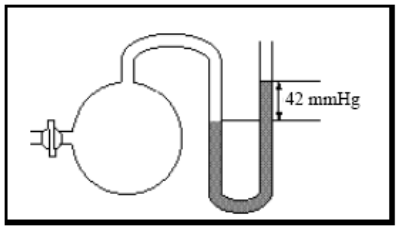
Name(s) _____ Chemistry ___/___/___

More Multiple Choice Practice- Choose the best answer for each of the following.

1._____ Under which conditions will a gas behave most ideally?
(A) low P and high T (B) low P and low T (C) high P and low T
(D) high P and high T (E) a gas will be have ideally at all conditions

2._____ A sample of neon gas has a volume of 248 mL at 30.°C and a certain pressure. What volume would it occupy if it were heated to 60.°C at the same pressure?
(A) 226 mL **(B) 273 mL** (C) 278 mL
(D) 496 mL (E) 124 mL

3._____ A gas is collected in the flask shown here. What is the pressure exerted by the gas if the atmospheric pressure is 735 mmHg?



(A) 42 mmHg (B) 693 mmHg
(C) 735 mmHg **(D) 777 mmHg**
(E) 84 mmHg

4._____ A sample of oxygen gas and a sample of an unknown gas are weighed separately in the same evacuated flask. Use the data given to find the molar mass of the unknown gas (assume experiments are carried out at the same pressure and temperature).

Mass of evacuated flask	124.46 g
Mass of flask + oxygen	125.10 g
Mass of flask + unknown gas	125.34 g

(A) 22 g/mol (B) 38 g/mol **(C) 44 g/mol** (D) 84 g/mol (E) 66 g/mol

5._____ A gas mixture at 27°C and 760 mm Hg contains 1.0 g each of He, H_2, N_2 and CO_2. How do their average molecular speeds compare?
(A) He = H_2 = N_2 = CO_2 (B) CO_2 < H_2 = N_2 < He (C) He < H_2 < N_2 < CO_2
(D) CO_2 < N_2 < He < H_2 (E) H_2 < He < N_2 < CO_2

6._____Helium is often found with methane, CH_4. How do the diffusion rates of helium and methane compare at the same temperature? Helium diffuses
(A) sixteen times as fast as methane. (B) four times as fast as methane.
(C) twice as fast as methane. (D) at the same rate as methane.
(E) half as fast as methane.

7._____Which pair of gases has the same average rate of diffusion at 25°C?
(A) He and Ne (B) N_2 and O_2 **(C) N_2O and CO_2** (D) NH_3 and HCl (E) SF_6 and Xe

8._____ A gas has a volume of 6.0 L at a pressure of 0.80 atm. What is the volume if the pressure is changed to 0.20 atm at constant temperature?
(A) 1.5 L (B) 3.0 L (C) 12 L **(D) 24 L** (E) 0.96 L

9._____ A 0.239 g sample of a gas in a 100-mL flask exerts a pressure of 600 mmHg at 14 °C. What is the gas?
(A) chlorine (B) nitrogen (C) krypton (D) xenon (E) oxygen

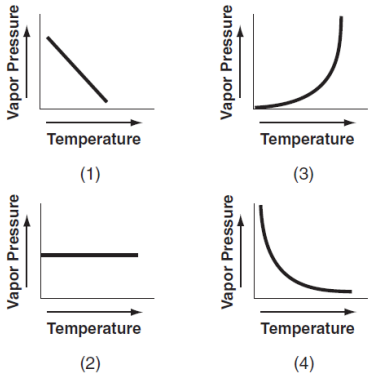
10._____What pressure (in atm) will be exerted by a 1.00 g sample of CH_4, in a 4.25 L flask at 115°C?
(A) 0.139 (B) 0.330 **(C) 0.467** (D) 7.50 (E) 8.46

11._____A gas in a closed, flexible container is slowly cooled from 50 °C to 25 °C. What is the ratio of the final volume of the gas to its initial volume? Assume ideal behavior.
(A) 2/1 (B) 1.08/1 **(C) 0.923/1** (D) 0.5/1

12._____The mass of 560 cm^3 of a gas at 0˚C and 1 atm is 1.60 g. Which gas could it be?
(A) O_2 (B) CO_2 **(C) SO_2** (D) Cl_2 (E) Xe

13._____Oxygen, which is 16 times as dense as hydrogen, diffuses:
(A) 1/16 times as fast. **(B) 1/4 times as fast.** (C) 4 times as fast.
(D) 16 times as fast (E) equally as fast as hydrogen.

14._____Which graph to the right best represents the variation in the vapor pressure of water as temperature changes?



15._____For which two gases are the rates of effusion 2:1?
(A) H_2 and He (B) He and O_2 **(C) Ne and Kr** (D) N_2 and Ar

16._____Which gas has a density of 0.71 $g \cdot L^{-1}$ at 0°C and 1 atm?
(A) Ar (B) Ne (C) CO **(D) CH_4**

17._____What is the molar mass of a gas that has a density of 5.66 $g.L^{-1}$ at 35°C and 745 mm Hg?
(A) 127 (B) 141 (C) 143 **(D) 146**

18._____Which noble gas effuses approximately twice as fast as Kr?
(A) Ne (B) Ar (C) Xe (D) Rn

19._____A sample of C_2H_6 gas initially at 50 °C and 720 mmHg is heated to 100 °C in a container of constant volume. What is the new pressure (in mmHg)?
(A) 360 (B) 623 **(C) 831** (D) 1440

20._____What is the molar mass of a gas if 10.0 grams of it occupy 4.48 liters at 273 K and 1.00 atm?
(A) 2.00 g/mol (B) 25.0 g/mol **(C) 50.0 g/mol** (D) 100. g/mol

21._____Which property is the same for 1.0 g samples of H_2 and CH_4 in separate 1.0 L containers at 25 °C?
(A) pressure (B) number of molecules
(C) average molecular velocity **(D) average molecular kinetic energy**

22._____Which statement is true about a substance that is subjected to a lower external pressure at a constant temperature?
(A) A liquid will boil at a lower temperature.
(B) A liquid will exhibit a lower vapor pressure.
(C) A gas in an insulated container will change into a liquid.
(D) A gas in a nonrigid container will exhibit a smaller volume

23._____A flask contains a mixture of Ne(g) and Ar(g). There are 0.250 mol of Ne(g) which exerts a pressure of 205 mmHg. If the Ar(g) exerts a pressure of 492 mmHg, what mass of Ar(g) is in the flask?
(A) 4.16 g (B) 12.1 g **(C) 24.0 g** (D) 95.9 g

24._____Three balloons are filled with the same number of atoms of He, Ar, and Xe, respectively. Which statement is true under the same conditions of temperature and pressure?
(A) The balloons contain the same mass of gas.
(B) All balloons have the same volume.
(C) The densities of the three gases are the same.
(D) The average speed of the different types of atoms is the same.
(E) All gases have the same root mean square velocity.

25._____Supercritical carbon dioxide exists at which point on the accompanying phase diagram to the right?
(A) A (B) B **(C) C** (D) D