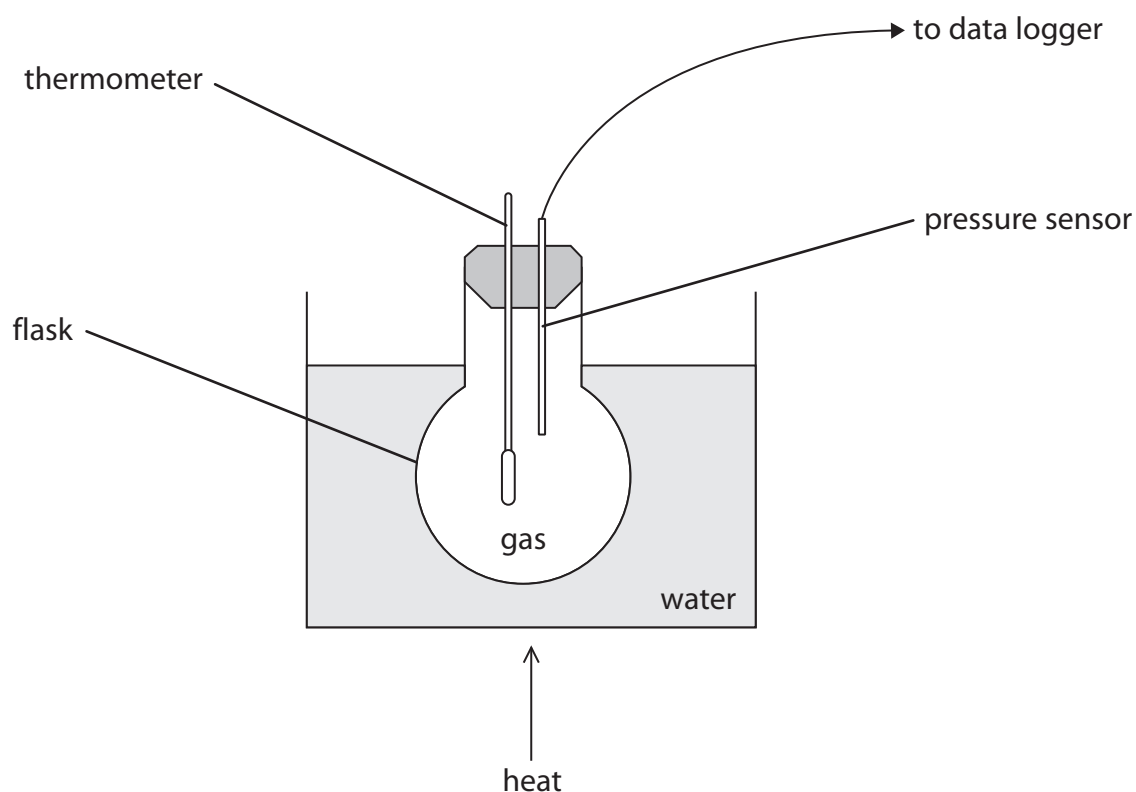


- 4 The diagram shows apparatus used to investigate how the pressure of a gas varies with temperature.



- (a) The volume of the gas is kept constant by the flask.

The volume of the gas is a control variable.

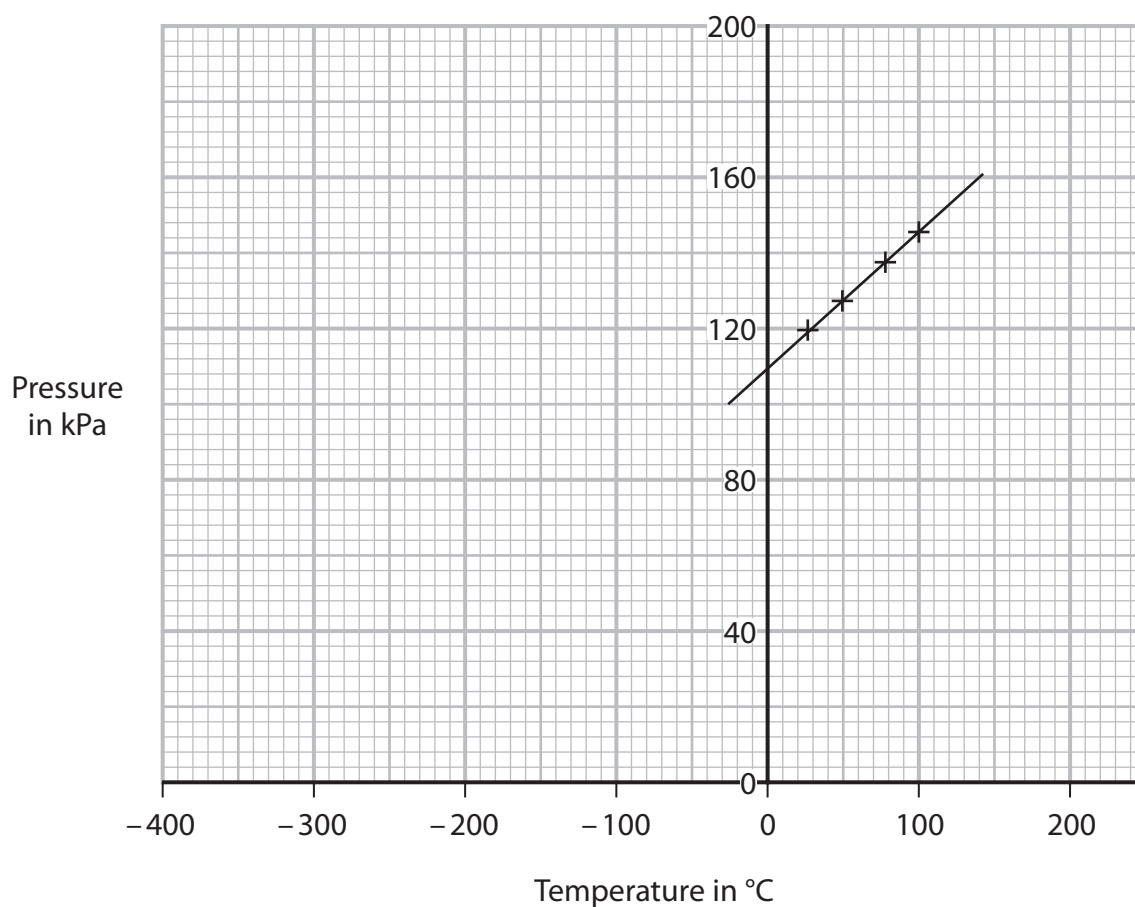
State why it is important to keep a control variable constant throughout the investigation.

(1)



- (b) The pressure of the gas changes as its temperature increases.

The graph shows the results.



- (i) Explain how these results show that there is a linear, but not proportional, relationship between the pressure of the gas and its temperature in °C.

(2)

- (ii) Use the graph to determine the value for absolute zero.

(2)

temperature = °C



(iii) Explain how the pressure of the gas changes as its temperature increases.

Include ideas about particles in your answer.

(3)

(c) The pressure of the gas is 112 kPa when its temperature is 35 °C.

The gas is heated to 340 °C using some different apparatus.

(i) Calculate the pressure of the gas when its temperature is 340 °C.

Assume the gas has a constant volume.

(4)

pressure = kPa

(ii) The volume of the gas is constant in the investigation.

Give the name of the other quantity that must be constant for the calculation to be correct.

(1)

(Total for Question 4 = 13 marks)

