Molarity & Dilution

Name _____

$M_1V_1 = M_2V_2$ Set your problems up so that the first condition (M_1 and V_1) is the more concentrated.

To find the amount of water added for the dilution just subtract the $V_2 - V_1$

1. A student wishes to prepare 250. mL of a 0.15 M NaOH solution from a 6.00M NaOH stock solution. What volume of the stock solution should she use?
2. How much water must be added to a 2.50 M HCl solution to obtain 500. mL of a 0.100M HCl solution?
3. What is the final volume of a 0.15 M solution prepared from 25.0 mL of a 6.0 M sodium acetate solution?
4. How much water does a student add to 25.0 mL of 1.00 M acetic acid solution to make it 0.100 M? II. Molarity Problems

Definition: $Molarity = \frac{moles\ of\ solute}{liters\ of\ solution}$ $= \frac{n}{V}$

5. What is the molarity of a solution that contains 12.5 g sodium acetate if the volume of solution is 250. mL?
6. What is the volume of a 2.50 M solution that contains 98.0 grams of H_2SO_4?
7. What mass of citric acid (MW = 192.14 g/mol) is contained in 100.0 mL of a 5.00 M citric acid solution?
8. What mass of sodium hydroxide is present in 100.0 mL of a 2.50 M NaOH solution?
9. What is the concentration of a solution that contains 25.0 g acetic acid and has a volume of 125 mL?
10. 3.5 moles of potassium nitrate are dissolved in water so that the final volume is 325 mL. What is the concentration of this solution?
11. 5.45 moles of an acid are diluted to 2.50 L of solution. What is the molarity of the acid solution?
12. Explain how you would make a 3.50 M solution that contains 58.0 grams of potassium carbonate?