

Chemistry - Gas Lab Alternative Assignment

Total: 16/20 = your max score possible

Name: _____ **Date:** _____ **Per:** _____

1 point each. You must show all work to receive credit.

1. Perform the following conversion of pressure units:

$$1.284 \text{ atm} = \text{_____ torr}$$

2. Perform the following conversion of pressure units:

$$173 \text{ torr} = \text{_____ atm}$$

3. Convert 8.64×10^2 torr to psi.

4. Write the name and equation for 4 different gas laws. Also, show the isolation of one of the variables in each of the equations.

5. A gas occupies 40.2 L at 2.00 atm pressure and 27°C. Calculate its volume if the pressure is decreased to 1.00 atm at constant temperature.

6. A gas occupies 26.5 L at 2.00 atm pressure and 27°C. Calculate its volume if the pressure remains at 2.0 atm but the temperature is raised to 54°C.

7. A gas occupies 42.3 L at 2.00 atm pressure and 27°C. Calculate its volume at STP.

8. A gas occupies 42.8 L at 2.00 atm pressure and 27°C. How many moles of gas are present in the sample?

9. What volume will 64.3 g of N₂ occupy at STP?

10. The volume of a sample of gas is 507.1 mL at STP. What volume will the sample occupy at 0.0°C and 950.0 torr?

11. Mercury vapor contains Hg atoms. What is the volume of 200. g of mercury vapor at 822 K and 0.195 atm?
12. What volume is occupied by 28.4 g of methane, CH₄, at 27°C and 1.59 atm?
13. A 5.73-g piece of solid CO₂ (dry ice) is allowed to vaporize (change to CO₂(g)) in a balloon. The final volume of the balloon is 1.00 L at 300. K. What is the pressure of the gas?
14. Consider a gas at 1.00 atm in a 5.00-L container at 20.°C. What pressure does the gas exert when transferred to a volume of 2.85 L at 43°C?
15. Determine the pressure exerted by 4.92 mol of gas in a 2.92-L container at 32°C.
16. Which of the following statements is true of 19.0 g of F₂(g) at STP?
- A) It contains 6.02×10^{23} molecules.
 - B) It contains the same number of molecules as $\frac{1}{2}$ mol of O₂(g) at STP.
 - C) It occupies a volume of 22.4 L.
 - D) It exists only in the form of ions.
 - E) none of the above

17. A sample of an ideal gas containing 0.873 mol is collected at 742 torr pressure and 31°C. Calculate the volume.
18. A 30.4-mL sample of H₂ at STP would contain how many grams of hydrogen?
19. 2.90 mol of CO₂ at STP will occupy what volume?
20. A 251-mL sample of a gas at STP is heated to 45°C. The final pressure is 1.71 atm. Calculate the volume of this gas under the new conditions.