Name _____Per____

Unit 4 – Benchmark #1: Gram/Mole/Volume Conversions – Practice!

You may use a periodic table, but NOT a calculator. SHOW YOUR WORK!

Problems 1 - 3

Assume that you have an 11 gram sample of methane gas, CO_2 at standard conditions

1. How many moles of CO_2 do you have?

2. How many molecules of CO_2 do you have?

3. What volume (in liters) should the sample occupy?

Problems 4 – 6

Assume that you have a sample of propane gas, C_3H_8 that occupies 11.2 liters at standard conditions.

4. How many moles of propane are contained in the sample?

5. What is the mass in grams of the sample?

6. How many molecules of propane are in the sample?

Problems 7 – 8

You have a sample of calcium that contains 0.25 moles of calcium atoms.

7. What is the mass, in grams, of the sample of calcium?

8. How many atoms of calcium does the sample contain?

Problems 9 – 10

You have a sample of aluminum that contains 2×10^{23} atoms of aluminum.

9. How many moles of aluminum atoms do you have?

10. What is the mass, in grams, of your sample of aluminum?

Problems 11 – 12

You have an 5.6 liter sample of nitrogen gas, N_2, at standard conditions.

11. How many moles of nitrogen are contained in the sample?

12. What is the mass, in grams, of the sample?