

Keypoints Stoichiometry

Definitions

You will not be asked to write a definition of any of these but I do expect you to recognize them when they are used in problems, etc..

concentration by percent

counting units

g/L

g/ml

isotope

molar mass

molarity (M)

millimolar (mM)

moles

parts per billion (ppb)

parts per million(ppm)

Solution

solvent

solute

Concepts

1. Be able to explain where the number 6.022×10^{23} comes from?
2. Be able to explain why the molar mass of carbon is 12.011 g/mole, not 12.0000 grams/mole.

Calculations

1. Be able to calculate the molar mass of a compound when given the *formula of the compound* and a *periodic table* that gives the atomic, or molar, masses of the elements.
2. Be able to calculate the number of moles in a sample when given the *number of grams* in the sample, and be able to calculate the number of grams of a sample when given the *number of moles* in the sample.
3. Be able to calculate the molarity of a solution when given the *number of moles of the solute* and the *volume of the solution*.
4. Be able to calculate the molarity of a solution when given the *mass of the solute in grams* and the *volume of the solution*.

5. Be able to calculate the number of moles of a solute in a solutions when given *the volume* of the solution and its *molarity*.
6. Be able to calculate concentration of a solution made by *diluting a solution of known molarity*.
7. Be able to calculate the concentration of a solute by percent, when given the *mass of the solvent* and the *mass of the solute*.
8. When given the *number of grams of a solute in a solution*, and the *number of grams of the solution* be able to calculate the concentration of the solute in percents, ppb and ppm.
9. When given the *number of moles of a solute* in a solution, and the *mass of the solution* be able to calculate the concentration of the solute in percents, ppb and ppm.
10. Be able to calculate the mass of a solute in a solution when given the concentration of the solute in either *concentration by percent, ppb or ppm*.
11. When given a *chemical equation*, and the *number of moles of one of the reactants or products* be able to calculate the number of moles of another one of the reactants or products.
12. When given a *chemical equation*, and the *mass of one of the reactants or products* be able to calculate the mass of another one of the reactants or products.
13. Be able to calculate the concentration of a solute in a solution when given the *mass of the solution* and the *mass of the solute*.
14. Be able to calculate the concentration of a solute in a solution when given the *mass of the solution* and the *number of moles of the solute* in the solution.