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# Effect of Temperature on the Volume of a Gas

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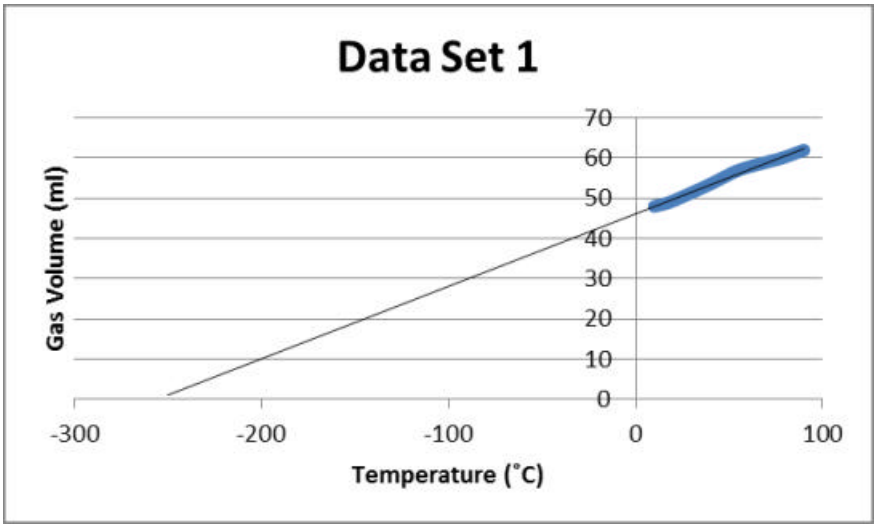


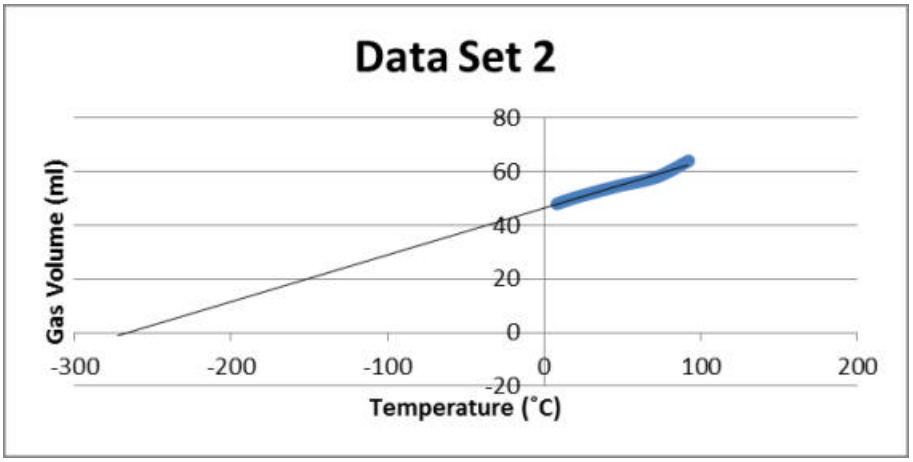

1. Using the data from this graph, absolute zero is estimated to be approximately - 250°C. This is 23.15°C warmer than the accepted value, -273.15°C. The error is not especially large.

2. PV = nRT

   n = PV / RT

   = (101.3 kPa)(0.048L)/(8.314)(283.15K)

   = 0.00207mol



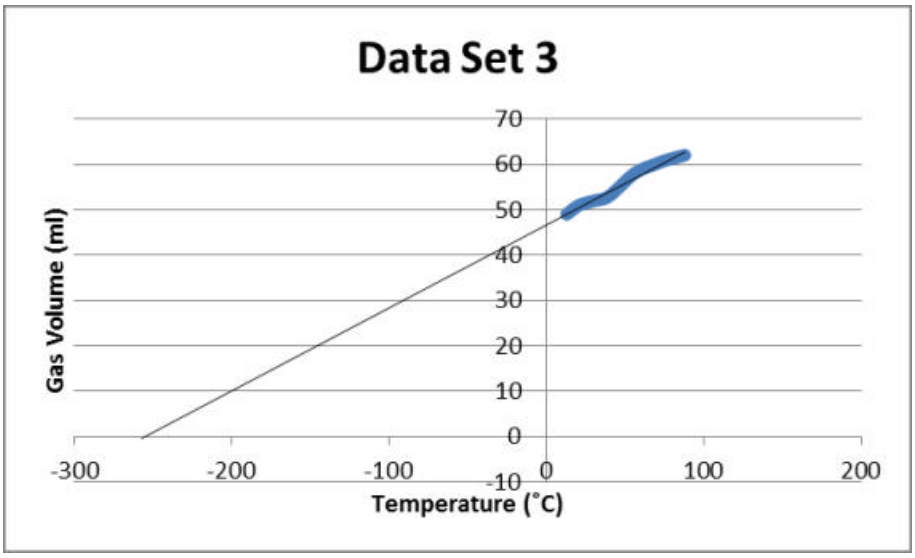

1. Using the data from the graph, absolute zero is estimated to be approximately -275°C. This is very close to the accepted value of -273.15°C. Thus, the error is small.

2. PV = nRT

   n = PV/RT

   = (101.3kPa)(0.048L)/(8.314)(281.15K)

   = 0.00208 mol



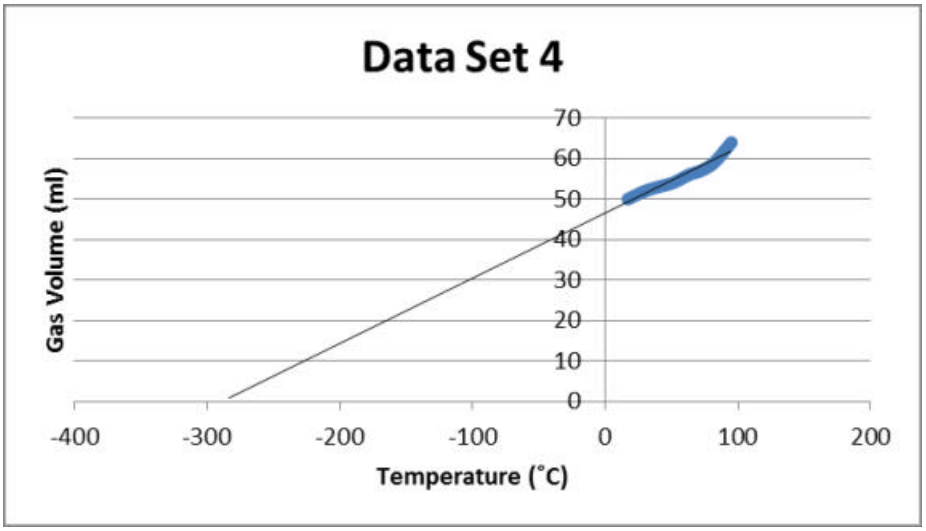

1. Using the data from the graph, absolute zero is estimated to be approximately -255°C. This is approximately 18°C off of the accepted value. Thus, though the error is significant, it is not very large.

2. PV = nRT

   n = PV/RT

   = (101.3kPa)(0.049L)/(8.314)(286.15K)

   =0.00209 mol



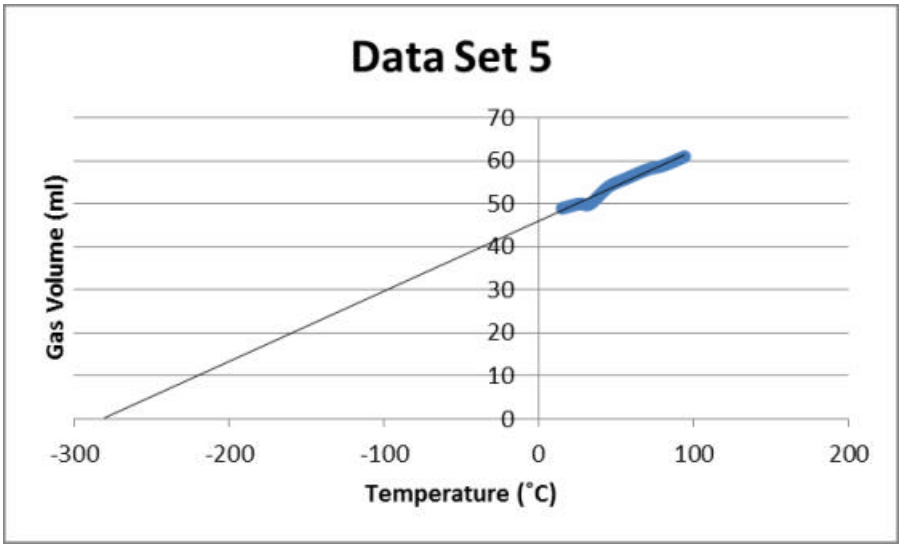

1. Using data from the graph, absolute zero is estimated to be approximately -280°C. This is only about 7°C colder than the accepted value of -273.15°C. Thus, the error is very small.

2. PV = nRT

   n = PV/RT

   = (101.3kPa)(0.05L)/(8.314)(290.15K)

   = 0.00210 mol



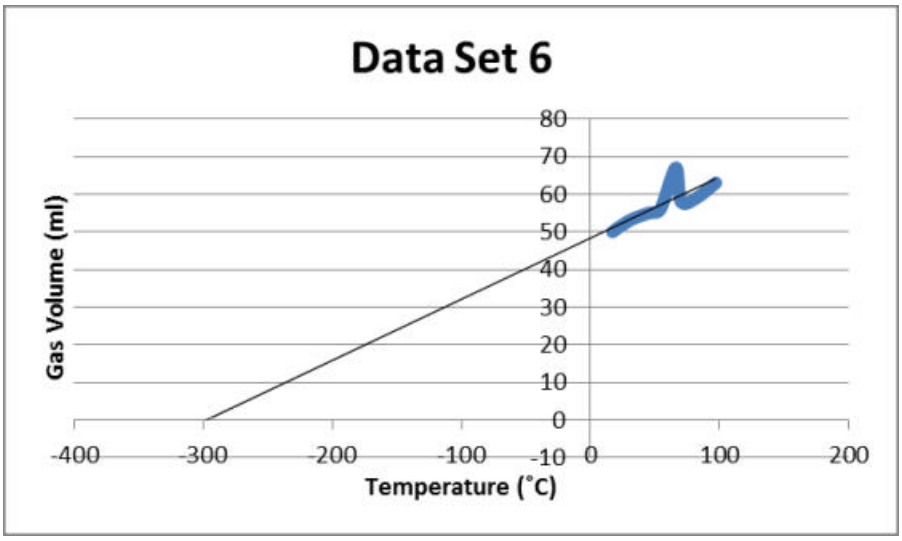

1. Using data from the graph, absolute zero is estimated to be approximately -280°C. This is less than 7°C colder than the accepted value, 273.15°C. Thus, the error is very small.

2. PV = nRT

n = PV/RT

= (101.3kPa)(0.049L)/(8.314)(288.15)

=0.00207 mol




1. Using the data from the graph to extrapolate, absolute zero is estimated to be approximately -295°C. This is about 22°C colder than the accepted value, -273.15°C. Thus, there is a significant, though not very large error.
2. PV = nRT

n = PV/RT

= (101.3kPa)(0.05L)/(8.314)(290.15K)

= 0.00210 mol