

## Gas laws

### Question 1

An investigation is carried out to determine the relationship between the pressure and temperature of an enclosed gas. The following results were obtained from the investigation.

| Pressure (kPa) | Temperature (°C) |
|----------------|------------------|
| 100            | -151             |
| 200            | -29              |
| 300            | 93               |
| 400            | X                |

1.1 Name the gas law being investigated

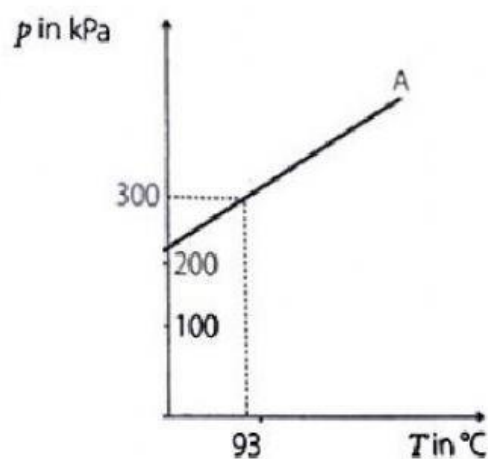
1.2 Name two variables that need to be controlled in this investigation (write answer in singular, not plural form)

\_\_\_\_\_ of gas

\_\_\_\_\_ of gas

1.3 The graph is drawn of pressure vs temperature and the graph is then extrapolated back to where it meets the x-axis.

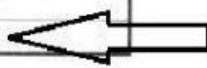
What is the value of the kelvin temperature of the gas when the pressure is zero



1.4 Calculate the value of x in the table, in Kelvin and in °C.

=                      K  
=                      °C

| Pressure (kPa) | Temperature (°C) |
|----------------|------------------|
| 100            | -151             |
| 200            | -29              |
| 300            | 93               |
| 400            | X                |



1.5 How will the gradient of the graph be affected if a greater mass of gas is used.

INCREASE      DECREASE      REMAIN THE SAME

## Question 2

A gas occupies a volume of 200 dm<sup>3</sup> at a pressure of 3kPa.

If the pressure is increased to 3,6 kPa, calculate the volume the gas will occupy

=                      dm<sup>3</sup> (2 decimal places)

## Question 3

0.44g of a certain gas was used to determine the relationship between the volume and the temperature of the gas.

| Volume (cm <sup>3</sup> ) | Temperature (°C) | Temperature (K) |
|---------------------------|------------------|-----------------|
| 35                        | -73              | A               |
| 70                        | 127              | B               |
| 105                       | 327              | C               |
| 140                       | 527              | D               |
| 250                       | X                |                 |

3.1 Name the law that is being investigated here.

3.2 Convert the first four temperatures given in the table to Kelvin temperatures.

A = K

B = K

C = K

D = K

3.3 Calculate the value of X in °C

= °C (2 decimal places)

#### Question 4

50g of a gas occupies a volume of 30 000dm<sup>3</sup> at a pressure of 202,9 Pa and at a temperature of 20°C. Identify what the gas is, by using suitable calculations.

**(This is a two-step calculation. Write the answer to the first step in the first block and final answer in the last blocks.)**

**Leave no spaces between the values and the unit**

= (1 decimal place)

= (0 decimal places)

Thus the element symbol is =