SERIAL DILUTION METHOD

Serial dilution is referred to as a series of sequential dilutions that are performed to convert a dense solution into a more usable concentration.
In simple words, serial dilution is the process of stepwise dilution of a solution with an associated dilution factor. In biology, serial dilution is often associated with reducing the concentration of cells in a culture to simplify the operation.

In serial dilution technique, a known amount (10g or 10 ml) of sample is suspended or agitated in a known volume of sterile water (90ml or so to make the total volume to 100 ml) to make a suspension. This suspension is called stock solution and it forms the 1^{st} dilution (10^{-1}). Now, 1 ml of mixture is taken from the 10^{-1} dilution and is added to tube containing 9 ml of sterile water. This tube has a total dilution factor of 10^{-2}.

The same process is then repeated, taking 1 ml from the previous tube and adding it to the next tube of 9 ml sterile water to make 10^{-3} dilution. Similarly, serial dilutions 10^{-4}, 10^{-5}, 10^{-6}, 10^{-7} etc. can be prepared in the same manner.

Then, 1ml aliquot of various dilutions are added to sterile agar plates to allow the growth of microorganisms.

The number of colonies appearing on dilution plates are counted, averaged and multiplied by dilution factor to find the number of cells per gram (or milliliter) of the sample.

No. of cells/ml or g= Number of colonies x Dilution factor / dry wt. of soil

Dilution factor = Reciprocal of the dilution (eg., $10^{-4} = 10^{4}$)