

FOR EACH PROBLEM, CLEARLY INDICATE THE ANSWER AS WELL AS THE CALCULATIONS, WHICH GENERATE THE ANSWER. YOU MAY ATTACH ADDITIONAL PAGE(S) IF NECESSARY, BUT THE ANSWER MUST BE ON THIS SHEET. PLEASE READ THE PROBLEMS CAREFULLY! YOU SHOULD BE ABLE TO WORK ON THESE PROBLEMS **ON YOUR OWN OUTSIDE OF LAB TIME**, NOT WITH OTHERS IN THE LAB. THIS SET IS DUE ON FEBRUARY 25, 26 OR 27 (depending on your section).

Background information including our definitions of “plated dilution” and “dilution factor” are given in Appendix C. Having done the practice problems will help in solving any dilution plating problem. (“Diluent” and “dilutant” are synonymous.)

1. (3 points) Five grams of cheese were mixed with 45 ml of sterile diluent. Two successive 1/10 dilutions were then made. One-tenth ml was plated from the last (most dilute) dilution onto **each of two plates** of an all-purpose medium. After incubation, 145 colonies were counted on one plate and 155 were counted on the other. Calculate the number of **CFUs per gram** of the original, undiluted cheese.
2. (1 point) If problem #1 were changed such that the **first dilution** was performed by adding one gram of cheese to 9 ml of diluent (instead of 5 grams added to 45 ml), **would you expect any change in the final answer** of CFUs per gram?
3. (3 points) One gram of hamburger was added to a 99 ml dilution blank. Two 1/100 dilutions were then made. From the last (most dilute) dilution, 0.1 ml was plated onto each of two plates of **MacConkey Agar**. (Recall this medium from Experiment 4 and the discussion in Appendix D.) After incubation, one plate had 79 red colonies and 122 white colonies, and the other plate had 81 red colonies and 118 white colonies.

Determine the number of gram-negative, lactose-fermenting CFUs per gram of the hamburger.

4. (1 point) Five ml of sample were added to 44 ml of diluent. The dilution thus made is circle one):

**1/10**

**5/44**

**5/49**

**1/100**

5. (1 point) Five ml of spring water were added to a petri dish to which 25 ml of melted Plate Count Agar were added. After incubation, 35 colonies arose on the plate. What was the count of CFUs **per ml** of the spring water?

6. (1 point) The **same dilution** can be obtained in **each** of the following situations:

- a. The addition of 10 ml of a sample to 40 ml of sterile diluent.
- b. The addition of \_\_\_\_\_ ml of the same sample to 20 ml of diluent.
- c. The addition of 2 ml of the same sample to \_\_\_\_\_ ml of diluent.