Definition of Solution:
A homogeneous mixture of one or more substances (solutes) dispersed in a sufficient quantity of dissolving medium (solvent).

1) %(W/v) : (percent weight per volume)

   a) Make 300 mL of 2.5% sucrose.
   You need 2.5 grams of "table sugar" for each hundred milliliters. It means you need:
   3 X 2.5 = 7.5 g
   Dissolve 7.5 grams sugar in ~250 mL and then add more water up to exact 300 mL.

   b) There is 0.9 %(w/v) normal Saline. Make a one liter normal saline.
   1 L = 1000 mL = 10 X 100 mL
   You need 10 X 0.9 grams NaCl. Dissolve 9 grams NaCl in about 950 mL water, and then add more water up to 1000 mL.

   c) We need to make 250 mL of 0.1 M glucose (MW = 180 g/mol).
   mol = mass/ MW
   mass = mol X Mw
   mass = 0.1 X 180 = 18.0 g
   18.0 X (250 /1000) = 4.5 g
   (To have 0.1 M glucose, dissolve 4.5 g glucose in 250 mL water)
   d) HHH

2) Dilution:
   a) We have 15% ethanol. We need to make 100 mL of 5% ethanol.
   Conc. $\rightarrow$ Diluted
   $C_1V_1 = C_2V_2$
   15% X V_1 = 5% X 100 mL
   0.15 V_1 = 0.05 X 100
   V_1 = 33.33 mL
   Take 33.33 mL of 20% ethanol and add water up to 100 mL.

   b) A physician orders 12 mL of a 20 μg/mL dilution of a drug. There is 50 μg/mL stock medication. How do you make it?
   Stock Medication $\rightarrow$ Order drug
   $C_1V_1 = C_2V_2$
   50 μg X V_1 = 20 μg X 12 mL
   V_1 = 4.8 mL of stock medication
   Take 4.8 mL of stock medication and add 7.2 mL DI-water.

Note:
In regard to red blood cell, 0.9% NaCl and 5% glucose are both isotonic solutions.