Chemistry 10th grade
Exercises GAS LAWS

Name: _____ **Score:** _____

INSTRUCTION: SOLVE THE FOLLOWING EXERCISES. And answer the questions.

Describe the used formula to calculate the result.
Don't forget to include the correct units in the answer

1. The pressure in a car tire is 2.08 atm at 35°C, what will be the pressure if the temperature warms to 37°C?

Cleared Law formula used.

Answer:

2. A car tire has a pressure of 2.38 atm at 15.2°C. If the pressure inside reached 4.08 atm, the tire will explode. How hot would the tire have to get for this to happen? Report the temperature in degrees Celsius.

Cleared Law formula used:

Answer:

3. A sample of argon gas is required to prepare lasers for medical procedures has a volume of 5 liters at a temperature of 4 °C. What volume does the gas occupy at 147 °C?

Cleared Law formula used:

Answer:

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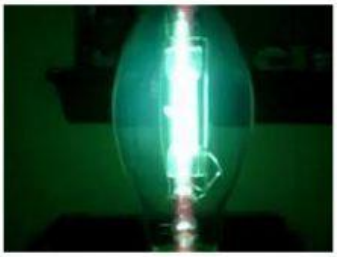
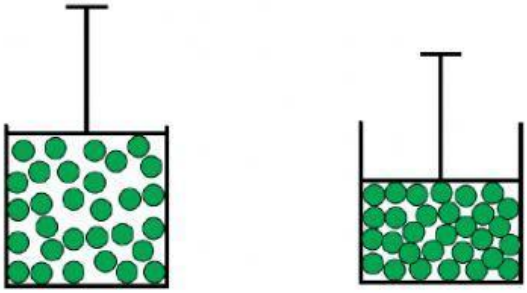


4. At certain temperature, 0.00432 g of Hg in the gas phase used in a lamp (highly toxic and risky BTW) has a pressure of 0.00120 mmHg and a volume of 435 L. If the pressure was increased to 0,00123 mmHg what is the new volume at 23°C

Cleared Law formula used:

Answer:



5. A gas is heated from 263.0 K to 298.0 K and the volume is increased from 24.0 liters to 35.0 liters by moving a large piston within a cylinder. If the original pressure was 178 torr, what would the final pressure be?

Cleared Law formula used:

Answer:

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Case Study : Ideal gases in Medicine (taken from Khan Academy)

Noble gases have numerous medicinal functions due to their relative non-reactivity. Helium is beneficial in respiratory treatments due to its low density, low solubility, and high thermal conductivity. Argon is useful for cryotherapy, in which tissue is exposed to sub-zero temperatures for surgical purposes. The anesthetic application of Xenon has been demonstrated to be more effective than previous techniques, although the significant financial expense of the gas makes its use less common. Finally, Krypton finds use in the field of cardiology in its use of detecting abnormal heart openings.

A research assistant in a lab is investigating the properties of Helium, Argon, Krypton, and Xenon for further use in the medical field. In the lab, there are four sealed containers, each of which contains a certain amount of a respective gas. The canisters are labeled with the type of gas contained, the pressure of the gas contained, the volume of the canister, and the # of moles of the gas.

Table 1. Each canister and the element's corresponding pressure, volume, and number of moles.

	Pressure of gas	Volume of canister	# of moles of gas
Helium	100,000 Pa	$0.02m^3$	4
Argon	200,000 Pa	$0.04m^3$	8
Krypton	300,000 Pa	$0.06m^3$	1
Xenon	400,000 Pa	$0.08m^3$	2

1. What's the temperature of Helium at the given conditions: _____
2. What would be the correct ranking of the average kinetic energy of the gas molecules of the gases based on how they are labeled?

Choose 1 answer:

(A) $KE_{Xenon} > KE_{Argon} > KE_{Krypton} > KE_{Helium}$

(B) $KE_{Xenon} > KE_{Krypton} > KE_{Argon} > KE_{Helium}$

(C) $KE_{Xenon} > KE_{Krypton} > KE_{Helium} > KE_{Argon}$

(D) $KE_{Krypton} > KE_{Xenon} > KE_{Argon} > KE_{Helium}$

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