Dilutions

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* If you begin with a solution of known concentration (called a **stock solution**), you can prepare a solution of lower concentration by dilution.

* You can calculate this concentration by using the following dilution equation:
    * $C_iV_i=C_fV_f$

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    * $C_iV_i=C_fV_f$

Ci is the concentration of the initial solution

Vi is the volume of the initial solution

Cf is the concentration of the final solution

Vf is the volume of the final solution

Example

* Calculate the final concentration of a hydrogen peroxide solution if water is added to 100mL of 6 mol/L peroxide until the total volume is 200mL.

Solution

* $C_iV_i = C_fV_f$
    * Given
        * C_i= 6 mol/L
        * V_i= 100 mL
        * V_f = 200 mL

Solution

$C_i V_i = C_f V_f$

$(6\ mol/L)(100\ mL) = C_f (200\ mL)$

Solution

$C_iV_i = C_fV_f$

$(6\ mol/L)(100\ mL) = C_f(200\ mL)$

$C_f = (6 \times 100)/(200)$

$C_f = 3\ mol/L$

Solution

$C_iV_i = C_fV_f$

(6 mol/L) (100 mL) = C_f (200 mL)

C_f = (6 x 100)/ (200)

C_f = 3 mol/L

Therefore the final concentration will be 3 mol/L