Q.] How many Litres of water be added to 1L of an aqueous soln of HCl with a pH of 1 to create an aqeous soln with pH of 2? [2013 Main

Soln

$pH = 1 \therefore [H^+] = 10^{-1} = 0.1\ M.$

$pH = 2 \therefore [H^+] = 10^{-2} = 0.01\ M$

For dil. of HCl. $M_1V_1 = M_2V_2$

$0.1 \times 1 = 0.01 \times V_2$

$\boxed{V_2 = 10L}$

Volume added $= 10 - 1 = \boxed{9L}$