Bethel College

Upper Level Math/Drug Proficiency Fall Review 1 KEY

Calculate the following problems. Unless indicated, all medications involving mL greater than 1 should be rounded to the nearest tenth. Answers in mL that are less than 1 should be rounded to the nearest hundredth. All answers involving tablets should be recorded in terms of # of tabs (or ½ tabs).

1. Synthroid 200 mcg scored tablets are available. The physician has ordered Synthroid 0.3 mg. Calculate the dosage _____**1.5**_____tab.

   X tab = tab/200 mcg x 1000 mcg/1 mg x 0.3 mg/1

2. The order is to infuse 600 mL of lactated ringers IV over 5 hours. Calculate the flow rate in both mL/hr and gtts/min. The IV tubing's calibration is 10 gtts/mL.
   _____**120**_____mL/hr. _____**20**_____gtts/min.

   X mL/hr = 600 mL/5 hr

   X gtts/min = 10 gtts/mL x 120 mL/hr x hr/60 min

3. The normal dose of a pediatric medication is 7 mg/kg every 6 hours. Calculate the daily dosage for a child weighing 30 lb _____**382**_____mg/day.

   X mg/day = 7 mg/kg/dose x kg/2.2 lbs x 30 lbs/1 x 4 doses/day

4. The physician orders 1000 mL LR to infuse at 125 mL/hr. Calculate the infusion time.
   _____**8**____hr.

   X hr = hr/125 mL x 1000 mL/1

5. Atropine gr 1/150 in 1.4 mL is available. The order is for Atropine gr 1/100. Calculate dosage. _____**2.1**_____mL.

   X mL = 1.4 mL/gr 1/150 x gr 1/100 /1

6. Your IVPB has a total volume 125 mL. It is to infuse over 1 hour. The tubing available has a set calibration of 20 gtts/mL. Calculate the flow rate in mL/hr & gtts/min.
____**125**_____mL/hr. ____**42**____gtts/min.

X mL/hr = 125 mL/1 hr

X gtts/min = 20 gtts/mL x 125 mL/hr x hr/60 min

7. You have orders to infuse Morphine Sulfate 10 mg/hr for intractable pain. The Morphine Sulfate comes supplied as 300 mg/500 mL. What will you set the IV pump at to administer this dose? _____**16.7**_____mL/hr.

X mL/hr = 500 mL/300 mg x 10 mg/hr

8. The order is for Dilaudid gr 1/64. The available Dilaudid is gr 1/32 per mL. How many mLs would you give? _____**0.5**_____mL.

X mL = mL/gr 1/32 x gr 1/64 /1

9. Determine the flow rate for an IV of D5NS which contains 1000 mL and is infusing at 50 mL/hr. The set calibration is 60 gtts/mL. _____**50**_____gtts/min.

X gtts/min = 60 gtts/mL x 50 mL/hr x hr/60 min

10. Prepare a gr 1/6 dosage of Morphine Sulfate from a solution with strength of 10 mg per mL. You will give _____**1**_____mL.

X mL = mL/10 mg x 60 mg/gr 1 x gr 1/6 /1

11. A new client has an order for 250 mL of D5W with 40 mEq KCL to run over 4 hours. The medication comes from the pharmacy prepared with 250 mL D5W and 40 meq KCL (20 mL). How fast will you administer this medication? _____**67.5**_____mL/hr.

X mL/hr = 270 mL/4 hr

12. The order reads to give 10 units insulin per hour IV to a patient in DKA. The medication comes mixed 100 units of insulin in 250 mL NS. What rate will you set the pump to infuse this does of insulin? _____**25**_____mL/hr.

X mL/hr = 250 mL/100 units x 10 units/hr

13. Erythromycin suspension 0.5 g is ordered. Liquid available is 250 mg/5 mL. Give _____**10**_____mL.

X mL = 5 mL/250 mg x 1000 mg/1 g x 0.5 g/1

14. Penicillin G powder requires the addition of normal saline prior to its IM administration.

Amount of Saline Added	***Resulting Dosage Strength***
9.6 mL	100,000 units/mL
4.6 mL	200,000 units/mL
3.6 mL	250,000 units/mL

a. It is up to the nurse to determine how to prepare this medication. The order is for 300,000 units IM. Which of the three strengths would you prepare? ___**100,000, 200,000, 250,000**___units/mL.

b. How much NS would need to be added to the powder in order to result in this dosage strength? _____**9.6, 4.6, 3.6**_____mL.

c. How many mLs of reconstituted medication would you need to draw up from this vial to provide your client with the 300,000 units dosage? ____**3, 1.5, 1.2**___mL.

X mL = mL/100,000 units x 300,000 units/1

X mL = mL/200,000 units x 300,000 units/1

X mL = mL/250,000 units x 300,000 units/1

15. The physician orders Lovenox 1 mg/kg for a patient following a total knee replacement. Your patient weighs 143 lbs. How much Lovenox will you administer? _____**65**_____mg.

X mg = 1 mg/kg x kg/2.2 lbs x 143 lbs/1

16. You are admitting a patient with a pulmonary embolus who needs to be started on Heparin. You have orders to give them a bolus of 70 units/kg and then start a Heparin drip at 18 units/kg/hr. The Heparin comes mixed 25,000 units of Heparin in 500 mL. The patient weighs 145 lbs. You also have a vial of Heparin that can be used to administer the bolus. That vial has 5,000 units in 1 mL.

How many units will you give as a bolus? ___**4614**___units.
How many mL is this? _____**0.92**_____mL.
How many units per hour is this? _____**1186**_____units/hr
What will you start your drip at (mL/hr)?_____**23.7**_____mL/hr.

X units = 70 units/kg x kg/2.2 lbs x 145 lbs/1

X mL = mL/5000 units x 4614 units/1

X units/hr = 18 units/kg/hr x kg/2.2 lbs x 145 lbs/1

X mL/hr = 500 mL/25,000 units x 1186 units/hr

17. The patient from the previous question has a PTT of 45.3 six hours after starting the above drip. According to the following protocol, what will you do next? If you determine you need to rebolus or change the drip rate, calculate how many units you will bolus with and what your new drip rate will be.

a. PTT < 35 give 70 units/kg bolus and increase drip 4 units/kg/hr.

b. PTT 35-55 give 40 units/kg bolus and increase drip 2 units/kg/hr.

c. PTT 55-80 no change.

d. PTT 80-99 reduce 2 units/kg/hr.

e. PTT > 99 withhold Heparin for 1 hour and reduce drip 3 units/kg/hr.

Give 0.53 mL bolus & increase drip rate to 26.3 mL/hr.

X mL = mL/5000 units x 40 units/kg x kg/2.2 lbs x 145 lbs/1

X mL/hr = 500 mL/25,000 units x 20 units/kg/hr x kg/2.2 lbs x 145 lbs/1

18. The order is for Digoxin elixir 25 mcg/kg for Heart Failure. The child weighs 25 lbs. The medication comes as 0.125 mg per 2.5 mL. How many mg will you give? How many milliliters will you give?
_____**0.28**_____mg. _____**5.6**_____mL.

X mg = mg/1000 mcg x 25 mcg/kg x kg/2.2 lbs x 25 lbs/1

X mL = 2.5 mL/0.125 mg x 0.28 mg

19. The order is for Tagamet 40 mg/kg/day PO, given in 4 divided doses. The child weighs 60 kg. The medication comes 300 mg per 5 mL.

How many milligrams per day will you give? _____**2400**_____mg/day.
How many milliliters will you give per day? _____**40**_____mL/day.
How many mg are there per dose? _____**600**_____mg/dose.
How many ml are there per dose? _____**10**_____mL/dose.

X mg/day = 40 mg/kg/day x 60 kg/1

X mL/day = 5 mL/300 mg x 2400 mg/day

X mg/dose = 2400 mg/day x day/4 doses

X mL/dose = 5 mL/300 mg x 600 mg/dose

20. The recommended maintenance dose of Phenobarb is 3-8 mg/kg. The medication is supplied 125 mg per 5 mL. The child weighs 30 lbs. Determine the maximum number of mL recommended per dose. _____**4.4**_____ mL/dose.

X mL/dose = 5 mL/125 mg x 8 mg/kg x kg/2.2 lbs x 30 lbs/1

22. You need to give Lasix 60 mg IVP stat. Pharmacy sends 2 Lasix vials with 40 mg/4 mL. How many mL will you draw up? _____**6**____mL.

X mL = 4 mL/40 mg x 60 mg/1