Rules for Solving Dilution Questions

1. Identify your variable and make sure volume is in Liters.
   a. reminder mL ➔ L ÷ 1000
2. Write the formula $C_iV_i = C_fV_f$
3. Isolate your unknown variable by manipulating your equation.
4. Sub in your numbers and to the math.
5. Watch your units.

Examples:

1. What volume of water must you add to 5 M HCl to make 2 L of 1 M HCl?

C_i = 5 M
C_f = 1 M
V_i = x L
V_f = 2 L

$C_iV_i = C_fV_f$

$V_i = \frac{C_fV_f}{C_i} = \frac{(1M)(2L)}{5M} = 0.4\ L$

2. What volume will you have of 2 M HCl if you dilute 0.5 L of 15 M HCl?

C_i = 15 M
C_f = 2 M
V_i = 0.5 L
V_f = x L

$C_iV_i = C_fV_f$

$V_f = \frac{C_iV_i}{C_f} = \frac{(15\ M)(0.5L)}{2M} = 3.75\ L$