Particle Model of Matter

Past Paper Questions AQA Physics GCSE

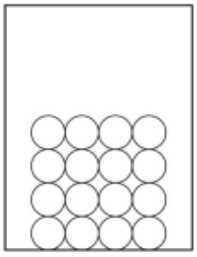
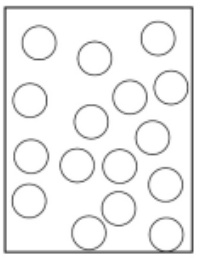
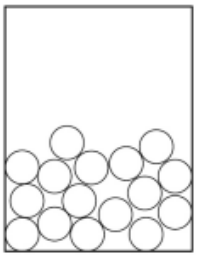
01.

A student investigated the three states of matter.

The arrangement of particles in the three states of matter are different.

Draw **one** line from each particle arrangement to the state of matter.

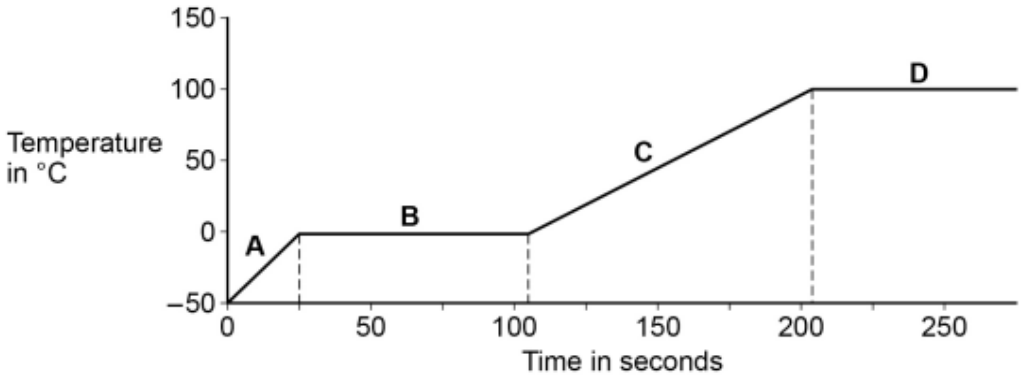
[2 marks]

Particle arrangement	State of matter
	Solid
	Liquid
	Gas

A large lump of ice was heated and changed state.

Figure 1 shows how the temperature varied with time.

Figure 1



02.

Which part of **Figure 1** shows when the ice was melting?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

03.

Which part of **Figure 1** shows when the water was boiling?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

04.

Which property of the water particles changes as the temperature of the water increases?

[1 mark]

Tick (✓) **one** box.

The kinetic energy of the particles ☐

The mass of each particle ☐

The number of particles ☐

05.

Calculate the thermal energy needed to melt 0.250 kg of ice at 0 °C.

specific latent heat of fusion of water = 334 000 J/kg

Use the equation:

thermal energy = mass × specific latent heat

[2 marks]

Thermal energy = _____ J

06.

Complete the sentence.

Choose the answer from the box.

[1 mark]

condenses	**evaporates**	**ionises**	**sublimates**

A substance is heated and changes directly from a solid to a gas.

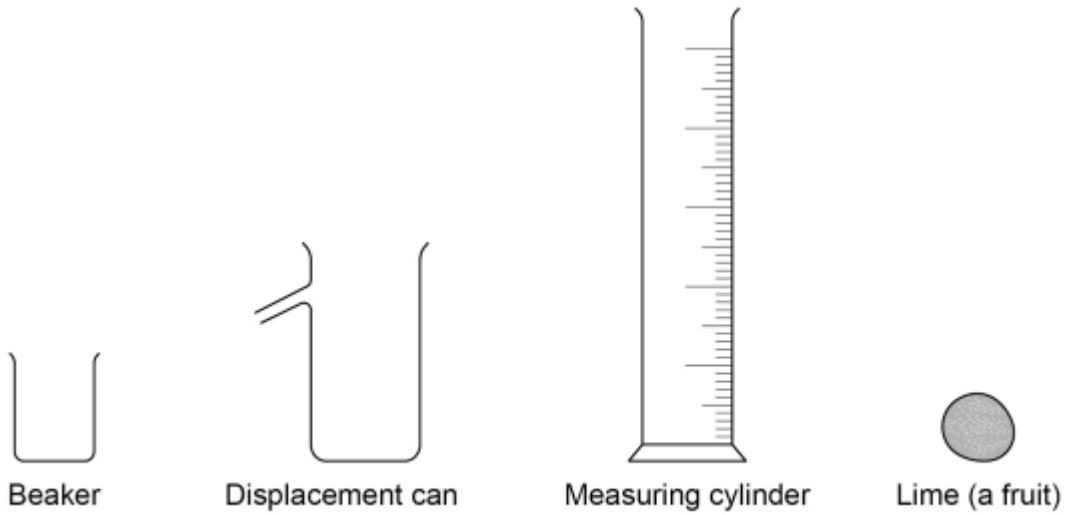
The substance _____ .

A student investigated the density of different fruits.

To determine the density of each fruit, the student measured the volume of each fruit.

Figure shows the equipment the student could have used.

Figure



07.

Describe a method the student could have used to measure the volume of the lime.

[4 marks]

08.

The student measured the volume of each fruit three times and then calculated a mean value.

The three measurements for a grape were

2.1 cm^3 2.1 cm^3 2.4 cm^3

Calculate the mean value.

[2 marks]

Mean value = _____ cm^3

09.

What are the advantages of taking three measurements and calculating a mean value?

[2 marks]

Tick (✓) **two** boxes.

- Allows anomalous results to be identified and ignored. ☐
- Improves the resolution of the volume measurement. ☐
- Increases the precision of the measured volumes. ☐
- Reduces the effect of random errors when using the equipment. ☐
- Stops all types of error when using the equipment. ☐

10.

The mass of an apple was 84.0 g.

The volume of the apple was 120 cm^3.

Calculate the density of the apple.

Give your answer in g/cm^3.

Use the equation:

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

[2 marks]

Density = _____ g/cm^3