

## Non-graded Practice Exercise Math

**Name:**\_\_\_\_\_ **Date**\_\_\_\_\_

1. Write the procedure for using a MLA Pipette in steps in your own words.

Write steps briefly.

- Ex: 1. Find Pipette  
2. Find water  
3. Etc...

2. a) Define concentration factor.

b) Explain how it is used.

c) Give an example using numbers.

## Dilution Exercise

- 1) Make a serial dilution. Use 0.5 ml of colored solution for the first sample using 0.5 ml of water diluent, mix. Carry out the serial dilutions until a final dilution is made at 1/128. Use MLA pipettes and 12x75mm tubes. Label the tubes with the dilutions using a Sharpie.

**Show tubes to instructor**

- 2) Setup the following tubes (12X75mm):

- 1) Make a  $\frac{1}{2}$  using 0.5 ml of sample (colored water) in tube 1, mix.
- 2) For the 2<sup>nd</sup> tube, use 1.0 of diluent (water) and 0.5 of Tube 1 (the  $\frac{1}{2}$ ).

What is the final dilution? \_\_\_\_\_

3. Setup the following and fill in the blanks: (Show equation for each tube)

	<u>Sample</u>	<u>Diluent Added</u>	<u>T. Volume</u>	<u>Dilution CF</u>
<b>Tube 1:</b>	0.2 ml	1.0 ml		
<b>Tube 2:</b>	0.1 ml		1.0 ml	
<b>Tube 3:</b>	250 uL	0.5 ml		
<b>Tube 4:</b>	0.5 ml		1.5 ml	
Tube 5:	0.200 ml			6

## Problems

1. A sample of 200  $\mu\text{L}$  of blood needs to be diluted 1 to 50. What will be the final volume of this dilution?
2. 50 mL of urine is diluted with 150 ml of water. Give the dilution ratio of this solution.
3. 2 ml of a 1:10 dilution is added to 10 ml of water. What is the final dilution?
4. 0.03 mL = how many liters?
5. How much of a 1/20 dilution will 0.5 mL of serum make?
6. A 0.5% NaCl solution is diluted 1/10. What is the concentration of the resulting solution.
7. The procedure requires a 1/100 dilution of a reagent and you have access to a 1/10 dilution already, how would you proceed to make the required dilution?
8. How much 10% NaCl solution can be made using 30 g of NaCl?
9. You need to prepare a 5% glucose solution. How would you prepare 10 ml of a 5% solution?

## Concentration Problems

1. How much of a 10% NaCl solution do you need to make 20 ml of a 5% NaCl?  
Show formula and the answer.
2. How much 95% alcohol is required to prepare 5 L of 70% alcohol?

**Volume of 95% solution:** \_\_\_\_\_ **Volume of diluent added:** \_\_\_\_\_

3. Using 20% solution prepare a 5 ml of a 5% solution.

**Volume of 20% solution:** \_\_\_\_\_ **Volume of diluent added:** \_\_\_\_\_

**Total Volume:** \_\_\_\_\_

3. Using 29% solution prepare a 100 ml of a 5% solution.

**Volume of 29% solution:** \_\_\_\_\_ **Volume of diluent added:** \_\_\_\_\_

**Total Volume:** \_\_\_\_\_

4. How would you prepare 300 ml of a 5% solution from a 10% solution?

Dilution and Math Problem Exercises Examples Redacted 3.18.15