

Thermodynamics Quiz

1. One mole of a volatile gas is being contained in a metal hemisphere with a diameter of 0.5 meters. It is unsafe to be disposed of at its current pressure of 1.5×10^5 Pascal. It is safe to handle at a pressure of 1.35×10^5 Pascal. What can be done to the container so that it may be properly disposed?
2. A ping pong ball has been dented. We know that the ping pong ball is filled with air and it has some volume. How can you use your knowledge of thermodynamics to fix the dent?
3. A balloon is filled with air and tied off (fixed pressure). What would happen if you froze the balloon?
4. Why does the pressure in a car tire decrease during the winter?
5. One mole of an ideal gas with a mass of .35 kg is contained in a room with a volume of 10 m^3 . If the pressure changes from 110000 Pascal to 98000 Pascal, what is the change in velocity of the gas?
6. A piston with a radius of .25m is compressing a cylinder filled with 5 moles of gas at room temperature (20 C°). The cylinder is held at a constant temperature. What is the change in pressure if the piston moves from a height of .5 m to a height of .1m?