

University of Missouri-Columbia
Sinclair School of Nursing
Nursing Calculations Exam Worksheet II

Your respective faculty will notify you of the exact date and time of the Nursing Calculations Exam per semester. A second attempt will be offered during the second week of the semester, on Monday from 6:30-7:30pm (only exception made when this Monday is a school holiday). The requirements per semester and the consequences for being unsuccessful after two attempts are stated in the MUSSON BSN Student Handbook.

The content of the Nursing Calculations exam will encompass information taught in N3170, with the basis being content found in Curren's Dimensional Analysis for Meds. Topics to be covered include (but are not limited to):

- Safe Medication Dosage Calculations
- Calculation of Dosage to be administered
- Conversions related to household/metric measurements (includes temp & wt)
- Basic to complex IV administration calculations
- Accurate addition of medications to IV fluids
- Insulin volume calculations
- Use of military time

The MUSSON Guidelines for rounding are listed below and will be printed on the cover page of the exam. These are considered to focus on situations beyond "common knowledge". (Examples of common knowledge situations include that temperatures are to be expressed to the 10ths unless no decimal is needed and that minutes in Military Time are expressed as whole numbers.)

Guidelines

1. Express answers for volumes of less than 1 mL to the hundredths. (0.73 mL, not 0.728 mL). When relating this to insulin dosages, NEVER round volumes when referring to an insulin calculation. (46 units of U-100 insulin = 0.46 mL, not 0.5 mL).
2. Express answers for volumes of greater than 1 mL to the tenths. (5.4 mL, not 5.41 mL or 5.412 mL).
3. When calculating body weights, express answers to the tenths unless specifically requested to calculate pounds and ounces. (3.2 lbs, not 3 lbs; 3.8 lbs, not 4 lbs).
4. A zero should ALWAYS appear before a decimal. (0.75, not .75).
5. A zero should NEVER appear after a decimal. (2, not 2.0; 2.2, not 2.20).
6. Drops should be expressed as a whole number. (32 gtt, not 31.6 gtt)
7. Wait until the last step of the calculation to round.

Sample Problems (to supplement the DA text)

1. The order reads to infuse 3 liters over 24 hours. At what rate (mL/hr) will you set the IMED pump?
2. The 50 mL bag of medication is to infuse over 30 minutes. At what secondary rate (mL/hr) will you set the pump?
3. Convert 97.8°F to °C. Convert 39.2°C to °F.
4. A 250 mL bag of IV fluid is started at 1845 on Monday and programmed to infuse at 20 mL/hr. At what time should the infusion be completed?
*(***Remember that if minutes become >60, subtract 60 and add to hours; if hours become >24, subtract 24 and indicate new day)*
5. Using a 1mL,U-100 insulin syringe, how many mL will you be instilling when you administer 43 units of U-100 insulin?
6. You are to administer 8 mcg/kg/min. Your medication is 40 mg/100mL. Your patient weighs 64 lbs. At what rate (ml/hr) will you set the pump?
7. A 500mL bag containing 10,000 units of med is infusing at 40mL/hr. How many units are infusing per hour?
8. The order is to administer 15 mL orally. When discharging your patient, you know that this is equivalent to: ___tsp or ___tbsp or ___oz
9. Using gravity drip tubing with a drip factor of 15 gtt/mL, you need to administer 120 mL/hr. What flow rate (gtt/min) will you need? What will the 15-second rate be?

10. The order reads to infuse 40 mEq/L of IV fluid. The medication is available in 20 mEq/10 mL vials. How many mL of med will you add to a 250 mL bag of IV fluid?
11. 100 mL of a medication is to be administered in 30 minutes using a set calibrated at 10 gtts/ mL. Calculate the flow rate.
12. A medication of 500 mL is to be administered in 3 hours using macrodrip tubing of 20 gtt/mL. Calculate the flow rate.
13. You are supposed to infuse 800 mL NS over 5 hours. After 2 hours you notice that 500 mL have already infused. The set being used is calibrated at 15 gtt/mL. Recalculate the new flow rate to complete the infusion on time.
14. An IV of 700 mL D5 $\frac{1}{2}$ NS is to infuse at a rate of 125 mL/hr.
 - a. How long will it take to complete the infusion? (express your answer in hours and minutes)
 - b. If the infusion started at 8:45 pm on Sunday, August 20 when would the infusion be complete?
15. Your drug is provided as 150mg / 250 mL. At what rate would you program the IMED to infuse it at 0.5mg/ min?
16. At what rate would you program your IMED to infuse a medication at 4mcg/ min if your bag contains 50 mg/100 mL?
17. You are infusing a medication at 50 mL/hr. The strength of the medication is 250 mg/ 100 mL. What dose is infusing per minute?
18. An IV of 500 mL containing 600 mg of medication is ordered to infuse at the reate of 20 mL/hr. What dosage is infusing per hour?
19. Calculate the flow rate for insuing 125 mL/hr when a microdrip set is used.
- 20) Your order reads: D5 $\frac{1}{4}$ NS + 20 mEq of Potassium Chloride Liter. Pharmacy sends you a vial of KCl 10 mEq / 5 mL. How many mL of Potassium Chloride will you add to a 1000 cc bag of D5 $\frac{1}{4}$ NS?
- 20a) Using the same order and the same concentration of KCl, how many mL of Potassium Chloride will you add to a 250 bag of D5 $\frac{1}{4}$ NS?