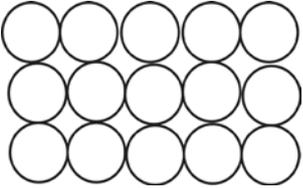
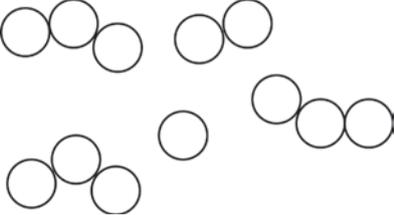
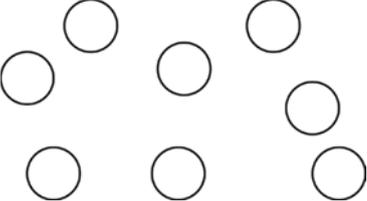




The properties of the different states of matter according to the kinetic theory of matter can be summarised as follows:

Solid	Liquid	Gas
		
Consists of small particles.	Consists of small particles.	Consists of small particles.
Only vibrate.	Move randomly, but restricted.	Move freely.
Very small spaces between the particles; this explains why solids cannot be compressed.	Spaces slightly larger than in solids; this explains why liquids can only be compressed slightly.	Large spaces between the particles; this explains why gases can be compressed.
Strong attractive forces result in a definite fixed shape.	Attractive forces are reasonably strong. Particles stay together, but are able to slide over each other, allowing the liquid to flow. The liquid fills the base of the container.	Very small attractive forces. The gas particles are far apart and so do not exert significant forces on each other. The particles move freely and this results in the gas molecules filling a container.
Particles only vibrate within the crystal lattice due to the strong attractive forces.	Collisions occur, causing pressure inside the liquid. Diffusion takes place if two liquids are added together.	Collisions occur, causing pressure inside the gas. Diffusion takes place if two gases are added together.



Exercise 4

Date:

1. Complete the following table by giving the state of the substance.

Property	Solid/liquid/gas
Restricted movement.	
Can be compressed significantly.	
Diffusion takes place.	
Crystal lattice	
Very small spaces between the particles	
Only vibrates	

2. Explain what is meant by diffusion, using the kinetic theory of matter.

3. What is Brownian motion?

4. Which properties of matter can be explained by the kinetic theory of matter?

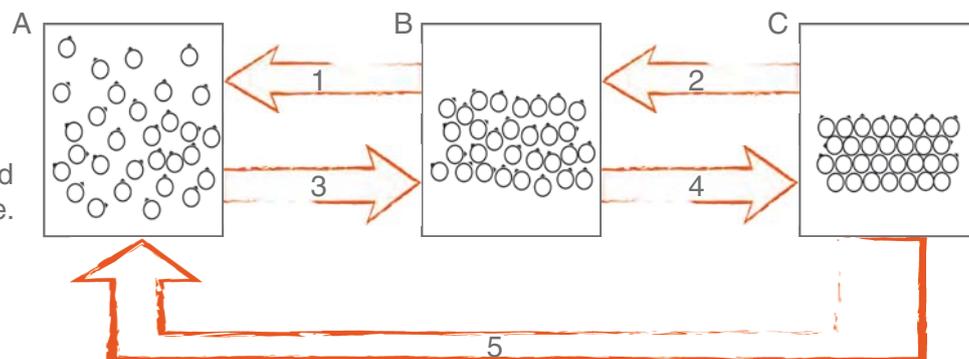
5. Define the freezing point of a substance.

6. Jason and Monique did experiments to see whether physical or chemical changes had taken place in certain substances. Study the results that they obtained and complete the table.

Experiment	Observations during experiment	Observations after experiment	Physical or chemical change
Ice is heated.	Ice melts to form water.	6.1	6.2
Methylated spirits is heated carefully.	Purple liquid boils quickly and suddenly bursts into an orange flame.	Nothing visible remains after the flame dies down.	6.3
Bread is toasted.	Surface becomes brown. Distinctive smell	6.4	6.5
Copper carbonate solution is heated.	Blue-green solution releases a gas and the colour changes.	6.6	6.7

7. Study the following diagram. Indicate:

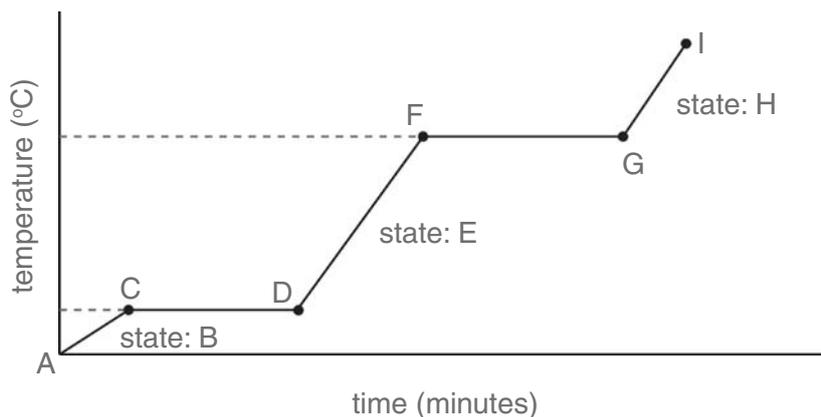
- the state of the particles and
- the process that led to the state change.





- A: _____ 1. _____ 4. _____
 B: _____ 2. _____ 5. _____
 C: _____ 3. _____

8 Ice blocks are heated. The following graph of temperature versus time is drawn. Write down the letter(s) corresponding to the statements made below.



- 8.1 The liquid absorbs energy without boiling. _____
 8.2 Vapour _____
 8.3 Ice begins to melt. _____
 8.4 Temperature of the gas increases. _____
 8.5 The water boils. _____
 8.6 Ice (solid) _____
 8.7 Water (liquid) _____
 8.8 Steam's temperature increases. _____

9 In the table below, describe the property given for each state of matter.

Property	Solid	Liquid	Gas
Movement of particles	9.1	9.2	9.3
Shape	9.4	9.5	9.6
Spaces between particles	9.7	9.8	9.9

