Mark schemes

Q1.

(a) the volume decreased

1

(b) the distance decreased

1

(c) the frequency of collisions increased

1

(d) the air pressure increased

1

(e) the mean speed of the particles increases

1

(f) $0.0130 = 2.60\times10^{-8} \times 1010 \times \Delta\theta$

1

$$\Delta\theta = \frac{0.0130}{(2.60 \times 10^{-8} \times 1010)}$$

1

$\Delta\theta = 495$ (°C)

allow a correct answer given to more than 3 s.f.

1

[8]

Q2.

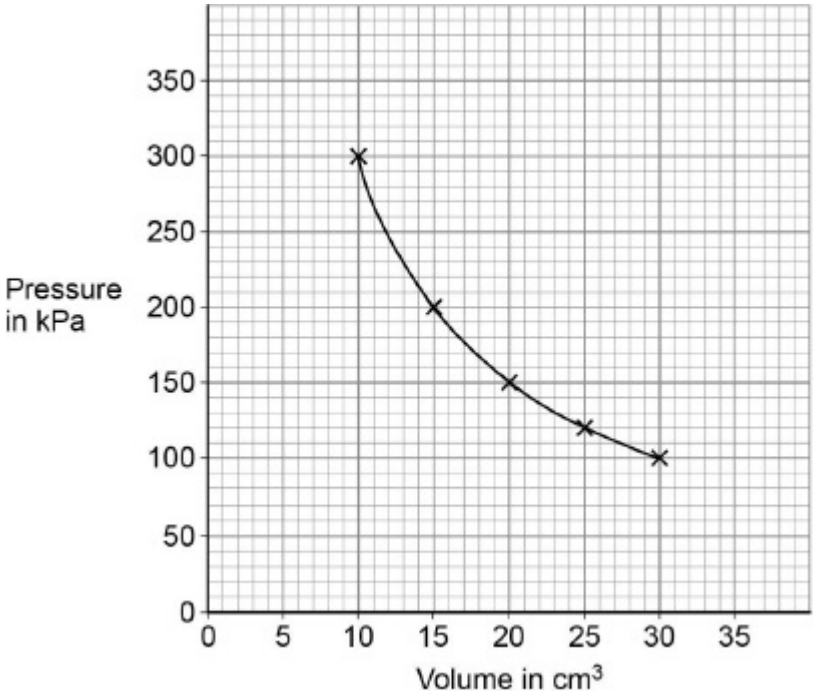
(a) random directions

1

(b) a range of speeds

1

(c)



2 marks for plotting 4 points correctly

1 mark for plotting 2 or 3 points correctly

1 mark for line of best fit

3

(d) 300 × 10 = constant

allow use of any correct pair of values

1

constant = 3000

1

(e)

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		✓	

additional tick in a row negates the mark for that row

3

[10]