

Below are opportunities to practice %, ppm and ppb calculations, *In all of these assume that every ml of water has a mass of 1 gram. The numeric answers are given to these on the second page. Please try to do these before you consult the answer. Otherwise you won't know if you can reason them through for yourself.*

- 1) Calculate the concentration of salt in a solution of water in percent if 45 grams is dissolved in 1200 ml of water.
- 2) Calculate the mass of solute in a 10% salt solution if the mass of the solution is 350 grams.
- 3) Calculate the mass of solvent in a 6 ppm solution of a drug if the mass of the solute is 0.050 milligrams. (In this case the amount of the solute is very small and treat the solution as though the mass of solvent=mass of the solution.)
- 4) What is the concentration in ppm of selenium if 1.3 milligrams is found in 2500 kg of soil?
- 5) What is the concentration in ppb of PCB's in a chemical spill, if there is 0.060 mg in 4,600 Kg of soil?
- 6) Calculate the number of moles of H_2O_2 in 450ml of a 35% H_2O_2 solution.
- 7) Calculate the mass of solute PCB's in a 65 Kg person, if the concentration is 4 ppm?
- 8) What mass of nickel is in a 2.4 Kg sample of propanol if the concentration is 20 ppb?
- 9) What mass of solution would be needed to deliver 3.0 mg of a drug if the concentration of the drug in the solution was 3.5%.
- 10) What is the concentration, in ppm, if 0.808 grams of CaCl_2 is dissolved in 250.0 ml of water.
- 11) What is the concentration of chloride in a solution made with 0.808 grams of CaCl_2 and 250.0 ml of water.? Give your answer in ppm.

- 1) 3.6%
- 2) 35g
- 3) 8000mg=8g
- 4) 0.00052 ppm
- 5) 0.013 ppb
- 6) 4.6 moles
- 7) 0.00026kg=0.26g
- 8) 4.8×10^{-8} kg=48 μ g
- 9) 860mg
- 10) 3220ppm
- 11) 2070ppm