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## Mixed Gas Laws

Give the name of the gas law required to solve each problem. Solve the equation and give the answer with appropriate units.
(1) The initial pressure of a gas is 2.0 atm and the initial volume is 150 mL . Determine the final pressure if the final volume is 200 mL .
(2) The initial temperature of a gas is $27^{\circ} \mathrm{C}$ and the initial pressure is $4.00 \times 10^{5} \mathrm{~Pa}$. Determine the final temperature if the final pressure is $6.50 \times 10^{5} \mathrm{~Pa}$.
(3) Calculate the volume of 3.4 mol of a gas at STP.
(4) The initial temperature of a gas is 800 K and the initial volume is 3.00 L . Determine the final volume if the final temperature is 600 K .
(5) Calculate the volume of 0.750 mol of gas at 4.00 atm of pressure and at 250 K .
(6) A sample of gas has an initial pressure of $2.0 \times 10^{6} \mathrm{~Pa}$ and an initial volume of 4.0 L at an initial temperature of $55^{\circ} \mathrm{C}$. Calculate the final pressure if the final volume is 2.0 L and the final temperature is $65^{\circ} \mathrm{C}$.
(7) Calculate the total pressure of a mixture of neon, argon, and xenon if the neon has a partial pressure of 0.50 atm , the argon has a partial pressure of 0.75 atm , and the xenon has a partial pressure of 0.25 atm .
(8) Determine the volume if $2.00 \times 10^{24}$ atoms of krypton gas at STP.
(9) Determine the pressure (in Pa ) if 200 g of water vapour occupies 300 mL at $43^{\circ} \mathrm{C}$.
(10) Determine the temperature if $6.80 \times 10^{22}$ molecules of sulphur dioxide gas occupies 0.500 L at 2.00 atm .

Answers:
(1) 1.5 atm
(6) $4.2 \times 10^{6} \mathrm{~Pa}$
(2) 488 K
(7) 1.50 atm
(3) 76 L
(8) 74.4 L
(4) 2.25 L
(9) $9.72 \times 10^{7} \mathrm{~Pa}$
(5) 3.85 L
(10) 108 K

