

Honors Chemistry

Gas Laws Worksheet

Name: _____ Date: _____ Period: _____

1. Determine the pressure in torr and kPa on a day when the pressure is .96atm.

Answer: _____

2. A reaction occurs in which a gas is produced causing the mercury column in an open-end manometer to be 125mm higher on the side of the sample gas. If the prevailing atmospheric pressure is .97atm, what is the pressure of the gas in Pascal's?

Answer: _____

3. Determine the pressure of a sample gas in an open-end manometer in which the mercury column is 25.0mm higher on the sample gas side and the prevailing atmospheric pressure is .97 atm. Give your final answer in Pascal's.

Answer: _____

4. A gas, initially at .60atm has is volume decreased to 1/3 its original amount. Determine the final pressure in torr.

Answer: _____

5. A 1.50L container of gas, initially at 25.0°C has its temperature increased to 50.0°C. What is the final volume of the gas if P and n are held constant?

Answer: _____

6. Determine the pressure of a gas in pascals if 2.0moles of that gas are sealed in a 500.mL container at 30.°C.

Answer: _____

7. Determine how many moles of gas are contained in a sealed 650.mL container at 700. torr and 25°C.

Answer: _____

8. Determine the volume of 1 mole of a gas at STP.

Answer: _____

9. How many moles of a gas are given off in a reaction that produces 2.50L of that gas at STP?

Answer: _____

10. Determine the identity of a monoatomic gas if 4.940g of that gas at 100.°C and 1.5atm occupies a volume of 5.00L.

Answer: _____

11. What is the density of diatomic oxygen gas at 95.0kPa and 30.0°C?

Answer: _____

12. Determine the total pressure (in torr) of a 5.00L sealed container that has 10.0g each of He, Ne and O₂. at 10.0°C.

Answer: _____

13. Determine the partial pressure due to carbon dioxide in the combustion of 6.25g of methane (CH₄) with sufficient oxygen in a 3.00L container at 110.°C.

Answer: _____

14. What is the mole fraction of the CO₂ in the container after the reaction?

Answer: _____

15. A gaseous compound is known to be 30.45% nitrogen and 69.55% oxygen. A 1.11g sample of the gas at 30.0°C in a 2.00L container has a pressure of 114 torr. Determine the molecular formula of the compound.

Answer: _____

16. A sealed container has 2.0g of Argon, 3.0g of helium and 2.0g of nitrogen gas.

- a) What is the mole fraction of the nitrogen?
- b) What is the pressure of the nitrogen at STP?
- c) What is the volume of the container under STP conditions?

Ans: a. _____ b. _____ c. _____

17. A cube of metal (2.425cm per side) that is sitting on an equal arm balance (see-saw) is exactly balanced by a spherical balloon of xenon gas sitting on the other side. If the radius of the balloon is 1.00dm and the prevailing conditions are 30.0°C and 760.torr of pressure for the gas, determine the identity of the metal from the following choices (assume the mass of the skin of the balloon is negligible).
(Density (g/cm³): Al, 2.698; Zn, 7.133; Fe, 7.874; Ag, 10.49; Mg, 1.738; Ca, 1.550)

Answer: _____

18. A person wishes to use a helium balloon to give people rides into the air. The combined mass of the balloon material and basket is 475kg and the volume of helium is 3.35x10⁵L. If the average density of air is 1.920g/L, what is the maximum mass of people (in kg) that the balloon will be able to lift off the ground? (Assume standard pressure and 22.0°C)

Answer: _____