Chemistry – Peterson
Date:

Name:
Period:

Lecture 10A: The Mole and Avogadro's Number

Matter is composed of small individual particles called _____

What are these representative particles?

1 – _____

2 - _____

3 – _____

In everyday life, we use units to count large quantities, like a _____.

In chemistry, a unit had to be defined to count how many _____,

_____, or _____ are in a _____.

The Mole

Why can we not count the number of particles in a substance?

- The representative particles are too _____,
- The _____ of individual particles in a sample are too _____

What is a Mole?

1 - A mole describes (counts) the _____ of _____ particles in a _____

1 mole of any substance = _____ atoms, ions, molecules or formula units. A mole is also…

2 – A way of _____ the _____ of a sample.

3 – A way of _____ the _____ of a gas sample.

What is 6.02×10^{23}?

_____ number, basic measuring _____!

How large is Avogadro's number?

Imagine if you were able to spread _____ marbles over the entire Earth's surface. The marbles would produce a layer _____ miles thick!

Summary:

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Now let's try some problems!

Example #1: How many moles of Au are there is a sample containing 1.94×10^{21} atoms of Au?

Example #2: How many molecules are in 6.8 moles of chlorine monoxide?

Example #3: How many mol $NaNO_3$ are in 3.04×10^{23} formula units of sodium nitrate?

Example #4: How many oxygen atoms are in 1.75 mol of $Ca_3(PO_3)_2$?