**Mini-quiz #27 Chemistry 1114 10 Dec 2012**

Your name\_\_\_\_\_\_\_\_\_answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_/7 pts

**YOU MUST SHOW WORK FOR CREDIT**

27.1 A fixed quantity of gas at constant temperature in a piston initially has a pressure, P1=3 atm and

a volume of 4 L. The piston is then yanked out to a volume, V2, of 12 L. What is the new

pressure in the piston ?

**At constant T**

**P1V1/~~T~~= P2V2/~~T~~**

**3\*4=P2\*12**

**12/12=P2=1 atm**  P2= \_\_\_\_\_**1**\_\_\_\_\_atm

27.2. A pressure cooker containing a fixed amount of water vapor has a pressure of 3 atm at 150o C.

What is the pressure at 361.576 oC ? (K= oC +273.15)

**T1 = 150 + 273.15=423.15**

**T2 =361.576 +273.15=634.726**

At constant V:

**P1~~V~~/T1 = P2~~V~~/T2**

**3/423.15 = P2/634.726**

**3\*634.726/423.15=4.5 atm** P2=\_\_\_\_**4.5**\_\_\_\_\_\_\_atm

27.3. A balloon, initially at 50,000 ft, has a pressure of 0.1 atm and a volume of 3.0 L at 100 K.

The balloon is then transported to sea level where the pressure is 1.0 atm and the temperature is 300 K. What is the balloon’s volume now?

**P1V1/T1 = P2V2/T2**

**0.1\*3/100= 1\*V2/300**

**300\*0.1\*3/100=0.9 L**

V2 = \_\_**0.9\_\_\_\_\_\_**L