

An equipment design to verify Boyle's law

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A portable and user-friendly tool was designed and built to measure pressure and temperature of the air with variable volumes. An Arduino board programmed to read pressure and temperature was installed in a closed container consisting of a syringe connected to a tightly sealed box. The volume of the air in the system can be altered by moving the piston. By considering the air as an ideal gas, the pressure and the volume readings allow a direct verification of Boyle's law at various temperatures. The gas constant can be deduced and it is found to be $8.32 \pm 0.04 \text{ J.mol}^{-1}.\text{K}^{-1}$.

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