MDM101 - BSN 105

Dosage Calculation for Nursing

PRACTICE EXAM QUESTIONS ANSWER KEY

Important Notes:

This PRACTICE exam was prepared as another tool for students to prepare for their final exam and may or may not represent fully the content of the final exam

We have organized the questions so that subject matter is grouped together. We hope this helps you better identify areas you find challenging that might need more attention while studying. **Your Final Exam will not be organized in this manner** and questions will appear more random

This mock exam EXCEEDS the number of questions that would appear on your final. Please do not consider the length indicative of what you should be able to complete during a live test.

1. Order: Octreotide acetate 0.05 mg SUBCUT daily.

Using the included label, calculate the volume the nurse will administer for a single dose. Show your work.

Administer: **0.5 mL – be sure to include unit in your answer**
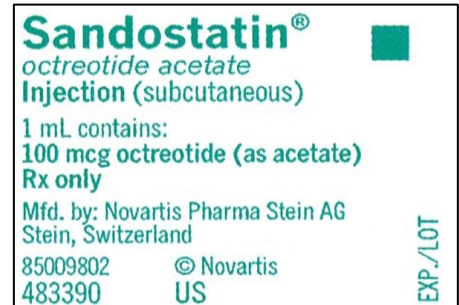
Calculation:
0.05 mg = 50 mcg
D = 50 mcg
H = 100 mcg
Q = 1 mL
50 mcg/100 mcg x 1 mL = x mL
x = 0.5 mL

Sandostatin®
octreotide acetate
Injection (subcutaneous)
1 mL contains:
100 mcg octreotide (as acetate)
Rx only
Mfd. by: Novartis Pharma Stein AG
Stein, Switzerland
85009802   © Novartis
483390   US
EXP./LOT

2. Answer the following questions based on the medication label provided.

NDC 0173-0489-00   *GlaxoWellcome*   Each 5 mL contains 5 mg of ondansetron HCl dihydrate equivalent to 4 mg of ondansetron.

Zofran®
(ondansetron hydrochloride)
Oral Solution

See package insert for Dosage and Administration.

Store between 15° and 30°C (59° and 86°F). Protect from light. Store bottle upright in carton.

4 mg/5 mL

Caution: Federal law prohibits dispensing without prescription.

Glaxo Wellcome Inc.
Research Triangle Park, NC 27709
Made in England
4058968
Rev. 3/96

50 mL

a) A patient undergoing chemotherapy has the following order:
   Ondansetron, 12 mg PO, q6h, prn for nausea.
   Calculate the volume you will administer for a single dose. Show your work.
   Calculation:
   D = 12 mg
   H = 4 mg
   Q = 5 mL
   12 mg/4 mg x 5 mL = x mL
   x = 15 mL

Administer: **15 mL – be sure to include unit in your answer**

b) What is the drug dose strength of the medication? **4 mg/5 mL**

c) What is the dose of the vial? **40 mg – be sure to include unit in your answer**
Calculation:
Dose refers to how many g/mcg/mg/unit etc are in the vial, *not* the number of tablets or mL in the vial. The label does not indicate the dose of the vial, but we can figure it out by solving for x. Start with what we know, we know that this is a 50 mL vial, we also know that the concentration or drug dose strength of the vial is 4 mg/5 mL, therefore:
4 mg : 5 mL = x mg : 50 mL
5x = 50(4)
x = 200/5
x = 40 mg

d) What is the maximum dose of medication the client can receive in 24 hours? **48 mg**
Calculation:
The order is for q6h prn, that means that the most frequently the patient can receive the medication is every 6 hours, therefore in a 24-hour period the patient may receive a maximum of 4 doses (24 ÷ 6 = 4). If each dose is 12 mg, 4 doses will be 48 mg (4 x 12 = 48)

3. Use the label below to answer the following questions.
A client with a urinary tract infection has the following order:
Ampicillin 450 mg IM q8h
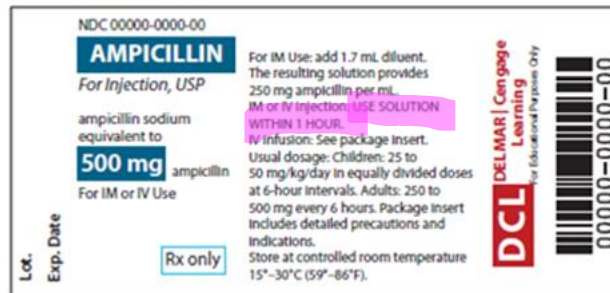
a. What volume of diluent should be added? 1.7 mL

b. What volume will the nurse administer for a single dose?
Administer: **1.8 mL – be sure to include unit in your answer**
Calculation:
250 mg : 1 mL = 450 mg : x mL
250x = 450(1)
x = 1.8 mL

c. How long after reconstitution is the medication stable? 1 hour

d. What is the dose of the vial? **500 mg**

4. A patient is having difficulty swallowing tablets thus the nurse decides to administer the medication to the patient as an oral suspension. If the order is for 80 mg of the medication and the oral suspension is supplied in a concentration (drug dose strength) of 20 mg/5 mL, the nurse will administer _____ for a single dose.
   a. **4 tsp**
   b. 4 mL
   c. 20 tsp
   d. 1 oz

   Calculation: D = 80 mg, H = 20 mg, Q = 5 mL
   80 mg/20 mg x 5 mL = x mL, x = 20 mL
   5 mL = 1 tsp, therefore 20 mL = 4 tsp (20/5 = 4)

5. Your patient is ordered digoxin 0.45 mg PO daily. If digoxin is supplied as 150 mcg tablets, how many tablets will the nurse administer for a single dose?

   Administer **3** tablets.
   Calculation:
   0.45 mg = 450 mcg
   D = 450 mcg
   H = 150 mcg
   Q = 1 tablet
   450 mcg/150 mcg x 1 tab. = x tab.
   x = 3

6. Your patient is ordered Levothyroxine 100 mcg PO daily for a diagnosis of hypothyroidism. The ward stock availability is Levothyroxine 0.4 mg tablets. How many tablets will you administer for a single dose?
   a. ½ tab
   b. **¼ tab**
   c. 1 tab
   d. ¾ tab

   Calculation:
   0.4 mg = 400 mcg
   400 mcg : 1 tab = 100 mcg : x tab
   400 x = 100 (1)
   x = 0.25 = ¼ tab

7. Your patient has a post-op systemic infection and has been ordered cephalexin 1.5 g IV q8h. The nurse is preparing the medication and is using a concentration of 250 mg/mL.

   a. What volume will the nurse administer for a single dose? **6 mL – be sure to include unit in your answer**
   Calculation:
   D = 1 500 mg (1.5 g = 1 500 mg)
   H = 250 mg
   Q = 1 mL
   1 500 mg/250 mg x 1 mL = x mL
   x = 6 mL

   b. What is the total dose of medication the patient will receive in a 7-day treatment course is? **31.5 g**
   Calculation:
   Medication is ordered q8h, that means in a 24-hour period patient will receive 3 doses (24/8 = 3). Each dose is 1.5 g, 1.5 x 3 = 4.5, therefore patient will receive 4.5 g per day. 4.5 x 7 = 31.5, thus patient will receive 31.5 g in a 7-day period.

8. A recipe to make 3 dozen chocolate chip cookies calls for 454 g of butter. If you want to make 5 dozen cookies, how many g of butter is required? Round answer to nearest 10th as required. **756.7 g**
   Calculation:
   12 cookies in a dozen, therefore 3 dozen cookies = 36 cookies, 5 dozen cookies = 60 cookies
   36 cookies : 454 g = 60 cookies : x g
   36x = 454(60)
   x = 27 240/36
   x = 756.666667 ⇨ rounded to nearest 10th = 756.7 g

9. Order: Atropine sulfate 300 mcg IM stat. Using the included label calculate the volume of medication required to administer a single dose. Show your work.
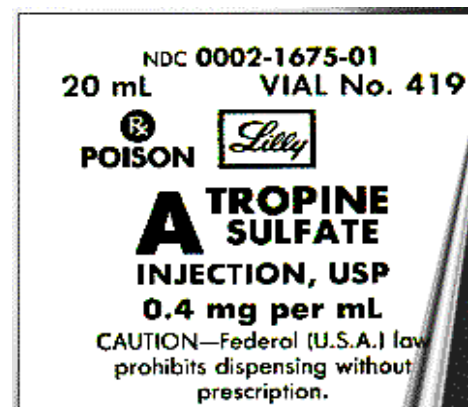
   a. Administer **0.75 mL**
   Calculation:
   0.4 mg = 400 mcg
   D = 300 mcg, H = 400 mcg, Q = 1 mL

300 mcg/400 mcg x 1 mL = x mL, x = 0.75 mL

NDC 0002-1675-01
20 mL   VIAL No. 419
℞
POISON *Lilly*
A TROPINE
  SULFATE
INJECTION, USP
0.4 mg per mL
CAUTION—Federal (U.S.A.) law
prohibits dispensing without
prescription.

b. Based on the volume calculated, select the correct syringe to use and shade in the volume
    to be administered.
    We always want to select the smallest syringe that contains our entire volume, therefore
    we will select the 1 mL syringe.
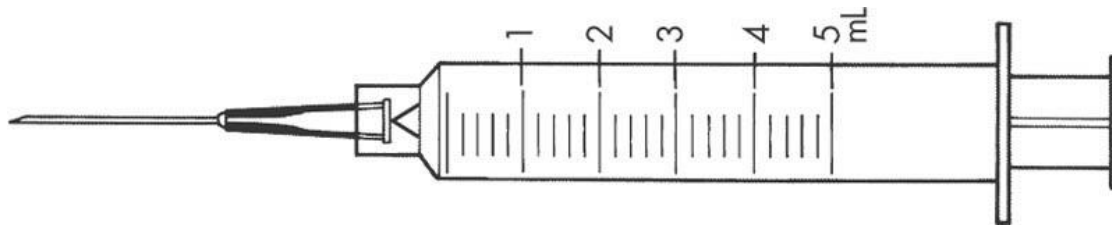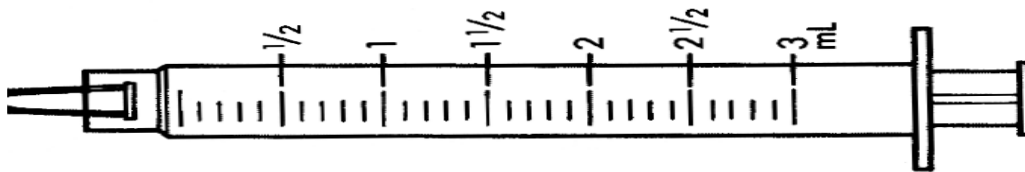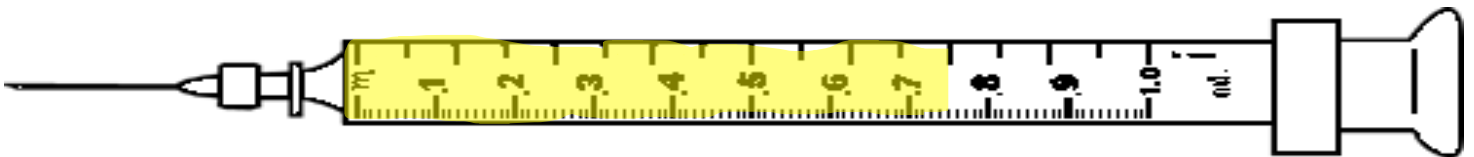
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10. A patient weighing 192 lb has an order for Cogentin 1.5 mg/kg IM stat. Cogentin is supplied as 250 mg/mL. Round answer to nearest whole number if necessary.

    a. What is the dose required for this patient? **131 mg**

    192 lb = 87.3 kg (actually 87.272727273 – unless otherwise indicated round weights to nearest 10th, 87.272727273 rounded to nearest 10th

    1.5 mg : 1 kg = x mg : 87.3 kg

    1x = 87.3(1.5)

    x = 130.95 rounded to nearest whole number = 131 mg

    b. What volume will you administer for a single dose? **0.52 mL – be sure to include unit in your answer, see explanation below for rounding**

    Calculation:

    D = 131 mg, H = 250 mg, Q = 1 mL

    131 mg/250 mg x 1 mL = x mL

    x = 0.524 mL ⇨ 0.524 rounded to nearest 100th = 0.52) . Unless otherwise stated, volumes less than 1 mL should be rounded to nearest 100th (we would select a 1 mL syringe and all 1 mL syringes will allow rounding to nearest 100th, see syringes pictured in question #9).

11. A child weighing 64 lb has an order for Morphine Sulfate 8.4 mg IV q2h for pain. The recommended range for a child is 0.2-0.4 mg/kg/dose. The morphine availability is 6 mg/mL

    a. According to the recommendation, is the ordered dose safe? **Yes**

       Calculation:

       64 lb = 29.1 kg (actually 29.0909091 kg – unless otherwise indicated round weights to nearest 10th, 29.0909091 rounded to nearest 10th = 29.1)

       According to recommendation each dose for this child should be at least 5.82 mg (0.2 mg x 29.1 kg – 5.82 mg) and no more than 11.64 mg (0.4 mg x 29.1 kg = 11.64 mg). Ordered dose is 8.4 mg which falls within this dose, therefore ordered dose is safe.

    b. If no, what action would you take? **Hold dose, contact prescriber.**

    c. If yes, what volume is required to administer a single dose? **1.4 mL**

       Calculation:

       D = 8.4 mg, H = 6 mg, Q = 1 mL, 8.4 mg/6 mg x 1 mL = x mL, x = 1.4 mL

12. Convert the following: Round answers to nearest 100th where indicated
    a. 450 mg = **450 000 mcg**
    b. 25 lb = **11.36 kg**
    c. 350 mL = **0.35 L** – don't forget to add leading zero, 0.35 L NOT .35 L
    d. 325 mg = **0.33 g**
    e. 735 g = **0.74 kg** – NOT .74 g
13. Order: Meperidine hydrochloride 120 mg IM q4h prn for pain. Use the included label to calculate the volume of Meperidine hydrochloride that you will administer for a single dose. Show your work.
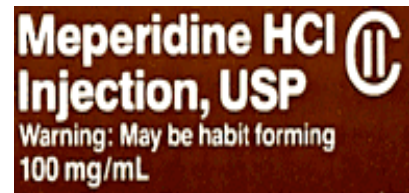
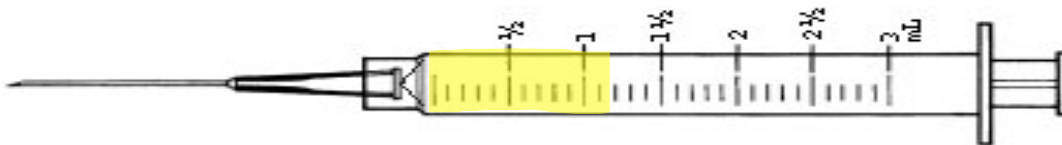a. Administer: **1.2 mL**

Calculation:

100 mg : 1 mL = 120 mg : x mL

100 x = 120(1)

x = 1.2 mL

Meperidine HCl
Injection, USP
Warning: May be habit forming
100 mg/mL

For IM, SC or Slow IV* Use
*See Insert
20 mL Multiple Dose Vial

b. Shade the syringe to show the correct dose.

c. If the patient receives 3 prn doses they will have received 3.6 mL and 360 mg

and 360 000 mcg.

Calculations:
(1.2 mL per dose, 1.2 x 3 = 3.6, each dose is 120 mg, 120 x 3 = 360, 360 mg = 360 000 mcg)

14. Your patient is ordered Humulin R 12 units and Humulin N 15 units SUBCUT.

    a. Indicate the **total number** of units that you will give to your patient.

I will give **27 units** to my patient. (12 + 15 = 27)

    b. Shade in the syringe to show the **total amount** of insulin that you will draw up.

15. A client who has type 1 diabetes has been prescribed basal-bolus insulin SUBCUT as follows:
    o   Insulin Humulin R 8 units ac breakfast, 6 units ac lunch and 10 units ac dinner.
    o   Insulin Glargine 12 units at bedtime.
    o   Additional bolus insulin (insulin Humulin R) may be given ac meals according to blood glucose (BG) on correction/supplemental scale:

Correctional Scale

BG (mmol/L)	Bolus Insulin (units)
<3.0	Call Health Care Provider
3.0–6.0	0
6.1–10.0	1
10.1–13.0	3
13.1–19.9	5
>19.9	Call Health Care Provider

_____

a. How much correction bolus insulin, if any, should the client receive ac breakfast, if the client's BG is 6.3 mmol/L? **1 unit** How much total insulin should they receive? **9 units** (8 + 1 = 9)

b. How much correction bolus insulin, if any, should the client receive ac lunch, if the client's BG is 5.1 mmol/L? **0 units** How much total insulin should they receive? **6 units** (0 = 6 = 6)

c. What is the total amount of bolus insulin that the client should receive ac dinner, if the client's BG is 13.3 mmol/L? **15 units** (5 + 10 = 15)

d. The client's BG is 17.8 mmol/L at bedtime. The nurse should administer **12** units of

Glargine insulin(s). The bolus doses are only to be given ac meals, NOT at bedtime

16. Order: Dalteparin 1 200 units SUBCUT qMonday, Wednesday and Friday, post dialysis.
What volume of Dalteparin is required for a single dose?

Dalteparin 1 500 units/mL 5 mL vial

Administer: **0.8 mL**

Calculation: 1 500 units : 1 mL = 1 200 units : x mL, 1 500 x = 1 200(1), 1 200/1 500 = 0.8 mL

What is the dose of the vial? **7 500 units**
Calculation:
Recall that the dose of something (in this case the vial) refers to mcg/mg/units/g, NOT volume or number of tablets. We are not given the dose of the vial, but we can figure it out by solving for x.
Let's start with what we know, we know the drug dose strength (concentration) of the vial is 1 500 units/mL, we also know that this is a 5 mL vial therefore:
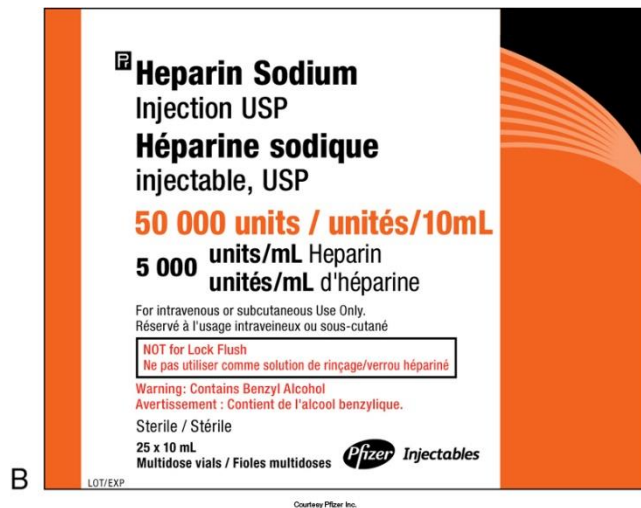1 500 units : 1 mL = x units : 5 mL
1x = 1 500(5)
x = 7 500 units

17. Order: Heparin 4 500 units SUBCUT qam. Supply on hand is Heparin 10 000 units/mL.

    What volume will you administer to your patient? Administer **0.45 mL**
    D = 4 500 units, H = 10 000 units, Q = 1 mL, 4 500 units/ 10 000 units x 1 = 0.45 mL

18. A patient who is recovering from a deep vein thrombosis is an order for 3 500 units of Heparin SUBCUT stat. Heparin is supplied as label indicates.

    a. What volume is required to administer a single dose? **0.7 mL**
        Calculations:

D = 3 500 units, H = 5 000 units, Q = 1 mL, 3 500 units/ 5 000 units x 1 mL = 0.7 mL

b. What size syringe should the nurse select to administer the ordered dose? **1 mL**

19. A patient weighing 165 lb has suffered a stroke and has the following order:
Heparin 120 units/kg SUBCUT x1. Heparin is supplied in a drug dose strength of 10 000 units/mL.

a. What dose does this patient require? **9 000 units**
  165 lb = 75 kg
  120 units : 1 kg = x units : 75 kg
1x = 120(75)
x = 9 000 units

b. What volume will you administer? **0.9 mL**
Calculations:
10 000 units : 1 mL = 9 000 units : x mL
10 000x = 9 000(1)
x = 0.9 mL

20. Your patient has an IV infusing at a rate of 100 mL/h, tubing drop factor is 15 gtt/mL. What is the rate in gtt/min? **25 gtt/min**

$$\frac{\text{vol x drop factor}}{\text{time(min)}} = \text{gtt/min}$$
$$\frac{100 \text{ mL x 15 gtt/mL}}{60 \text{ min}} = 25 \text{ gtt/min}$$

21. The order is to infuse a Normal Saline solution at 45 mL/h, the nurse is using microdrip IV tubing. Calculate the rate in gtt/min. **45 gtt/min**
microdrip tubing means tubing has a drop factor of 60 gtt/min, therefore for microdrip tubing rate in mL/h and gtt/min will be the same.
$$\frac{45 \text{ ml x 60 gtt/mL}}{60 \text{ min}} = 45 \text{ gtt/min}$$

22. A patient has an order for 3 L of D$_5$W to administer be administered intravenously over the next 24 hours. IV tubing has a drop factor of 20 gtt/mL.
    a. What is the infusion rate if the nurse is infusing the solution via gravity?
       42 gtt/min

Calculations:

Gravity infusions are always calculated in terms of gtt/min

gravity infusion calculation is volume (mL) x drop factor/time in minutes

volume = 3 000 mL, drop factor = 20 gtt/mL, time in minutes = 1 440 min

$$\frac{3\ 000\ \text{mL x 20 gtt/mL}}{1\ 440\ \text{min}} = 41.66666667 \text{ gtt/min}$$

We cannot count a fraction of a drop so all IV rates should be rounded to nearest whole number. 41.66666667 rounded to nearest whole number = 42

b. What is the infusion rate if the nurse is infusing the solution using an IV pump?
125 mL/hr

Calculations:

All IV infusion rates are calculated in terms of mL/hr.

3 000 mL : 24 h = x mL : 1 h

24x = 3 000(1)

3 000/24 = 125

c. How many g of Dextrose will the patient receive? **150 g**

Calculations:

D5W solution means there is 5 g of Dextrose in 100 mL.

patient will receive 3 L or 3 000 mL of IV solution over 24 hours

 5 g : 100 mL = x g : 3 000 mL

100x = 5(3 000)

x = 15 000/100

x = 150

23. A patient has the following order: RL IV @ 35 mL/h. Using IV tubing with a drop factor of 20 gtt/mL, calculate the rate in gtt/min. **12 gtt/min**

Calculations:

Gravity infusion are calculated in terms of gtt/min

Formula for gtt/min infusion is volume (mL) x drop factor/time (min)

$$\frac{35\ \text{mL x 20 gtt/mL}}{60\ \text{min}} = 11.66666$$

we cannot count a fraction or portion of a drop so IV rates should always be rounded to nearest whole number. 11.6666 rounds to 12 as a whole number.

24. Order: NS IV 1 000 mL over 7 hours, IV tubing has a drop factor of 15gtt/mL

a. Calculate the flow rate for a gravity infusion. **Answer: 36 gtt/min**
Calculations:
Gravity infusion are calculated in terms of gtt/min
1 000 mL x 15 gtt/mL = 35.7142857 gtt/min
    420 min
As we cannot count a portion of a drop, IV rates are always rounded to nearest whole number.
35.7142857 rounded to the nearest whole number = 36

b. Calculate the flow rate for an IV pump infusion. **Answer: 143 mL/h**
Calculations:
Rates for an IV pump are always calculated in terms of mL/h
1 000 mL : 7 h = x mL : 1 h
7x = 1 000(1)
x = 142.857143
as most IV pumps can only be programmed in terms of whole numbers, we will always round IV rates to the nearest whole number. 142.857143 rounded to the nearest whole number = 143

c. If the nurse hangs a 1 L bag at 1600, at what time would you expect the bag to run empty? **2300 h**
Rate of infusion is 143 mL/h
1 000/143 = 6.99 h (7h)
1600 + 700 = 2300

25. A client is prescribed cefazolin 825 mg IV q12h for a post operative infection. Cefazolin is available in 300 mg/mL strength.
Administration instructions: Further dilute gentamicin in 50 mL D5W and infuse over 20 minutes. The nurse is using IV tubing with a drop factor of 10 gtt/mL. Show your work.

a. What volume of gentamicin should the nurse add to the 50 mL D5W minibag?

Answer **2.8 mL**

D = 825 mg, H = 300 mg, Q = 1 mL
825 mg x 1 mL = x mL
300 mg

x = 2.75 mL
Unless otherwise indicated, volumes greater than 1 mL should be rounded to nearest 10th (think
of the syringe you would be using – 3 mL, 3 mL syringes allow for rounding to nearest 10th)

b. Calculate the rate of flow to administer the medication using a gravity infusion.

Answer ***25 gtt/min OR 26 gtt/min**
Calculation
Gravity infusion are calculated in terms of gtt/min
Formula for gtt/min infusion is volume (mL) x drop factor/time (min)
50 mL x 10 gtt/mL = 25 gtt/min
    20 min
        OR
52.8 mL x 10 gtt/mL = 26.4 which would round to 26 gtt/min
    20 min

*Technically the volume to be infused could be counted as 52.8 mL, as we added 2.8 mL in
volume when we added the medication. As a general rule we do not count volume we added to
the minibag when calculating IV medication administration rates as the volume of IV bags are
not precise and generally there is a 10 – 15% overfill volume. If the volume you are adding is
more than 10% of the volume of the minibag then you would generally count that volume or
remove that amount of volume from the minibag prior to adding the medication. Refer to class
notes or consult with professor to determine their preference on how this should be calculated.

c. Calculate the rate of flow to administer the medication using an IV pump.

Answer **150 mL/h OR 158 mL/h**

Calculations:
Rates for an IV pump are always calculated in terms of mL/h
50 mL : 20 min. = x mL : 60 min
20x = 50(60)
x = 150

OR

52.8 mL : 20 min. = x mL : 60 min
20x = 52.8(60)
x = 158.4 which rounds to 158

26. A 5-year-old child weights 44 lb and has a temperature of 39.8°C has the following order: Acetaminophen 10 mg/kg/dose q4h prn for temperature ≥ 38.5°C.

    a. What dose of acetaminophen is required for a single prn dose? **200 mg**
       Calculation:
       44 lb = 20 kg
       10 mg : 1 kg = x mg : 20 kg
       1x = 20(10)
       x – 200 mg

    b. If acetaminophen is available in a strength of 140 mg/4 mL, what volume is required to administer a single dose? Round answer to nearest 10th where applicable.
       Answer: 5.7 mL
       Calculation
       D = 200 mg, H = 140 mg, Q = 4 mL
       $\frac{200 \text{ mg} \times 4 \text{ mL}}{140 \text{ mg}}$ = x mL
       x = 5.71428571 ⇨ rounded to nearest 10th = 5.7

    c. What is the maximum dose of acetaminophen the child can receive in a 24-hour period? **1 200 mg or 1.2 g**
       Calculation:
       q4h means that the child could potentially receive a 200 mg dose every 4 hours.
       This would mean in a 24-hour period the child could receive 6 doses (24 ÷4 = 6)
       200 mg per dose times 6 doses = 1 200 mg or 1.2 g

    d. If the child receives a prn dose at 1625, what is the earliest time they can receive another dose? **2025**
       q4h prn means no more frequently than every four hours, four hours after 1625 is 2025.

27. A child weighs 30 kg has the following order: Gentamicin 30 mg IV q6h. The recommended dosage is 4 to 8 mg/kg/day in 4 divided doses q6h. Show your work

    a. What is the recommended daily dosage range for this child?
       Answer: 120 mg – 240 mg
       Calculation:
       According to the recommendation, in a day the child should get at least 4 mg for each kg of body weight and no more than 8 mg/kg
       Child weighs 30 kg
       4 x 30 = 120
       8 x 30 = 240

b. What is the recommended single dosage range for this child?
Answer: 30 mg – 60 mg
Calculations:
According to recommendation, daily dose should be given in 4 divided doses.
$120 \div 4 = 30$
$240 \div 4 = 60$

c. According to the recommendation, is the dosage ordered safe? **Yes**

28. A child with a seizure disorder has the following order: Phenobarbital 75 mg PO BID. The child weighs 80 lb and the recommended dosage is 6 to 9 mg/kg/day in two divided doses. Show your work.

a. What is the recommended daily dose range for this child? Round answer to nearest whole number
Answer: 218 – 328 mg
Calculations:
80 lb = 36.4 kg (80 ÷ 2.2 = 36.3636364 – unless otherwise indicated, weights should be rounded to the nearest 10th)
36.4 x 6 = 218.4 mg (rounded to nearest whole number = 218)
36.4 x 9 = 327.6 mg (rounded to nearest whole number = 328)

b. What is the recommended single dose range for this child?
Answer: 109 – 164 mg
Calculations:
$218 \div 2 = 109$
$328 \div 2 = 164$

c. According to the recommendation, is the dosage ordered safe? **No**
Minimum recommended dose is 109, order is for 75 mg, a dose that is too low is also considered to be unsafe

29. The nurse needs to prepare 0.45 L of a 2/3 strength Ensure solution. The nurse will add

__**150**_____ mL of water to ____**300**_____ mL of full strength Ensure.

Show your work.

Calculations:

2/3 strength ensure solution means that 2/3 of the solution will be the full strength ensure and 1/3 will be water.

0.45 L = 450 mL

$$\frac{2}{3} = \frac{x}{450 \text{ mL}}$$

3x = 450 (2)

x = 300 mL ⇨ therefore 300 mL of the 450 mL solution will be Ensure, the remaining volume will be water. 450 – 300 = 150 mL ⇨ therefore 150 mL of the 450 mL solution will be water

30. Use the label below to answer questions a - f

From:http://medlibrary.org/lib/rx/meds/eryped-200/page/4/

    a. After reconstitution, what is the volume of the bottle? **100 mL**

    b. What is the dose of the bottle? **4 000 mg or 4 g**
The dose is not indicated on the label, but we can calculate the dose by solving for x. Start with what we know. We know that after reconstitution the bottle has a drug dose strength (concentration) of 200 mg/5 mL. We also know that after reconstitution the bottle has a volume of 100 mL, therefore 200 mg : 5 mL = x mg : 100 mL

5x = 200(100)

$$x = \frac{20\ 000}{5}$$

x = 4 000 mg or 4 g

    c. What volume and type of diluent is required for reconstitution? **53 mL of water**

d. What is the displacement factor? **47 mL**
Displacement factor is the difference between the volume added and the volume we end up with. We add 53 mL but the resulting volume is 100 mL, 100 – 53 = 47

e. If a child has an order for 0.3 g of Erythromycin PO TID, what volume is required for a single dose? **7.5 mL**
Calculation:
0.3 g = 300 mg
D = 300 mg, H = 200 mg, Q = 5 mL
$\dfrac{300 \text{ mg}}{200 \text{ mg}}$ x 5 mL = x mL
x = 7.5 mL

f. If the child weighs 30 kg, is the ordered dose safe (0.3 g TID)? **Yes**
Calculations:
Recommendation is for 30 – 50 mg/kg/day
Child weighs 30 kg ⇨ therefore in a day child should receive at least 900 mg (30 x 30 = 900) and no more than 1 500 mg (30 x 50 = 1 500)
Order dose is 0.3 g (300 mg) TID ⇨ in a day this child will receive 900 mg of medication (300 x 3 = 900). 900 mg is within the recommended range ⇨ safe

30. How many g of NaCl are in 800 mL of NS? **7.2 g**
Calculations:
NS is a 0.9% NaCl which means there is 0.9 g of NaCl in 100 mL
0.9 g : 100 mL = x g : 800 mL
100x = 0.9(800)
x = 7.2 g

31. How many g of Dextrose are in 1 200 mL of D5W? **60 g**
Calculations:
D5W is a 5% Dextrose solution which means there is 5 g of dextrose in 100 mL
5 g : 100 mL = x g : 1 200 mL
100x = 5(1 200)
x = 60 g

32. Use the label below to answer the following questions:

a. What is the drug dose strength/concentration of the drug? **100 mg/25 mL or 4 mg/mL**

b. What is the volume of the vial? **25 mL**

c. Who is the manufacturer of the drug? **Omega**

d. How should the medication be stored? **Protected from light, between 15 and 30°C**

e. Is this medication available without a prescription? **No**

f. Order: Dexamethasone 5 mg IM x1. The nurse will administer **1.3** mL.
D = 5 mg, H = 4 mg, Q = 1 mL
$\underline{5 \text{ mg}}$ x 1 mL = 1.25 mL ⇨ rounded to nearest 10th = 1.3
4 mg

g. Order: Dexamethasone 25 mg IV stat. The nurse will administer **6.3** mL.

D = 25 mg, H = 4 mg, Q = 1 mL
$\underline{25 \text{ mg}}$ x 1 mL = 6.25 mL ⇨ rounded to nearest 10th = 6.3
4 mg

h. Order: Dexamethasone 3.75 mg SUBCUT daily. The nurse will administer **0** mL.
Label indicates for IV or IM use

33. A patient with type 2 diabetes and is on a subcutaneous basal-bolus insulin regimen of rapid-acting insulin analogue (Insulin aspart) before meals and long-acting basal insulin analogue (Insulin NPH) at bedtime. The patient also has a correctional scale of rapid acting insulin (Insulin aspart) to be given with the bolus insulin at mealtimes, as shown below.

Adult Subcutaneous Insulin Order Set				
Monitor Blood Glucose (BG) before breakfast, before lunch, before dinner, at bedtime (2200) & prn				
	Before Breakfast	Before Lunch	Before Dinner	Bedtime (2200)
Bolus Insulin: ☑ insulin aspart ☐ insulin lispro ☐ insulin Regular	Administer ____8_____units SUBCUT	Administer ____7_____units SUBCUT	Administer ____10_____units SUBCUT	
Basal Insulin: ☑ insulin NPH ☐ insulin detemir ☐ insulin glargine	Administer _____units SUBCUT		Administer _____units SUBCUT	Administer ____30_____units SUBCUT
Supplemental (Correction) Dose Insulin Algorithm	Administer according to Supplemental (correction) dose algorithm: ☑ Insulin aspart **OR** insulin lispro SUBCUT TID before meals Do **NOT** use Supplemental insulin scale for blood glucose taken at bedtime Notify physician if bedtime BG is greater than 19 mmol/L **OR** ☐ Insulin aspart **OR** insulin lispro SUBCUT _____(frequency)			

Capillary Blood Glucose (mmol/L)	Supplemental Insulin Dose (Give along with routine bolus pre-meal insulin above)
Less than 4	Follow protocol for treatment of hyoglycemia
____4__to__6____	_____0___units SUBCUT
__6.1__to__8____	_____1___units SUBCUT
__8.1__to__10__	_____1___units SUBCUT
__10.1__to__12__	_____2___units SUBCUT
__12.1__to__14__	_____3___units SUBCUT
__14.1__to__16__	_____5___units SUBCUT
__16.1__to__19__	_____8___units SUBCUT
Greater than 19	Notify Physician

Printed Name of Prescriber	Signature, Designation	License #	Date YYYY/MM/DD	Time
Samuel Richardson	Samuel Richardson, MD	83-67890	2021/04/11	1800

a. How much correction bolus insulin, if any, should the client receive before breakfast, if the client's BG is 5.2 mmol/L? **0 units**
How much total insulin should they receive? **8 units (0 + 8 = 8)**

b. How much correction bolus insulin, if any, should the client receive before lunch, if the client's BG is 12.8 mmol/L? **3 units**
How much total insulin should they receive? **10 units (3 + 7 = 10)**

c. How much correction bolus insulin, if any, should the client receive before dinner, if the client's BG is 16.4 mmol/L? **8 units**
How much total insulin should they receive? **18 units (8 + 10 = 18)**

d. Your patient is ready for bed. How much long-acting basal insulin analogue (Insulin NPH) will you administer if the blood glucose is 10.2 mmol/L? **30 units**

Explanation: Bolus/correctional insulin is only to be administer ac meals according to order, so blood glucose levels have no bearing on evening insulin administration unless glucose level is determined to be dangerous (as per order, greater than 19 mmol/L)