Name: Gas Laws Homework  
Period: Part 1: Concepts

1. What is a gas?
2. Define the following terms:
   1. **Pressure** –
   2. **Volume** –
   3. **Temperature** –
3. How is pressure measured? Name the four units of pressure discussed in class.
4. Say we wanted to convert something from atm to mmHg. How do we do that?
5. How is temperature measured? Name the two units of pressure discussed in class.
6. Say we wanted to convert something in degrees Celsius to Kelvin. How would we do that?
7. What are the three units of volume?
8. Saw we wanted to convert something in L to mL. How do we do that?
9. What is Boyle’s Law?
10. In Boyle’s Law, Pressure and Volume and INVERSELY proportional. What does this mean?
11. What is Charles Law?
12. In Charles Law, Temperature and Volume are DIRECTLY proportional. What does this mean?
13. How does a directly proportional relationship look in a graph? How does an indirect relationship look? [DRAW BOTH GRAPHS]

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Period: Part 2: Math

1. Convert the following (NO WORK REQUIRED. USE YOUR NOTES):

1 atm = \_\_\_\_ mmHg 1 atm = \_\_\_\_ psi 1L = \_\_\_\_mL 1L = \_\_\_\_cm3 oC + \_\_\_\_ = K

1. Convert the following units of pressure (PLEASE SHOW YOUR WORK USING T-CHARTS IN SPACE BELOW):

2 atm = \_\_\_ mmHg? 380 mmHg = \_\_\_ psi?

30psi = \_\_\_\_ atm? 25 atm = \_\_\_ psi?

1. Convert the following units of temperature and volume:

3550 mL = \_\_\_L 6904 cm3 = \_\_\_ L 3.5L = \_\_\_\_\_ mL?

50oC = \_\_\_ K 100oC = \_\_\_\_ K 300K = \_\_\_\_\_ oC

1. Find the missing unit for the following problems using ***BOYLE’S*** ***LAW (P1V1 = P2V2):***
2. V1 = 53.2mL V2 = \_\_\_\_\_\_ mL P1 = 785 mmHg P2 = 700 mmHg
3. V1 = 2.0 L V2 = 2.25 L P1 = 1.67 atm P2 = \_\_\_\_\_ atm
4. V1 = \_\_\_\_ L V2 = 6.0 L P1 = 25 psi P2 = 75 psi
5. What pressure is required to compress 100mL of gas at 2 atm of pressure to a volume of 50mL?
6. Find the missing unit for the following problems using ***CHARLES LAW (V1T2 = V2T1):***
   1. V1 = 25.0 L V2 = \_\_\_\_\_ mL T1 = 600 K T2 = 250 K
   2. V1 = 53.2mL V2 = 16.8 mL T1 = \_\_\_\_\_ oC T2 = 80oC
   3. V1 =\_\_\_\_\_ L V2 = 16.0 L mL T1 = 300 K T2 = 300 K
7. If 5L of a gas is cooled from 20 degrees Celsius to 10 degrees Celsius, what will the new volume of the gas be?
8. **CHALLENGE PROBLEM**: A sample of neon gas occupies 266 mL of space at 323K.

a. What temperature would the sample be if the initial size was cut in half?

b. What would the temperature be if the size doubled?