

# The Particle Model

1) Match up the picture to the correct state of matter:



Solid

Liquid

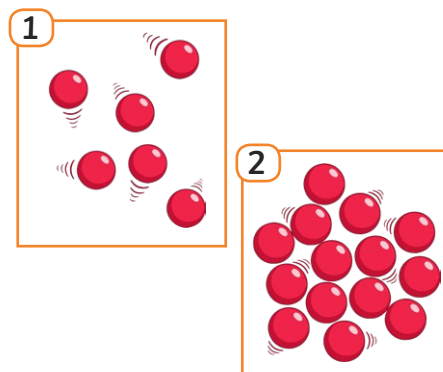
Gas

2) Next to each statement write whether it is true (T) or false (F):

- In a solid, the particles are close together. \_
- Liquids can be squashed (compressed). \_
- Solids, liquids and gases can all be poured, and flow. \_
- The particles in a gas are free to move around in all directions. \_
- Solids and liquids are dense – they have a lot of particles in a small volume. \_
- Gases can be squashed (compressed) easily because they have spaces between the particles. \_

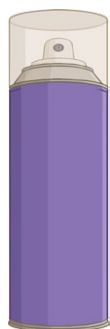
3) Density

- Which picture has the highest density (mass per volume)? \_
- Which picture has the lowest density (mass per volume)? \_

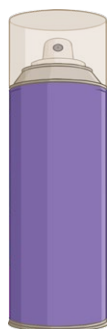


4) Phoebe leaves a can of hairspray on the windowsill on a sunny day. Draw what is happening inside the container in terms of the particles in the morning compared to midday:

Morning:



Midday:



**Challenge:** Racing car tyres are not inflated to the correct pressure before a race. Why?  
**Hint:** Think about what happens during the race.

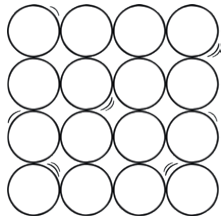
## Learning Objectives:

- I can identify the arrangement of particles in solids, liquids and gases.
- I can identify the properties of solids, liquids and gases.
- I can compare densities in solids, liquids and gases.
- I can show how temperature affect gas pressure as a diagram.

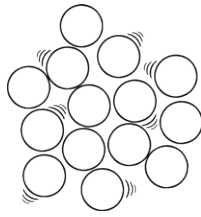


# The Particle Model Answers

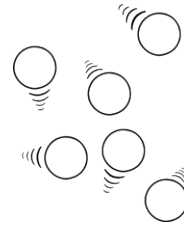
1)



solids



liquids



gases

2) a. True

b. False

c. False

d. True

e. True

f. True

3) Density

a) Which picture has the highest density (mass per volume)? **Liquid picture number 1**

b) Which picture has the lowest density (mass per volume)? **Gas picture number 2**

4) Morning: **Student should draw the particles as being far apart, in motion and colliding with the walls of the hairspray can.**

Midday: **There should be a noticeable increase in the movement of the particles and more colliding with the walls of the hairspray can.**

**Challenge:** Racing car tyres are not inflated to the correct pressure before a race. Why? Hint: Think about what happens during the race?

**As the racing car moves around the track, the tyres get warm (friction). This gives the gas particles inside of the tyre more kinetic energy. Therefore the gas particles collide more frequently and with more force against the walls of the tyre. If the tyres were inflated fully, then gained more kinetic energy it could cause the tyre to explode and burst.**

