

AVOGADRO'S HYPOTHESIS - SAMPLE PROBLEMS

1. There are 3.67×10^{32} molecules of nitrogen gas in a flask at STP.
How many molecules of oxygen gas would be present in the same flask?
2. 312 L of chlorine gas at STP. What mass of fluorine gas would be present at the same volume, temperature and pressure.
2b. How many molecules would this be?
3. What mass do 4.37×10^{32} molecules of ammonia gas possess?
4. 156 g of ammonia gas in a flask at STP. What mass of chlorine gas would fit in the same flask?
5. 211.5 g of fluorine gas at RTP. 178 g of oxygen gas in the same container at RTP. How many litres of each gas are present at RTP?
6. A balloon holds 4678 g of He gas. What mass of hydrogen gas would it hold at identical conditions?
7. What mass of Neon gas would the balloon in #6 hold (at identical conditions)?
7b. How do the molecules of hydrogen gas and Neon gas compare in mass?
8. How many molecules of carbon monoxide gas are present in 176 L of the gas at STP?
9. A container holds 6.93 moles of ammonia gas at 42°C and 176 kPa. What mass of chlorine gas would the container hold at identical conditions?
10. A container holds 302 g of gas "X". The same container holds 75 g of oxygen gas under identical conditions. What is the molar mass of gas "X"?
11. Argon has a density of 1.784 g/L.
How many atoms are present in 220. mL of Argon gas?
12. 361 L of C_3H_8 gas at STP. How many moles would exist at RTP?