PARTS PER MILLION WORKSHEET (key)

1. 25 grams of a chemical is dissolved in 75 grams of water.

   a. What is the concentration of the chemical in parts per hundred (pph)?

   $$\frac{25}{(25+75)} \times 100 = \textbf{25 pph}$$

   b. What is the concentration of the chemical in parts per thousand (ppt)?

   $$\frac{25}{(25+75)} \times 1000 = \textbf{250 ppt}$$

   c. What is the % of solute in this solution?

   $$\frac{25}{(25+75)} \times 100 = \textbf{25\%}$$

2. Suppose 17 grams of sucrose is dissolved in 183 grams of water. What is the concentration of sucrose in pph ? ppm?

   $$\frac{17}{(17+183)} \times 100 = \textbf{8.5 pph} \qquad \frac{17}{(17+183)} \times 1{,}000{,}000 = \textbf{85,000 ppm}$$

3. 35 grams of ethanol is dissolved in 115 grams of water. What is the concentration of ethanol in parts per billion (ppb)?

   $$\frac{35}{(35+115)} \times 1{,}000{,}000{,}000 = \textbf{233,333,333.33 ppb}$$

4. The solubility of NaCl is 284 grams/100 grams of water. What is this concentration in ppm?

   $$\frac{284}{100} \times 1{,}000{,}000 = \textbf{284000 ppm}$$

5. The solubility of AgCl is 0.008 grams/100 grams of water. What is this concentration in ppm?

   $$\frac{.008}{100} \times 1000000 = \textbf{80 ppm}$$

6. A certain pesticide has a toxic solubility of 5.0 grams/Kg of body weight. What is this solubility in ppm?

   $$\frac{1\ \cancel{Kg}}{1} \times \frac{1000\ g}{1\cancel{Kg}} = 1000\ g \qquad \frac{5}{1000} \times 1{,}000{,}000 = \textbf{5000 ppm}$$

7. Change 50 ppm to ppb.

50 ppm x 1000 = 50,000 ppb

8. How many parts per million (ppm) is 1mg/L?

   1 ppm

9. When lemonade is 1000 ppm it is said to be sour. Is 2 ml of lemon juice added to 1000 ml of water considered sour?

Total = 1002 ml

2/1002 = 0.001996

0.001996 x 1,000,00 = 1996.00 ppm

Yes the lemonade is sour!