**Special Gas Law Problems For A Special Class**

Handy information: R = 0.08206 L atm/mol K; K = oC + 273

1. If I have 18 L of a gas at a pressure of 45 atm, what will the pressure of the gas be if I compress it to a volume of 2.5 L?
2. If I place 7.5 moles of oxygen into a 5.0 L container at a temperature of 25o C, what will the pressure inside the container be?
3. How big a container would be needed if I were to store 25 grams of nitrogen gas (N2) at a pressure of 1.25 atm and a temperature of 305 K?
4. I’ve got a balloon that has a volume of 150 L at a temperature of 25o C. If the balloon rises to an altitude where the temperature is 15o C, what will the new volume of the balloon be?
5. How many moles of carbon dioxide will be needed to fill a 550 L bag at a pressure of 1.15 atm and a temperature of 25o C?
6. My cat is in a container with a volume of 50 L and at a temperature of 35o C. If the temperature of the container is lowered to -35o C, how big will the container be?
7. What would happen if I cooled a gas to near absolute zero? Would the volume of the gas become zero? Explain.
8. Why does the temperature of a gas need to be given in Kelvin?
9. Why can gases be compressed?
10. Is there a limit to how compressed a gas can become? Is this likely to be something that’s commonplace in the world? Explain why or why not.
11. Which gas will behave more ideally: The gas within a pressurized SCUBA tank or the gas within an ordinary balloon? Explain your answer.
12. Which has a higher pressure:

* 1.0 moles of gas at a temperature of 450 K in a container with a volume of 35 L
* 2.5 moles of a gas at a temperature of 210 K in a 45 L container

1. I have 40 liters of nitrogen gas in a balloon at a temperature of 25 degrees Celsius. To what temperature would I have to heat this gas for it to have a volume of 65 liters?

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