

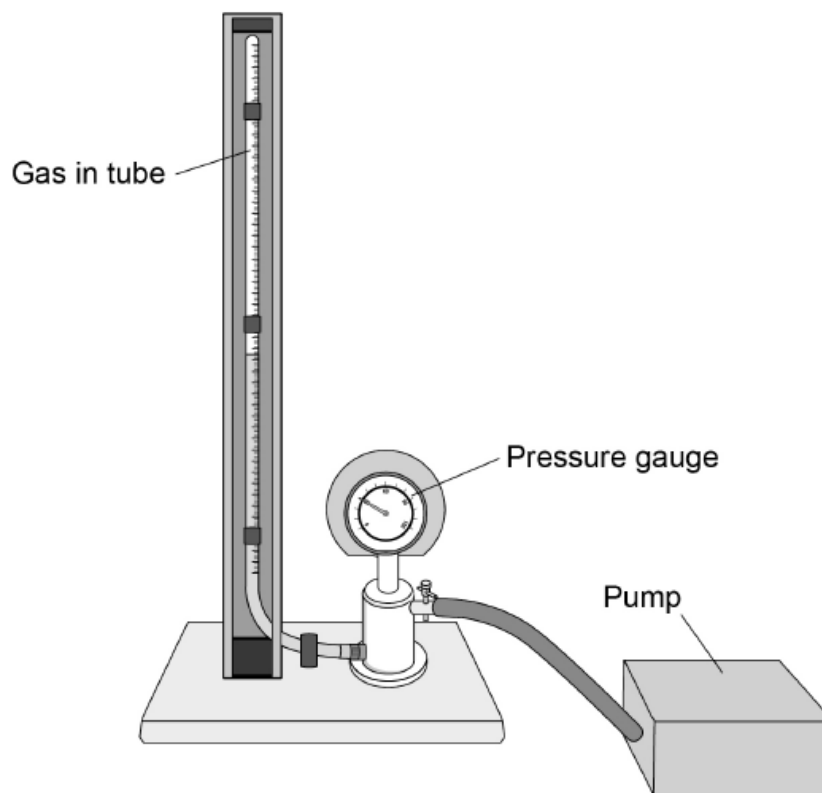
Particle model and pressure – GCSE Physics Paper 1

1. No.7

07

A teacher demonstrated the relationship between the pressure and the volume of a fixed mass of gas at a constant temperature.

Figure 9 shows the equipment used.

Figure 9

07.1

Complete the sentence.

Choose the answer from the box.

[1 mark]

circular paths

random directions

the same direction

Particles in a gas move in _____.

07.2

Complete the sentence.

Choose the answer from the box.

[1 mark]

a constant speed

a constant velocity

a range of speeds

Particles in a gas move with _____.

0 7 . 3 Table 6 shows some of the results.

Table 6

Pressure in kPa	Volume in cm ³
300	10
200	15
150	20
120	25
100	30

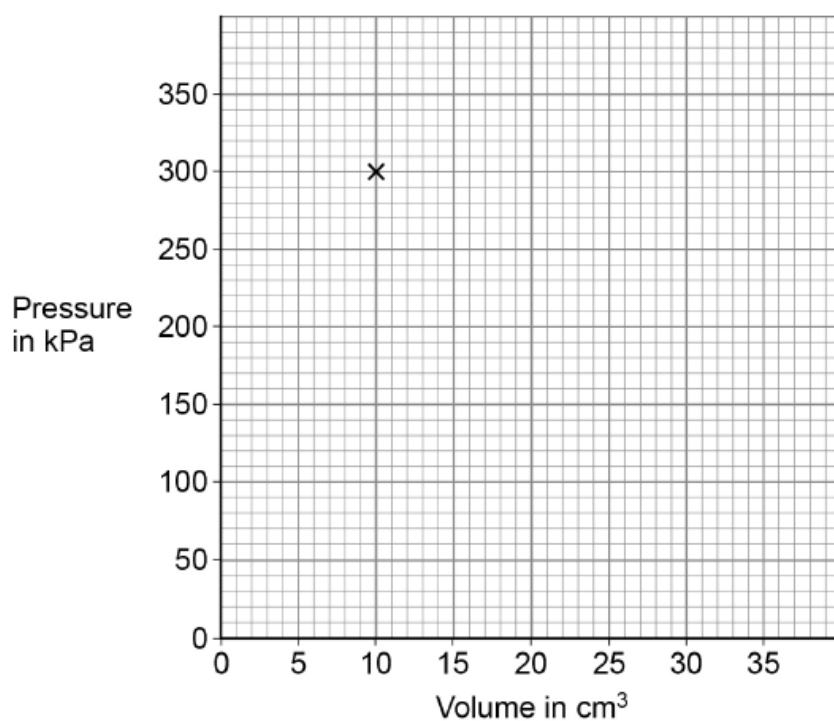
Complete **Figure 10**. The first point has been plotted for you.

You should:

- plot the points from **Table 6**
- draw the line of best fit.

[3 marks]

Figure 10



07.4

The relationship between the pressure and the volume of a gas is given by the equation:

$$\text{pressure} \times \text{volume} = \text{constant}$$

Calculate the constant when the pressure of the gas was 300 kPa.

Use Table 6.

[2 marks]

Constant = _____ kPa cm³

07.5

When the volume of the gas increases, the pressure in the gas decreases.

The temperature of the gas stays the same.

How does increasing the volume affect each of the following quantities?

[3 marks]

Tick (✓) **one** box in **each** row.

Quantity	Decreases	Stays the same	Increases
Mean time between collisions of the particles with the tube			
Mean distance between the particles			
Mean speed of the particles			

2. No.9

0 9

Figure 9 shows air being pumped into a car tyre.

Figure 9



0 9 . 1

Complete the sentence.

[1 mark]

Air particles in the tyre move quickly in _____ directions.

0 9 . 2

When the tyre is at the correct pressure, pumping more air into the tyre causes the pressure to increase further.

The volume and temperature of the air in the tyre do **not** change.

Explain why the pressure increases as more air is pumped into the tyre.

[2 marks]

0	9	.	3
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The air pressure in a car tyre changes if the temperature of the air in the tyre increases.

Explain why.

[4 marks]
