**Conversion Practice**

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| **Conversion factors** | |
| **Density of water** | **1 g = 1 mL** |
| **Specific heat of water** | **1 cal = 1 g ℃** |
| **Energy content of proteins** | **1 g = 4 kcal** |
| **Energy content of carbohydrates** | **1 g = 4 kcal** |
| **Energy content of fat** | **1 g = 9 kcal** |
| **Molar mass of carbon** | **1 mole = 12.01 g** |
| **Avogadro’s number** | **1 mole = 6.02 x 1023 particles** |
| **Calorie Conversions** | **1 Cal = 1 kilocalorie = 1000 calories** |
| **Calories and Joules** | **1 Calorie = 4.184 kilojoules** |

**Answer these question using the table method:**

1. **Convert 23 calories into kcal. .023 kcal.**
2. **How many moles of Na2CO3 are there in 10.0 L of 2.00 M solution?**

M = n / L 2 = n / 10 **n = 20 moles**

1. **Convert 7.9 kcal into grams of protein. 7.9 kcal = 7900 cal At 4 cal per gram 🡪**
2. **How many moles of Na2CO3 are in 10.0 mL of a 2.0 M solution?**

M = n / L 2 = n / .01 **n = .02 moles**

1. **Convert 2240 kJ into Calories.** 2240 / 4.18 🡪 535.89 Calories
2. **Sea water contains roughly 28.0 g of NaCl per liter. What is the molarity of sodium**

**chloride in seawater ? 1. Using n = g / M 28 grams = .479 moles**

2. M = n / L .479 moles / 1liter 🡪 .479 M

1. **What is the molarity of 245.0 g of H2SO4 dissolved in 1.000 L of solution?**

1. MW is 98.06 g so 245 g = 2.50 moles 2. M = 2.5 / 1 🡪 2.5 M

SKIP 8 and 9

1. **How many Calories are in used to increase the temperature of 10 mL of water 31°C?**
   * + 1. Q = m x ∆ T x Cp 🡪 Q = 10 x 31 x 1 🡪 310 calories