

### 2008 Calculations Quiz #3

1. A physician has requested lorazepam 80mg in 100 ml D5W. Your stock solution contains 20mg lorazepam/5ml. Assuming you will withdraw from the 100ml bag of D5W the same amount of lorazepam stock solution you will add, how much lorazepam stock solution will you need to make this product?
2. A physician has ordered 10 ml of “tri-mix.” This preparation contains prostaglandin E<sub>1</sub> (PGE<sub>1</sub>) 500 mcg, phentolamine 25 mg, and papaverine 75 mg. Your available stock solutions are PGE<sub>1</sub> 0.5 mg/ml, phentolamine 5 mg/ml, and papaverine 30 mg/ml; you will use NS if needed to fill to 10ml. What volume of each ingredient will you add?
3. A pharmacist places 4 ml of dopamine 200 mg/5ml in 46 ml of D5W. What is the resulting concentration of dopamine in mg/ml?
4. A pharmacist places 4 ml of dopamine 200 mg/5ml in 46 ml of D10W. What is the resulting osmolarity of this solution? (MW dextrose 180, dopamine 153)
5. How much fentanyl 50 microgram/ml injection will you need to place in a 250ml bag to ensure the that bag has a final concentration of 10 micrograms/ml? Assume that you will need to account for the volume you are adding in your calculations (i.e., you will not withdraw fluid from the bag before adding the fentanyl).

6. An ophthalmologist would like you to make 5 milliliters of a metronidazole 0.5% ophthalmic solution. The first step is determining metronidazole's E-value. (MW metronidazole 171) Round your calculated E-value to the nearest 1/100 of a decimal point.

7. You are now ready to make 5 milliliters of a metronidazole 0.5% ophthalmic solution. You have available a vial of metronidazole injection to which you are instructed to add 4.4 ml sterile water, making a suspension of 500 mg drug in 5 ml. The vial also contains mannitol 415 mg (E-value 0.17). You have a stock solution of sodium chloride 14.6%. What metric volumes of metronidazole stock solution, sodium chloride stock solution, and water will you add to prepare 5 ml of an isotonic metronidazole 0.5% solution?

8. You receive a prescription for liothyronine 60 micrograms, 3-month supply. This strength is not available commercially, so you know that you will need to formulate and compound the medication. You have a balance with a sensitivity requirement of 1 mg. Assuming a 5% error for variance, what is the minimum weight of a liothyronine aliquot you can use for this product?

9. You are now ready to compound the liothyronine 60 microgram capsules, using the balance for which you just calculated MWQ. You confirm that the patient is lactose tolerant and decide to make 93 capsules so you have a few extra in case of spillage. Using as minimal an amount of lactose as possible in each capsule, determine the total amount of lactose and the total amount of liothyronine powder you will weigh.

10. The ingredients in the previous liothyronine capsule compounding cost \$105 /250 mg liothyronine powder, \$27 for one pound of lactose, and \$17 for a box of 1000 #4 gelatin capsules. Your pharmacy typically charges a \$10 compounding fee, a \$3 dispensing fee. Your pharmacy generally rounds product costs up to the nearest whole dollar. How much will you charge for this compounded preparation?