Name _____ Date _____ Period _____

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3.6 Deviation from Ideal Gas Law

AP Chemistry

$R = 0.08206$ L·atm/(mol·K). Show work with units, and name the specific cause (attractions or particle volume) in every explanation.

1. Measured values of PV/nRT for three gas samples are 0.98, 0.72, and 1.15.

(a) Which sample behaves most like an ideal gas?

(b) For the sample at 0.72, is the measured pressure higher or lower than the ideal pressure? Which cause dominates?

(c) For the sample at 1.15, is the measured pressure higher or lower than the ideal pressure? Which cause dominates?

2. A 1.00 mol sample of NH_3 is in a 1.00 L container at 300. K. Its measured pressure is 21.4 atm.

(a) Calculate the ideal gas pressure.

(b) Calculate PV/nRT.

(c) Explain the difference using the IMFs in NH_3.

3. A sample of chlorine gas can be studied under any of these conditions.

Condition	A	B	C	D
Temperature	250 K	600 K	250 K	600 K
Pressure	10 atm	0.5 atm	0.5 atm	10 atm

(a) Under which condition is the gas most ideal? Justify your answer.

(b) Under which condition is the gas least ideal?

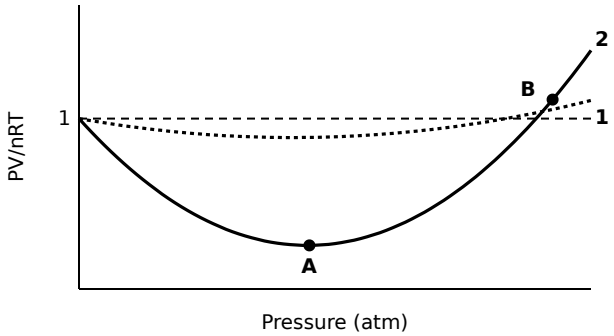
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4. For each pair, under the same conditions, which gas deviates more from ideal behavior? Justify each answer by naming the IMFs.

(a) F_2 or Cl_2

(b) methane or water vapor

5. The graph shows *PV*/*nRT* vs. pressure for N_2 and CO_2 at the same temperature.



(a) Which curve, 1 or 2, is CO_2? Justify your answer.

(b) Explain why *PV*/*nRT* is less than 1 at point A but greater than 1 at point B.

6. A student says, "At extremely high pressure, *PV*/*nRT* is greater than 1 because the attractions between particles get stronger." Identify the error and correct it.

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