**Solution concentration**

%mass/volume: used for solutions used in intravenous (IV) therapy.

%mass/volume = g of solute/mL of solution x 100 (the units must be in g/mL)
EG saline IV solution: 0.9% NaCl. That is 0.9g NaCl in 100mL water

**EXERCISE:**
1. Calculate the % m/v of NaCl solution: 0.15g NaCl in 275mL water.

2. How would you prepare 2L of a 5% dextrose solution?

Mole, Molarity and Avogadro's number \((6 \times 10^{23})\)
1mol of atoms = \(6 \times 10^{23}\) atoms
1mol of molecules = \(6 \times 10^{23}\) molecules

1 single carbon atom: 12.01amu/mol
1 mole of carbon atoms: 12.01 g/mol
The mass of 1 mol of compound is called the molar mass (is the bottom number in the box for each element)

**EXERCISE:**
1. Calculate the molar mass of sucrose \(\text{C}_{12}\text{H}_{22}\text{O}_{11}\)

2. How many molecules of sucrose are found in the molar mass of sucrose?

Molarity (M) is the number of moles of solute in one liter of solvent (moles/liter)

\(M = \text{moles of solute/L of solution}\)

**EXERCISE:**
1. A 1.5L solution contains 0.018 mol CO2. What is the concentration of CO2 in moles/L (molarity)
2. How would you prepare the following solutions:
   a. 1L 1M solution of sucrose
   b. 1L 2M solution of sucrose
   c. 500mL 1M sucrose

3. The molar mass of NaCl is 58g/mol. How many grams of NaCl are in 2L of 0.3M solution of NaCl?

PH = -log [H⁺] The measure of acidity/alkalinity
Concentration in molarity
EXERCISE:
Calculate the pH for the following solutions:
1. [H⁺] = 1x10⁻⁷, pH =
2. [H⁺] = 1x10⁻⁴, pH =
3. [H⁺] = 1x10⁻⁹, pH =