

Intro to Gas Laws Student Practice Page

Instructions: List the variables down the left side, solve the equation for the unknown variable and write it on the left before substituting.

Boyle's Law: $P_1V_1 = P_2V_2$

1. A 224 mL sample of argon had its pressure changed from 95.0 kPa to 185 kPa. What is its new volume?

$P_1 =$

$V_1 =$

$P_2 =$

$V_2 = ?$

Eq: $V_2 =$

2. Chlorine gas occupies a volume of 2.3 liters at 180 kPa pressure. What volume will it occupy at 1.0 atm pressure?

3. Nitrogen gas occupies a volume of 270. mL at a pressure of 730. mmHg. What volume will it occupy at standard pressure?

Charles' Law: $V_1T_2 = V_2T_1$ (or $\frac{V_1}{T_1} = \frac{V_2}{T_2}$)

4. Argon occupies a volume of 3.4 liters at -145°C . What volume will it occupy at 25°C ?

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5. A sample of argon gas is cooled and its volume went from 885 mL to 550. mL. If its final temperature was -95.0°C , what was its original temperature in $^{\circ}\text{C}$?

6. Helium gas was cooled from 270. K to 50. K. Its new volume is 25 mL. What was its original volume?

Dalton's Law: $P_{\text{T}} = P_1 + P_2 + P_3\dots$, etc. *(be sure all pressures are in the same units)*

7. The partial pressure of fluorine gas is 0.723 atm. The partial pressure of hydrogen gas is 88.2 kPa. What is the total pressure of the container in atmospheres?

8. A container of gas has a total pressure of 22.1 psi. If the pressure of one gas is 950. torr, what is the pressure of the missing gas in kPa?