Activity book pages 33- 37

CHAPTER 4

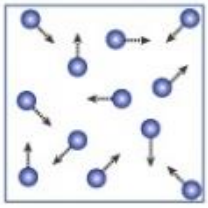
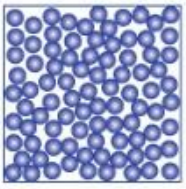
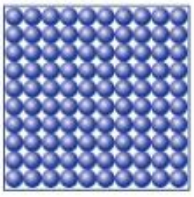
States of Matter

Activity 4A Particle Models

page 33

Skill: Use a model to illustrate and explain a scientific idea

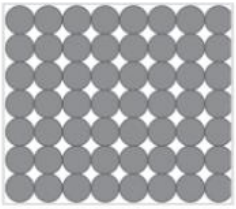
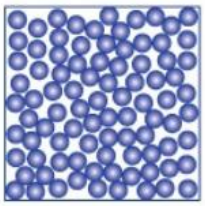
a Using the descriptions of the particles below, identify each state of matter and draw the particle model.

Descriptions	State	Particle model
Particles are far apart and randomly arranged. Particles move quickly in all directions.	gas	
Particles are packed not so tightly together and are randomly arranged. Particles move around each other.	liquid	
Particles are closely packed together in a regular pattern. Particles vibrate about fixed positions.	solid	

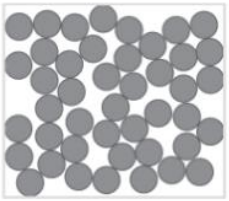
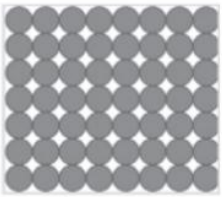
In **b** and **c** below, draw the particles in their new state in the box provided. Record the new state of matter and your observations in the table.

b Your teacher will heat some ice over a gas burner.

b Your teacher will heat some ice over a gas burner.

Original state	New state	Observations
 solid	 liquid	The ice changed from solid to liquid

c Your teacher will place a bottle of water in the freezer.

Original state	New state	Observations
 liquid	 solid	The liquid water has turned into solid ice. 

Name the processes above:

Process in **b**: **melting**

Process in **c**: **freezing**

35-36

Materials:
Water Two beakers Ice cubes

Method

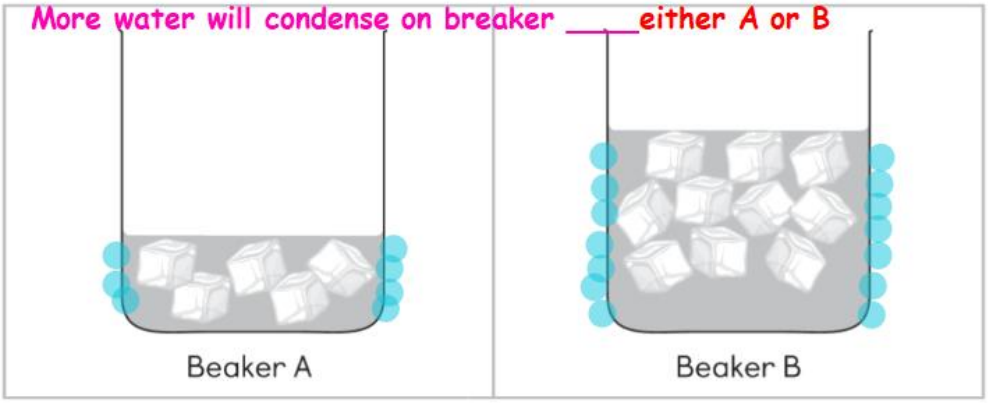
1 Pour an equal amount of water at room temperature into each of the two beakers. Label the beakers A and B.

2 Put five identical ice cubes into the water in beaker A. Put ten identical ice cubes into the water in beaker B. independent variable

3 Leave both beakers to stand for 15 minutes.

4 In the boxes below, predict and draw what you will observe on the outside of each beaker after 15 minutes.

More water will condense on breaker ____either A or B



Beaker A Beaker B

5 What process caused the observation in step 4? How does it happen?

The process is known as condensation. As water vapour in the air comes into contact with the cold glass, it turns into a liquid.

6 State the independent variable in this investigation.

The number of ice cubes or the temperature

7 State the dependent variable in this investigation.

The amount of water that condensed outside the beaker

8 State three control variables in this investigation.

1. volume of water **2. the surrounding temperature**

3.time given for condensation to happen

9 Circle the correct word below to conclude the investigation.

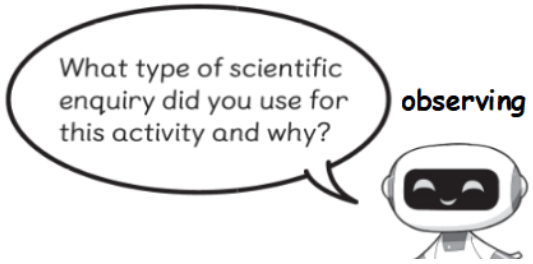
The (**warmer / colder**) the surface of the beaker of water, the greater the rate of condensation.

10 How accurate was your prediction based on the results of your investigation?

It was accurate. if the prediction was B

It was not accurate if the prediction was A

fair testing



observing over time

Word Whizz

Unscramble the words below and write the answers in the blanks.
Use the clues to help you.

1 A state of matter in which particles are freely moving in all directions

a g s u o e s — gaseous

2 A process by which a liquid gains heat and changes into a gas

a v i a t o r o p e n — evaporation

3 A temperature range of around 20°C to 22°C

o r o m e m t p r a e r e t u

room temperature

4 A factor that is measured in an experiment

p e d n d e n e t a r i a v b l e

dependent variable

5 A process by which a gas loses heat and changes into a liquid

c a n n o t n o i s e d

condensation

6 A factor that is investigated in an experiment

i d e n P e e n t d n v a l e r i b a

independent variable