

<p>1. Convert the following temperatures to K.</p> <ul style="list-style-type: none">a) 104 Cb) -3 C	
<p>2. Convert the following temperatures to C.</p> <ul style="list-style-type: none">a) 67 Kb) 1671 K	
<p>3. A sample of nitrogen gas has a volume of 478 cm³ and a pressure of 104.1 kPa. What volume would the gas occupy at 88.2 kPa if the temperature remains constant?</p>	
<p>4. 8.98 dm³ of hydrogen gas is collected at 38.8 °C. Find the volume the gas will occupy at -39.9 °C if the pressure remains constant.</p>	
<p>5. A sample of gas has a volume of 215 cm³ at 23.5 °C and 84.6 kPa. What volume will the gas occupy at STP?</p>	

<p>6. At a certain temperature, molecules of methane gas, CH_4 have an average velocity of 0.098 m/s. What is the average velocity of carbon dioxide molecules at this same temperature?</p>	
<p>7. Find the relative rate of diffusion for the gases chlorine, Cl_2 and ethane, C_2H_6.</p>	
<p>8. 495 cm^3 of oxygen gas and 877 cm^3 of nitrogen gas, both at 25.0°C and 114.7 kPa, are injected into an evacuated 536 cm^3 flask. Find the total pressure in the flask, assuming the temperature remains constant.</p>	
<p>9. A sample of gas is transferred from a 75 mL vessel to a 500.0 mL vessel. If the initial pressure of the gas is 145 atm and if the temperature is held constant, what is the pressure of the gas sample in the 500.0 mL vessel?</p>	
<p>10. A sample of gas occupies a volume of 450.0 mL at 740 mm Hg and 16°C. Determine the volume of this sample at 760 mm Hg and 37°C.</p>	

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<p>11. One mole of H_2S gas escapes from a container by effusion in 77 seconds. How long would it take one mole of NH_3 gas to escape from the same container?</p>	
<p>12. Convert a pressure of 0.0248 mm Hg to the equivalent pressure in pascals (Pa).</p>	
<p>13. Air in a closed cylinder is heated from 25°C to 36°C. If the initial pressure is 3.80 atm, what is the final pressure?</p>	
<p>14. A bubble of helium gas has a volume of 0.650 mL near the bottom of a large aquarium where the pressure is 1.54 atm and the temperature is 12°C. Determine the bubble's volume upon rising near the top where the pressure is 1.01 atm and 16°C.</p>	
<p>15. At what temperature Celsius will 19.4 g of molecular oxygen, O_2, exert a pressure of 1820 mm Hg in a 5.12 L cylinder?</p>	

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<p>16. A sample of nitrogen gas, N_2, is collected in a 100 mL container at a pressure of 688 mm Hg and a temperature of $565^\circ C$. How many grams of nitrogen gas are present in this sample?</p>	
<p>17. What is the pressure in mm of Hg, of a gas mixture that contains 1g of H_2, and 8.0 g of Ar in a 3.0 L container at $27^\circ C$.</p>	
<p>18. To what temperature must 32.0 ft^3 of a gas at $2^\circ C$ be heated for it to occupy $1.00 \times 10^2 \text{ ft}^3$ at the same pressure?</p>	
<p>19. What is the pressure in atm exerted by 2.48 moles of a gas in a 250.0 mL container at $58^\circ C$?</p>	
<p>20. Determine the molar mass of a gas that has a density of 2.18 g/L at $66^\circ C$ and 720 mm Hg.</p> <p><i>(Hint: the number of moles of a substance is its mass/molecular mass and density is mass/volume.)</i></p>	