

# N5 will increase. the kelvin scale changes

[Science](#), [Physics](#)



N5 Physics assignment Nathan Harbinson Aim To investigate the correlation between the pressure and volume in a gas when the mass is constant.

In order to find this we would need to alter either pressure or volume. Underlying physics Gases are built up of several particles. These particles are in a state of constant motion.

Because of this, they collide with the walls of their container. These collisions create pressure. This means that when the volume is altered the pressure will also change.

Pressure can be measured using  $P = \frac{F}{A}$  where  $P$  = pressure Pa,  $F$  = force N,  $A$  = area  $m^2$ . Using this information we know that when area is decreased the pressure will increase and when force is increased the pressure will increase. The Kelvin scale changes 0 degrees Celsius into -273 degrees kelvin. This theory allows us to know that the volume of a gas is 0 at -273K this is useful as it allows us to work out the volume of a gas using temperature. Method A fixed mass was trapped in tube with oil at the bottom.

Along the tube was a scale showing the volume inside. Then using a foot pump we decreased the volume and took a measurement of the pressure inside the tube using a pressure gauge. We did this for five values of volume and wrote a table of results.

Air Volume $cm^3$	Pressure 1 (kPa)	Pressure 2 (kPa)	Pressure 3 (kPa)	Average Pressure (kPa)	$1/v$
10	256	253	259	259	0.1
15	180	180	180	180	0.07
20	148	130	130	130	0.05
25	109	100	91	100	0.04
30	80	83	77	80	0.03

Using these results we plotted and drew a straight line graph. See next page

for second source graph.

Analysis This

graph shows that when volume decrease the pressure increase and vice-versa.

This would suggest that the pressure and volume in a fixed mass are inversely proportional. My second Source is also a straight line graph going through the origin. It shows us that volume and pressure are also inversely proportional. Conclusion The aim of my experiment was to find out if there was a correlation between Volume and pressure in a fixed mass. My graph and experiment results show that there is a definite correlation between the two. Evaluation In order to make my experiment as accurate as possible we took three tables of results for pressure. This in turn meant that we used an average when plotting our results.

This meant our results would be accurate as we would have more values to co-operate.