

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Seat#: \_\_\_\_\_

**Mathematical Questions**

- Show plugging in the variables to the correct places in the equation
- Get an actual answer, including units! Box your answer!
- Don't forget - you must show units and any conversions that might be involved.
- You can either rearrange your equation before you plug in your variables, or after. Do what works for you!

- 1) How much of a 15.0 M stock solution do you need to prepare 250 ml of a 2.35 M HF solution?
  
  
  
  
  
  
  
  
  
  
- 2) If 455 ml of 6.0 M HNO<sub>3</sub> is diluted to 2.5 L, what is the molarity of the diluted solution?
  
  
  
  
  
  
  
  
  
  
- 3) If 65.5 ml of HCl stock solution is used to make 450 ml of a 0.675 M HCl dilution, what is the molarity of the stock solution?
  
  
  
  
  
  
  
  
  
  
- 4) How do you prepare 500 ml of a 1.77 M H<sub>2</sub>SO<sub>4</sub> solution from an 18.0 M H<sub>2</sub>SO<sub>4</sub> stock solution?
  
  
  
  
  
  
  
  
  
  
- 5) How many moles of LiF would be required to produce a 2.5 M solution with a volume of 1.5 L?
  
  
  
  
  
  
  
  
  
  
- 6) How many moles of Sr(NO<sub>3</sub>)<sub>2</sub> would be used in the preparation of 2.50 L of a 3.5 M solution?
  
  
  
  
  
  
  
  
  
  
- 7) What is the molarity of a 500-ml solution containing 249 g of KI?
  
  
  
  
  
  
  
  
  
  
- 8) How many grams of CaCl<sub>2</sub> would be required to produce a 3.5 M solution with a volume of 2.0 L?
  
  
  
  
  
  
  
  
  
  
- 9) If 45 mL of water are added to 250 mL of a 0.75 M K<sub>2</sub>SO<sub>4</sub> solution, what will the molarity of the diluted solution be?

10) If water is added to 175 mL of a 0.45 M KOH solution until the volume is 250 mL, what will the molarity of the diluted solution be?

11) How much 0.075 M NaCl solution can be made by diluting 450 mL of 9.0 M NaCl?

12) If 550 mL of a 3.50 M KCl solution are set aside and allowed to evaporate until the volume of the solution is 275 mL, what will the molarity of the solution be?

13) How much water would need to be added to 750 mL of a 2.8 M HCl solution to make a 1.0 M solution?

14) . Which solution is more concentrated? Solution "A" contains 50.0 g of  $\text{CaCO}_3$  in 500.0 mL of solution. Solution "B" contains 6.0 moles of  $\text{H}_2\text{SO}_4$  in 4.0 L of solution.

15)  $125 \text{ cm}^3$  of an aqueous solution contains 3.5 moles of solute. What is the molarity of the solution?

16) You perform a serial dilution starting with 12.1 M concentrated HCl. If you perform 5 dilutions, with 100mL of the stronger concentration solution being added to 500mL of water each time, what will the final concentration of your last dilution end up being?

