Some More Examples B Converting Density Units

1. What is the density of a material in μg/ml if the original density was measured as .005dg/dL?

$$\frac{.005\,dg}{1\,dL} \quad x \quad \frac{1\,g}{10\,dg} \quad x \quad \frac{10^{6}\,\mu g}{1\,g} \quad x \quad \frac{10\,dL}{1\,L} \quad x \quad \frac{1\,L}{1000\,ml} \quad = \quad \frac{.005 \quad x \quad 10^{7}}{1 \quad x \quad 10^{4}} \quad = \quad .005 \ x \ 10^{3} \ = \ 5.0 \ \mu g/ml$$

Notice how the exponent of the 10's in scientific notation cancel out. (algebraic law of exponents)

2. What is the density in dag/hL for a material with a density of 6.2g/cm³?

$$\frac{6.2\,g}{1\,cm^{3}} \quad x \quad \frac{1\,dag}{10\,g} \quad x \quad \frac{1\,cm^{3}}{1\,ml} \quad x \quad \frac{1000\,ml}{1\,L} \quad x \quad \frac{100\,L}{1\,hL} \quad = \quad \frac{6.2 \ x \ 10^{5}}{1 \ x \ 10^{1}} \quad = \quad 6.2 \ x \ 10^{4} \ dag/hL$$

Complete the following practice problems. The answers are given in next to the question..

1. Change 120 μg/dL into kg/dm³ $\quad \dfrac{120 \ x \ 10^{3}}{1 \ x \ 10^{9}} \quad = \quad 1.2 \ x \ 10^{-7} \ kg/sm^{3}$

2. The density of a material is 2.5 hg/dm³. What is the density is mg/cm³? $\quad \dfrac{2.5 \ x \ 10^{6}}{1 \ x \ 10^{3}} \quad = \quad 2.5 \ x \ 10^{3} \ mg/cm^{3}$

3. A solution has a concentration of 30 ng/ml. What is its concentration in dg/L?
   This problem is solved the same as a density problem. Concentration of a solution can be expressed in a number of different ways. Here it is so many nanograms dissolved in 1 milliliter of a solvent.

$$\frac{30 \ x \ 10^{4}}{1 \ x \ 10^{9}} \quad = \quad 30 \ x \ 10^{-5} \quad = \quad 3.0 \quad x \quad 10^{-4} \ dg/L$$

If you would like to see more examples, use the Internet Links in the Density Index Table to visit some other Web Sites.