'</i>		
		• it includes a fair test	<i>accept the converse of any marking point</i>		
		• it includes measurement	<i>accept a statement referring to any of the points in the second plan</i>		
			<i>accept answers which describe a consequence of the test not being fair</i>		
	(b)	to avoid scalding or burning themselves	<i>accept 'it is very hot'</i> <i>accept 'to avoid spilling'</i> <i>credit may be given for answers which, although not accurate, imply that the water is at a high temperature eg 'it is nearly boiling'</i>	1	
	(c)	any one from		1	
		• it allowed them to compare the times for different tea bags	<i>accept 'as soon as it has gone they stopped timing'</i>		
		• it told them when the measurement was completed	<i>accept 'so they know how long it takes'</i> <i>accept 'the cross let them see when the tea produced by the 3 bags was the same'</i>		
		• so they knew when to stop	<i>accept 'so they could stop at the right time'</i> <i>accept 'it tells them when they have dissolved the same'</i> <i>answers must indicate that the cross shows when the teas are the same colour or allows a measurement to be made</i> <i>'it made it fair' is insufficient</i>		
	(d)	(i) results ✓		1	
			<i>if more than one box is ticked, award no mark</i>		
		(ii) triangle circle square	<i>accept a drawing of a triangle, a circle and a square</i> <i>all three answers are required in the correct order</i>	1	[5]
4.	(a)	(i) a mixture ✓		1	

		<i>if more than one box is ticked, award no mark</i>	
	(ii) a compound ✓		1
		<i>if more than one box is ticked, award no mark</i>	
	(iii) any one from		1
	<ul style="list-style-type: none"> • they are denser than the liquid 	<i>accept 'it is heavier than the liquid or the paint'</i> <i>accept 'the solid particles are more dense or heavier or too heavy'</i> <i>accept 'the solid is denser'</i> <i>do not accept 'solid particles are heavy' without a comparison or qualifier eg 'too heavy'</i>	
	<ul style="list-style-type: none"> • the liquid is less dense than the solid 	<i>accept 'the liquid is less dense' or 'the liquid is lighter'</i>	
	(b) any one from		1
	<ul style="list-style-type: none"> • it is insoluble in water • water is not a solvent for the paint • it dissolves in white spirit • white spirit is a solvent for the paint 		
		<i>'it is waterproof' is insufficient</i>	
			[4]
5.	(a) tar		1
	(b) (i) any one from		1
	<ul style="list-style-type: none"> • to cool the vapour • to condense the vapour 	<i>accept 'energy is transferred from the water vapour to the ice'</i>	
	(ii)		2
			
	a random arrangement of particles most of which do not touch	a random arrangement of particles most of which touch each other	
	(c) carbon dioxide	<i>accept 'CO₂'</i>	1
			[5]
6.	(a) chemical	<i>accept 'potential' or 'stored'</i>	1
	any two from		2
	<ul style="list-style-type: none"> • sound • thermal • kinetic • light 	<i>accept 'heat'</i> <i>accept 'movement'</i>	

- (b) any **two** from 2
- they gained energy *accept 'they move more quickly'*
 - they hit the lid with greater force *accept 'they hit the lid harder'*
 - they hit the lid more often *accept 'the pressure inside the tin increased'*
- accept 'the molecules are closer together'*
- accept 'more molecules are present'*
- (c) (i) oxygen 1
accept 'O₂'
- (ii) any **one** from 1
- carbon dioxide *accept 'CO₂'*
 - water vapour *accept 'H₂O'*
- accept 'carbon monoxide'*
- (d) any **one** from 1
- it was quieter
 - the lid didn't move as high *accept 'the lid was not pushed off'*
 - less energy released *accept 'it does not work'*

[8]