

Name: _____

Date: _____

Chemistry
Ideal Gas Law WS

- I. *Answer the following questions using the Ideal Gas Law, showing all work and circling your answer:*
1. What volume will 2.00 moles of oxygen gas have at 7.00 atm and 27°C?
 2. What is the pressure (in kPa) of 7.53 mol of nitrogen gas in a 10.0 L flask at 7.0°C?
 3. How many moles of carbon dioxide gas are required to create a pressure of 1.20 atm in a 200. mL flask at -40.0°C?
 4. A sample of 6.90 moles of carbon monoxide gas is present in a container of volume 60.4 L. What is the pressure of the gas in kPa if the temperature is 52°C?
 5. What is the mass of ammonia (NH₃) that occupies 0.050 L at 700. kPa and 30.0°C?
 6. 50.0 g of CH₄ gas has a pressure of 165 kPa in a 12.0 L flask. What is the temperature of this gas in degrees Celsius?
 7. What is the total pressure (in kPa) exerted by 44 g O₂ mixed with 120. g CO₂ in a 17.0 L container at standard temperature? (*hint: calculate the pressure of each gas first*)

8. What mass of fluorine gas (F_2) would exhibit a pressure of 1600. kPa in a 0.400 L container at $7.5^\circ C$?
9. A sample of nitrogen gas in a container of volume 73.0 L and at a temperature of $-32^\circ C$ exerts a pressure of 1.9 atm. Calculate the mass of the gas present.
10. A rigid steel cylinder with a volume of 20.0 L is filled with argon gas to a final pressure of 200 atm at $30^\circ C$. How many grams of argon gas does the cylinder contain?
11. A deep underground cavern contains 2.24×10^6 L of methane gas (CH_4) at a pressure of 15.0 atm and a temperature of $42^\circ C$. How many grams of methane does this natural gas deposit contain?
12. What is the molar mass of a gas that occupies a 0.250 L container at $90.0^\circ C$ while exhibiting a pressure of 98.6 kPa if the gas has a mass of 1.50g? (*hint: find the number of moles first*)
13. The gaseous product of a reaction is collected in a 25.0 L container at $27^\circ C$. The pressure in the container is 300.0 kPa and the gas has a mass of 96.0 g. What is the molar mass of the gas in g/mol? (*hint: find the number of moles first*)
14. The following balanced decomposition reaction occurs in a 3.35 L canister filled with air at $220.^\circ C$ with an initial pressure of 99.27 kPa:



If 82.35 g $CaCO_3$ are fully decomposed, what is the final pressure of gas inside the canister?