

250.8 grams of magnesium metal is burned in air (oxygen is the active ingredient) to produce solid magnesium oxide.

1. Write a balanced equation for this reaction

2. How many moles of oxygen will be used up in this reaction?

3. If this reaction was done on a day when the temp was 18.5 C and the pressure was 766.8 mmHg calculate how many liters of oxygen were used.

How many liters of hydrogen gas would be produced if you reacted 350 kg of magnesium metal with an excess of hydrochloric acid. At the time the reaction takes place the temp was 35.8 C and the pressure was 730 mmHg.  
(magnesium chloride is the other product)

4. Write a balanced equation

5. Solve the problem (use  $pV = nRT$ ) watch your units.

6. 80.5 g of nitrogen monoxide reacts with an excess of oxygen gas to produce nitrogen dioxide gas. How many liters of nitrogen dioxide gas will be produced at 1100 mmHg of pressure and  $-80.5\text{ C}$ ?

7. 290.0 grams calcium oxide decomposes to produce calcium metal and oxygen gas. How many liters of oxygen gas will be produced if the reaction takes place at 11.5 C and a pressure of 256 mmHg?

8. 555 kL of carbon dioxide gas was collected when some methane(  $\text{CH}_4$ ) was burned in air. Calculate the mass of methane needed if the reaction took place at STP (this is in your notes and on page 470). Water was the other product

In a lab situation similar to what we did in class, 48.5 mL of hydrogen gas is collected in a eudiometer tube, when you react magnesium metal with hydrochloric acid. The reaction took place at 25 C and 771 mmHg. (magnesium chloride is the other product)

9. What is the vapor pressure due to water.
  
10. Use Dalton's law to calculate the vapor pressure of the hydrogen gas?
  
11. How many moles of hydrogen gas were produced in this reaction?
  
12. How many grams of Mg did you start out with?

### Multiple guess/matching

#### Part 1- Multiple guess

13. all of the gases below had the same kinetic energy( $KE = 1/2 mv^2$ ), which would have the highest velocity
- He
  - CH<sub>4</sub>
  - H<sub>2</sub>
  - O<sub>2</sub>
  - NO<sub>2</sub>
14. A gas in a balloon at constant pressure has a volume of 120.0mL at -123 C. What is it's volume at 27.0C?
- 60.0 mL
  - 240.0mL
  - 26.5 mL
  - 546 mL
15. Studied the effect that temperature had on pressure.
- Boyle
  - Dalton
  - Charles
  - Avogadro
  - Gay – Lussac
16. Which of the following changes would increase the pressure of a gas in a closed container?
- Part of the gas is removed
  - The container size is decreased
  - The temperature is increased
- i and ii only
  - ii and iii only
  - i and iii only
  - i, ii, and iii

17. Studied the effect that temperature had on volume.

- a) Boyle
- b) Dalton
- c) Charles
- d) Avogadro
- e) Gay – Lussac

18. A real gas behaves most nearly like an ideal gas at....

- a. High pressure and low temperature
- b. At low pressure and high temperature
- c. At low pressure and high temperature
- d. At high pressure and high temperature

19. Studied the effect that pressure had on volume.

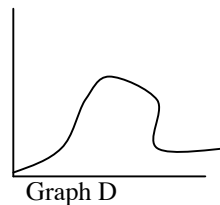
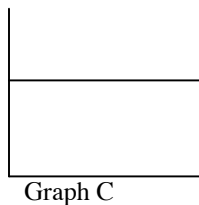
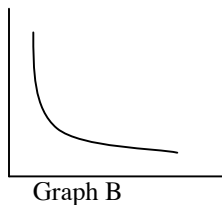
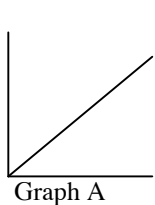
- a. Boyle
- b. Dalton
- c. Charles
- d. Avogadro
- e. Gay – Lussac

20. Came up with the idea that the total pressure of the system is equal to the sum of the partial pressures on the gases that are in the system.

- a. Boyle
- b. Dalton
- c. Charles
- d. Avogadro
- e. Gay – Lussac

21. 1 liter of any gas will have....
- The same mass
  - The same density
  - The same number of particles
  - More than one of these is correct
  - None of these is correct
22. If the pressure of a system is 1.00 atm, and the system has three gasses in it A, B, & C. B & C have equal numbers of particles. And gas A has .5atm of pressure. Calculate the pressure of gas C.
- .15atm
  - .25atm
  - .50atm
  - not enough in formation
23. As you increase the pressure on a gas it's density will(all other things being constant)...
- Increase
  - Decrease
  - Stay the same

Look at the graphs below to answer questions (13– 15)



24. The graph that shows a directly proportional relationship.
25. Graph has a slope of 0
26. Graph shows an inverse relationship
27. Graph with a constant slope

**28 . 5.0 liters of gas at 760mmHg and 50 degrees celcius has the conditions changed to 500mmHg and 20 degrees celsius. What is the new volume?**

**29. 2.0 liters of gas has a mass of .40 grams at STP. What will the density of the gas be if the gas is heated to 500 K, with pressure remaining constant.**

**30. 50.5 moles of gas , occupy a volume of 400.0 liters at 300 celsius. What is the pressure on the gas.**

**31. 29.5 grams of nitrogen monoxide is burned in a excess of oxygen to produce nitrogen dioxide. If 28.3 liters of gas was produced at a pressure of 1.05 atm what was the temperature in degrees Kelvin?**

**Acetylene gas burns in air according to the following unbalanced equation:**



**If 25.0 liters of gas are burned at STP then.....**

**How many liters of oxygen will be needed?**

**How many grams of water will be produced?**

**How many liters of air will be required?**

**What would the vol of air be if the conditions were 385 mmHg, and 123 K?**

