# MAROOCHYDORE STATE HIGH SCHOOL



YEAR 11 – CHEMISTRY

**SEMESTER ONE**

## MOLES, MASS, and VOLUME OF A GAS

1. Complete the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | **Formula** | **Molar mass (M)** | **Moles (n)** | **Sample mass** |
| Sodium Hydroxide | NaOH |  |  | 3.41 g |
|  | CCl4 |  | 1.4 |  |
| Sodium Carbonate |  | 106 amu | 1.0 |  |
|  | KCl |  | .25 |  |
| Ammonium Phosphate |  |  |  | 8.46 g |

1. Find the number of moles in the following samples
2. 14.6 g acetylene, C2H2
3. 0.48 g propane, C3H8
4. 485 g ethanol, C2H5OH
5. 8.5 g Carbon Dioxide, CO2
6. Which of the following substances has the greatest mass?
7. 200 g of Magnesium
8. 5 mol of Sulphur
9. 1.2 x 1024 atoms of helium
10. Sodium Fluoride is thought to reduce tooth decay, especially in children. It is therefore added to some brands of toothpaste. If a tube of toothpaste contains 0.013g of Sodium Fluoride:
11. How many moles of Sodium Fluoride does this represent?
12. How many Sodium ions does this represent?
13. To prevent a gum disease called Scurvy, the minimum daily requirement of Vitamin C (C6H8O6) required is 60 mg.
14. How many moles of Vitamin C is this?
15. How many molecules is this?
16. If 10 g of Spinach is found to contain 1.2 x 10-5 g of Vitamin C, how much Spinach must be eaten each day to get the daily requirement?
17. What would be the volume of:
18. 2.0 moles of Hydrogen gas (H2) at STP
19. 7.5 moles of Oxygen gas at STP
20. 4.0 g of Carbon Dioxide gas at 0oC and 1 atmosphere pressure
21. 30 g of Butane gas (C4H10) at SLC

Questions 7 and 8 deal with the following scenario:

You react chemical A with chemical B to make a single product. It takes 100 g of A to react completely with 20 g of B

1. What is the mass of the product?

a) less than 10 g b) between 100 and 120 g c) exactly 120 g d) over 120 g

1. What is true about the Chemical Properties of the product?
2. the properties are more like chemical A
3. the properties are more like chemical B
4. the properties are an average of those of chemical A and chemical B
5. the properties are not necessarily like either chemical A or B