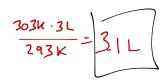
## Gas Laws Magic Square-Mixed Review

## You must show your work in the square.

Name.....

A. If 3.0 L of a gas at 20.0 °C is heated to 30.0 °C what is the new volume of the gas?

V,=3.0L +,= 20°C 293K 1 = 30 °C 3P3K



B. A balloon full of air has a volume of 2.75 L at a temperature of 18°C and pressure 0.852 atm. How many moles are in the balloon?

PV=nRT V1 = 2,75 L t,= 291K  $n = \frac{PV}{RT} = \frac{0.852 \text{ abs} \cdot 2.75L}{29 \text{ lk} \cdot 6.0821}$ P<sub>1</sub>=0.852 P=0.0821

n= 0.098mal

C. To what pressure would you have to compress 48.0 L of oxygen gas at 99.3 kPa in order to reduce its volume to 16.0 L?

P.V=PZVZ 9934Pa. 48L=16LPs P. = 99.3kPa V1=48.0L B=297.9kB Vz=16.0L P2= ?

D. A 24g sample of argon is in a 0.75 mL tube at 24°C. What is the pressure inside the tube?

24g | Mel = 0.6 mal PV=nRT اصم 6.6 = ١ V=6.00075L T= 297 K P= 0.6mol. 6.0821.297 K R=0.0821 P= 19,507 atm

E. A 148g sample of neon gas occupies a volume of 2.8 L at 1.8 atm. What would its volume be at 1.2 atm if 1.15 moles are removed?

1, 489 [mal = 7.12 ml  $V_1 = Z. & C$   $P_1 = 18 atm$   $PV = R.T = \frac{PV}{n}$ امسر 5.97 = Nz 1.89+m.28L 1.70+m/2 7.12 mol 5.97mol V1= ? Pz= 1.2 atm / Vz = 3.5L

F. If 4 moles of gas at a pressure of 5.4 atm has a volume of 120 liters, what is the temperature?

n=4,001 PV =T P=5.4+m V= 120L T=1973K T= ? R = 0.0821

G. What is the temperature of a 24.7L gas sample at 1.011 atm, if at 18°C it takes up 5.7L and exerts a pressure of 0.999 atm?

V. 5.7L Tz= P2 V7 T1
P1 V1 71: 18°C>291K P,=0.999atu Tz= 1276K Vz= 24.7L P2= 1.011 atm

H. What is the starting temperature (in Celsius) of 150mL of gas when cooled to 33°C and a volume of

120mL  $\frac{V_1}{7} = \frac{V_2}{T_2}$   $\frac{1}{150m}$   $\frac{1}{150m}$ V2=150mL

V<sub>1</sub>= KomL V<sub>1</sub>=388.5K→\169.5℃ V,= 120ml T,=7

My car has an interval volume of 2600 L. If the sun heats my car up from 20°C to 55°C, what will the pressure inside my car be? (Assume the initial pressure was 0.852 atm)

V.= 2600 L T.= 293K Tz = 328K P.=0.852 atm 1Pz= 6.954 atm

## ANSWERS (don't forget your units)

1. 0.098 B 1.011.247.29K
2. 19,507 D 0.199.5.74

5. 109.5 H

9 1973 F

6. 298 C

10. 0.6622

- 11. <u>31</u> A

4. <u>1276</u> G

- 8. 3.5 E
- 12. 0.954