**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_**

**H. Chemistry**

**Ch. 8.3-8.4 Lecture Guide**

* The Mole (mol)
  + Definition:
  + Avagadro’s number:
    - 1 mole of water =
    - 1 mole of fancy socks =
    - 1 mole of a stampeding armadillos =
* How do we use the mole in chemical calculations?
  + 12.01 g of C = 1 mole of carbon atoms (6.022 x 1023 C atoms)
  + 1.008 g of H =
  + 22.99 g of Na =
  + 16.00 g of O =
* Bottom line:
* Practice Problems
  + Calculate both the number of moles of atoms and the number of atoms in a 10.0 g sample of aluminum.
    - Number of moles of atoms:
    - Number of atoms:
  + Calculate both the number of moles of atoms and the mass of a sample of chromium containing 5.00 x 1020 atoms.
    - Number of moles of atoms:
    - Mass of sample:
* Molar Mass
  + Definition:
* Calculating Molar Mass:
  + Ex) The molar mass of CH4:
    - Mass of 1 mol of C =
    - Mass of 4 mol of H =
    - Molar Mass of CH4 =
* Calculating Moles from Mass
  + Ex) How many water moles are in a 10.0 g sample of water?
    - Step 1: Calculate the molar mass of water.
    - Step 2: Use the appropriate conversion factor to figure out the number of moles.
* Calculating Number of Molecules
  + Ex) Sucrose, or table sugar, has the formula C12H22O11. How many molecules of sugar are in a 5.00-lb bag of sugar?
    - Step 1: Calculate the molar mass of sucrose.
    - Step 2: Use the appropriate conversion factor to figure out the number of moles of sucrose.
    - Step 3: Use the appropriate conversion factor to figure out the number of molecules of sucrose.