1 Draw lines to match the start of the sentences with the correct endings.

A hypothesis is …	… air particles hitting a surface.
A theory is …	… the particle theory.
The theory that explains air pressure is called …	… a space that contains no particles of any substance.
Our current theory of matter states that all matter …	… move fastest and have the largest spaces.
The particles in gases …	… it is crushed by the air particles hitting the outside.
Air pressure is caused by …	… an initial idea used to explain an observation.
When the air is removed from inside a metal can …	… is made up of tiny particles that are moving all the time.
A vacuum is …	… a collection of tested ideas that explain lots of observations.

You are watching TV and you can smell food cooking. The smell has spread by diffusion.

(a) Use particle theory to explain why diffusion happens.

_____

(b) Use particle theory to explain why diffusion does **not** happen in solids.

_____

(c) Does diffusion happen faster in a liquid or a gas? Tick **one** box.

- ☐ **A** In a gas, because particles in a gas move faster than particles in a liquid.
- ☐ **B** In a gas, because particles in a liquid move faster than particles in a gas.
- ☐ **C** In a liquid, because particles in a liquid move faster than particles in a gas.
- ☐ **D** In a liquid, because particles in a gas move faster than particles in a liquid.

LIVEWORKSHEETS

1 If you put a drop of coloured liquid into a glass of cold water and leave it to stand without stirring, the colour spreads through the water. What is this called?

- **A** divination
- **B** dissolving
- **C** dissuasion
- **D** diffusion

2 Which of these changes involve the mixing of particles of different substances?

- **A** water boiling in a kettle
- **B** chocolate melting in your hand
- **C** particles of dust moving about in the air
- **D** perfume being smelled across a room

3 Gases spread out and mix together more quickly than liquids because gas particles:

- **A** are lighter.
- **B** are heavier.
- **C** are further apart.
- **D** are closer together.

4 If you put some sugar into cold water and leave it *without stirring*, the sugar will eventually dissolve and mix with the water. This happens because:

- **A** particles are extremely small.
- **B** particles in a liquid are always moving.
- **C** water particles are bigger than sugar particles.
- **D** sugar particles are bigger than water particles.

1 Pressure in a container full of gas is caused by:

- **A** particles sticking to the walls.
- **B** particles bumping into the walls.
- **C** particles sticking to each other.
- **D** particles falling to the bottom of the container.

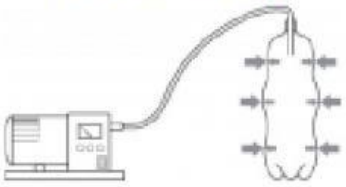
2 You can increase the pressure in a container full of gas by:

- **A** making the container smaller.
- **B** making the container bigger.
- **C** making the container heavier.
- **D** taking some of the gas out.

3 If you put more gas into a container the pressure increases because:

- **A** the particles all cool down.
- **B** there is more space for the particles to move around.
- **C** more particles fall to the bottom of the container.
- **D** there are more particles, so there are more collisions with its walls.

4 The air is being sucked out of this bottle. Why is it collapsing?



- **A** There is more pressure inside than outside.
- **B** There is more pressure outside than inside.
- **C** There are more particles inside it.
- **D** Air particles are sticking to the walls and pulling them in.

LIVEWORKSHEETS