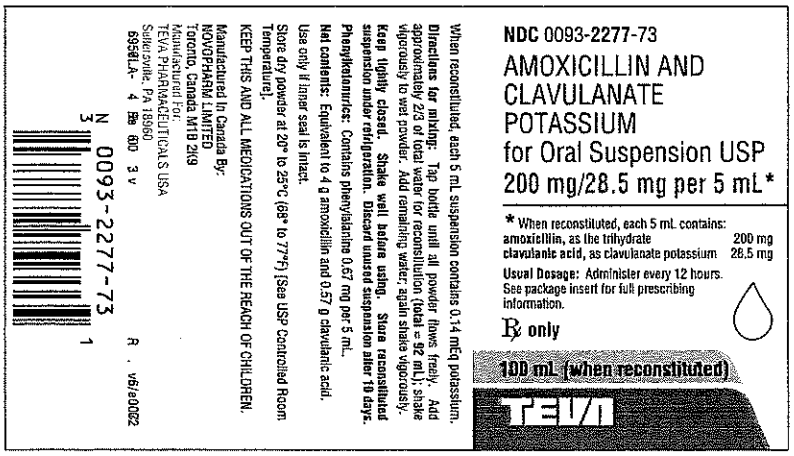
Comprehensive Post-Test

Solve the following calculation problems. Remember to apply the principles learned in the text relating to dosages. Use labels where provided. Shade in the dosage on the syringe where indicated.

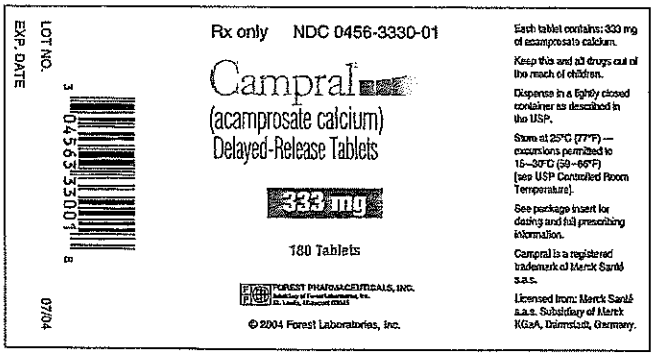
1. Order: Amoxicillin and clavulanate potassium 300 mg p.o. q8h (ordered according to dose of amoxicillin).

   Available:



2. Order: Campral DR (delayed-release) 666 mg p.o. t.i.d.

   Available:

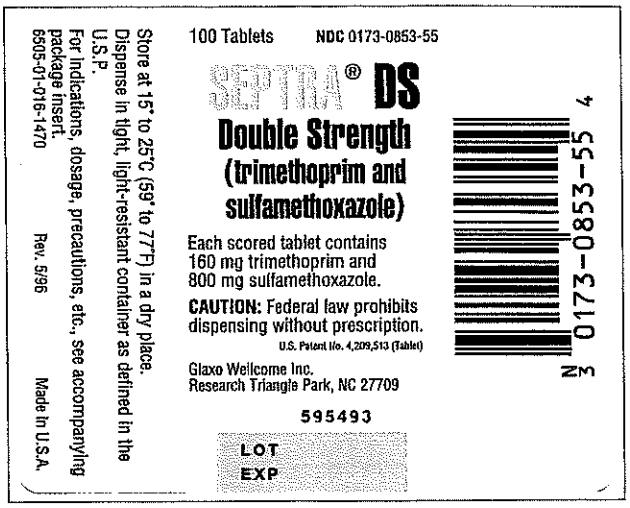


3. Order: Septra DS 1 tab p.o. q12h for 14 days.

Available:

A

B

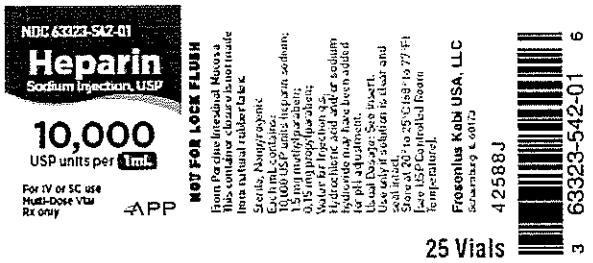


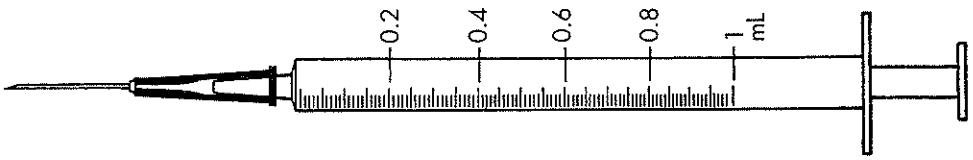
a. Indicate by letter which tablets the nurse would choose to administer to the client based on the order. _____

b. State why. _____

4. Order: Heparin 6,500 units subcut daily. (Express your answer in hundredths.)

Available:





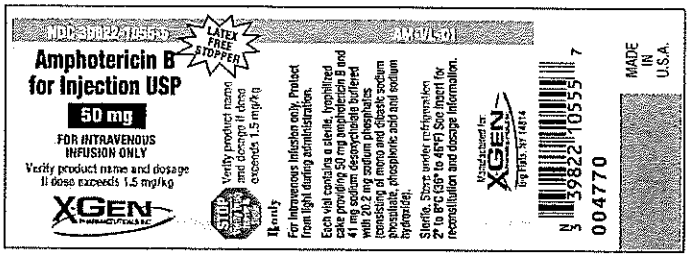
_____

5. Order: Cipro 0.75 g IV q12h for 7 days.

Available: Cipro labeled 400 mg per 40 mL _____

6. Order: Amphotericin B 75 mg in 1,000 mL D5W to infuse over 6 hr daily. The reconstituted solution contains 50 mg per 10 mL.

   Available:



   a. How many milliliters will the nurse add to the IV solution? _____

   b. The IV is to infuse in 6 hr. The administration set delivers 10 gtt/mL. At what rate in gtt/min should the IV infuse? _____

7. The recommended dose of Retrovir for adults with symptomatic HIV infection is 1 mg/kg infused over 1 hour q4h. Determine dosage for a client weighing 110 lb. _____

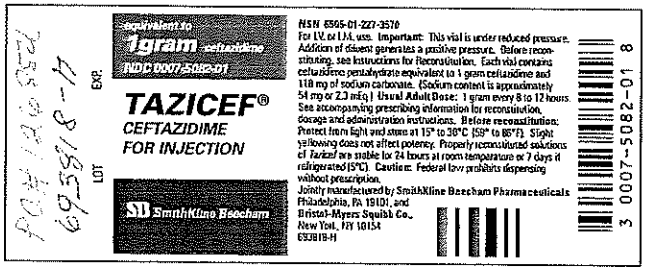
8. Order: Epivir 0.3 g p.o. every day.

   Available: Epivir tablets labeled 150 mg

   How many tablets will the nurse administer? _____

9. Order: Tazicef 0.25 g IV q12h.

   Available:

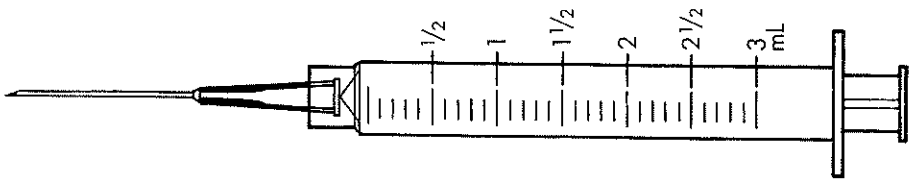


Directions for reconstitution state the following for IV infusion: 1-g vial, add 10 mL sterile water to provide 95 mg per mL; 2-g vial, add 10 mL sterile water to provide 180 mg per mL.

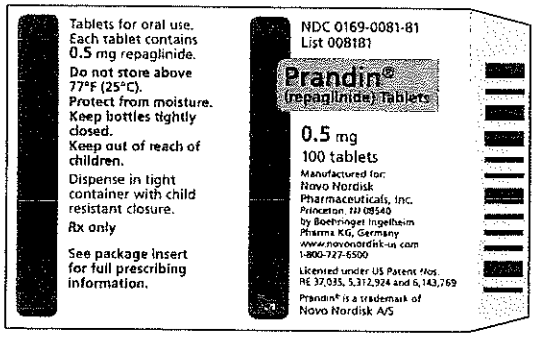
   a. Using the information provided, what concentration will the nurse prepare? _____

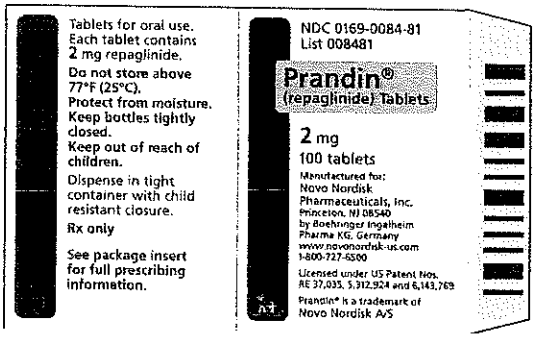
b. How many milliliters will the nurse administer?

_____



10. Order: Prandin 3 mg p.o. b.i.d.





How many of which tablets would be best to administer to the client?

_____

11. Order: Transfuse 1 unit packed red blood cells (250 mL) over 3 hr. The administration set delivers 20 gtt/mL. At what rate in gtt/min should the IV infuse?

_____

12. A client is receiving 500 mg of Flagyl IVPB q8h. The Flagyl has been placed in 100 mL D5W to infuse over 45 minutes. The administration set delivers 10 gtt/mL. At what rate in gtt/min should the IV infuse?

_____

13. Calculate the infusion time for an IV of 1,000 mL of D5NS infusing at 60 mL/hr. Express time in hours and minutes.

_____

14. The prescriber orders Septra Suspension 60 mg p.o. q12h for a child weighing 12 kg. The pediatric medication reference states that Septra Suspension contains trimethoprim (TMP) 40 mg and sulfamethoxazole (SMZ) 200 mg in 5 mL oral suspension, and the safe dosage of the medication is based on trimethoprim. The safe dosage is 6 to 12 mg/kg/day of TMP given q12h. Is the dosage ordered safe?

_____

15. A medicated IV of 100 mL is to infuse at a rate of 50 mL/hr.

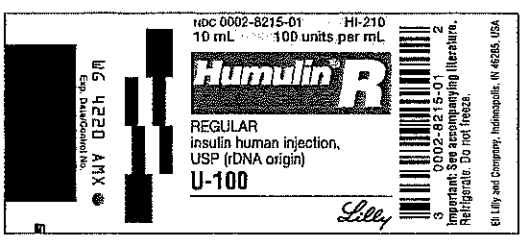
    a. Determine the infusion time. _____

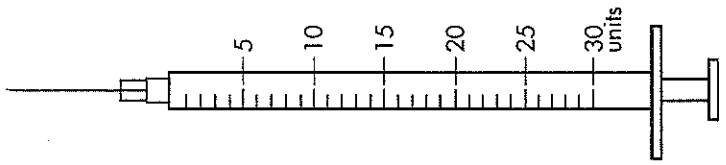
    b. The IV was started at 10:00 AM. When will it be completed? (State time in military and traditional time.) _____

16. A client is to receive 10 mcg/min nitroglycerin IV. The concentration of solution is 50 mg in 250 mL D5W. What should the flow rate be (in mL/hr) to deliver 10 mcg/min? _____

17. Order: Humulin Regular U-100 6 units and Humulin NPH U-100 16 units subcut at 7:30 AM.

    What is the total units the nurse will administer? _____





18. A dosage of 500 mg in a volume of 3 mL is to be diluted to 55 mL to infuse over 50 minutes. A 20-mL flush is to follow.

    a. What is the dilution volume? _____

    b. At what rate in gtt/min should the IV infuse? (Administration set is a microdrop.) _____

    c. Indicate the rate in mL/hr. _____

19. Calculate the body surface area (BSA), using the formula, for a child who weighs 102 lb and is 51 inches tall. Calculate the BSA to the nearest hundredth. _____

20. Acyclovir IV is to be administered to a child who has herpes simplex encephalitis. The child weighs 13.6 kg and is 60 cm tall. The recommended dosage is 500 mg/m^2. Use the formula to calculate the BSA.

    Available:

    a. What is the BSA? (Express your answer to the nearest hundredth.) _____

    b. What will the dosage be? _____

    c. The reconstituted Zovirax provides 50 mg per mL. Calculate the number of milliliters to administer. _____

21. Prepare the following strength solution: 2/5 strength Ensure Plus 250 mL. _____

22. A child weighing 21.4 kg has an order for 500 mg of a medication in 100 mL D5W q12h. The normal daily dosage range is 40 to 50 mg/kg. Determine if the dosage is within normal range, and state the course of action. _____

23. Calculate the amount of dextrose and NaCl in 2 L of D5 $\frac{1}{4}$ NS.

    a. Dextrose _____ g

    b. Sodium chloride _____ g

24. 500 mL D5W was to infuse in 3 hours at 28 gtt/min (28 macrogtt/min). The drop factor is 10 gtt/mL. After 1$\frac{1}{2}$ hours, you notice 175 mL has infused.

    a. Recalculate the IV flow rate. _____

    b. Determine the percentage of change. _____

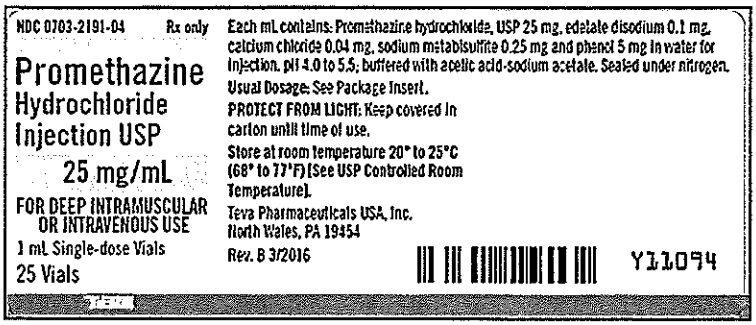
    c. State the course of action. _____

25. Order: Infuse D5W 500 mL with 20,000 units heparin at 25 mL/hr. Determine the following:

    _____ units/hr

26. Order: Phenergan (promethazine hydrochloride) 25 mg IV push before surgery. The literature states: Do not give at a rate above 25 mg/min.

    Available:



    a. How many milliliters will the nurse prepare? _____

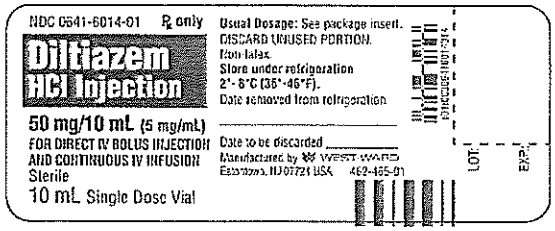
    b. What is the number of minutes the medication should be administered? _____

27. Order: Morphine sulfate 80 mg in 250 mL of IV fluid to infuse at a rate of 20 mL/hr.

    Determine the dosage in mg/hr the client is receiving. _____

28. Order: Diltiazem HCl (cardizem) 25 mg IV over 2 minutes.

    Available:



    a. How many milliliters will the nurse add to the IV? _____

    b. How many milliliters will the nurse infuse per minute? _____

29. Order: Cipro 0.5 g p.o. q12h.

    Available: Cipro tablets labeled 250 mg

    How many tablets will be needed for 10 days of therapy? _____

30. Order: Lanoxin (digoxin) tablets 0.375 mg p.o. stat.

    Available: Scored tablets labeled 125 mcg, 250 mcg, and 500 mcg.

    a. Which Lanoxin tablet(s) will the nurse use to prepare the dosage? _____

    b. How many tablets should the client receive? _____

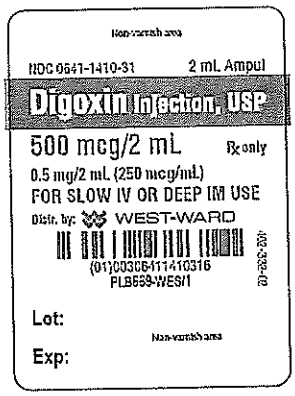
31. Order: Infergen 12 mcg subcut stat.

    Available: Infergen 15 mcg per 0.5 mL.

    How many milliliters will the nurse administer? _____

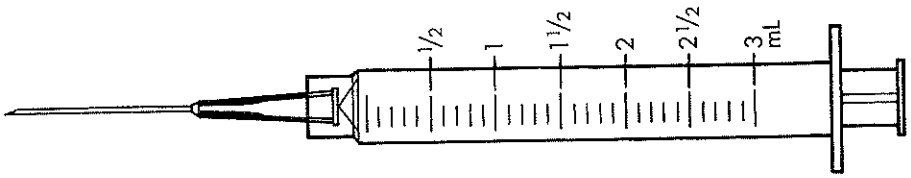
32. Order: Digoxin 0.125 mg IV daily for 7 days.

    Available:



    a. How many milliliters will the nurse administer? _____

    b. Shade the dosage in on the syringe provided.



For problems 33-34, round weight to the nearest tenth as indicated.

33. The heparin protocol at an institution is: Bolus client with 80 units/kg of body weight and start drip at 14 unit/kg/hr. Using the heparin protocol, determine the following for a client weighing 242 lb.

    a. Heparin bolus dosage _____

    b. Infusion rate for the heparin IV drip _____

34. Order: 20 units/kg/hr heparin IV. The client weighs 88 kg.

    How many units will the client receive per hour? _____

35. Order: Digoxin 0.375 mg IV push (infused slowly over 5 minutes).

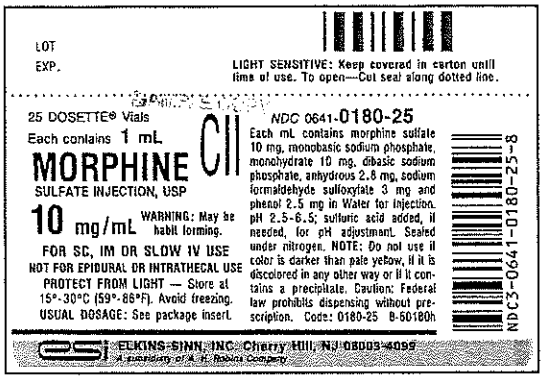
    Available: Digoxin 0.25 mg per mL

    a. How many milliliters should the nurse administer? _____

    b. At what rate in mL/min should the IV infuse? _____

36. Order: Morphine 8 mg IV q4h p.r.n. (infusion not to exceed 10 mg/4 min).

    Available:



    a. How many milliliters will the nurse administer? _____

    b. How many minutes will it take for the IV to infuse? _____

37. Refer to the chart below and calculate the client's fluid intake in milliliters.

ORAL INTAKE	IV INTAKE
4 oz gelatin 2 oz water 12 oz apple juice	100 mL

What is the client's intake in mL? _____

Refer to the Heparin Weight-Based Protocol provided below to answer question 38.

1. Bolus heparin at 80 units/kg.
2. Begin intravenous infusion of heparin at 18 units/kg/hr using 25,000 units heparin in 250 mL D5W for 1,000 units per mL.
3. Adjust intravenous heparin daily based on APTT results.
   - APTT less than 35 sec: Rebolus with 80 units/kg and increase rate by 4 units/kg/hr.
   - APTT 35-45 sec: Rebolus with 40 units/kg and increase rate by 2 units/kg/hr.
   - APTT 46-70 sec: **No change.**
   - APTT 71-90 sec: Decrease rate by 2 units/kg/hr.
   - APTT greater than 90 sec: **Stop heparin** infusion for 1 hour and decrease rate by 3 units/kg/hr.

38. Client weighs 187 lb. Determine the bolus dose of heparin and the initial intravenous rate of heparin. The APTT is reported as being 43 seconds. Determine the rebolus and adjust the intravenous rate based on the APTT results.

39. A client is ordered to begin Levophed (norepinephrine bitartrate) at 4 mcg/min to maintain blood pressure and titrate to maintain systolic blood pressure greater than 100 mm Hg to a maximum of 12 mcg/min. Available solution is Levophed 8 mg in 1,000 mL D5W. Develop a titration table from minimum to maximum dose in 2 mcg/min increments. (The IV pump is calibrated in whole mL.)

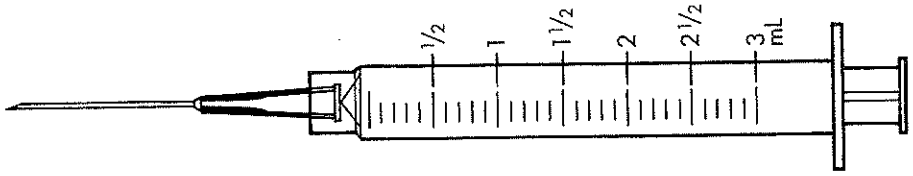
40. Versed (midazolam) 10 mcg/kg IV is ordered for sedation of a client. The client weighs 127.2 lb. How many mcg should the client receive? _____

41. Order: Kantrex 32 mg IV q8h for an infant.

    Available: Kantrex labeled 75 mg per 2 mL

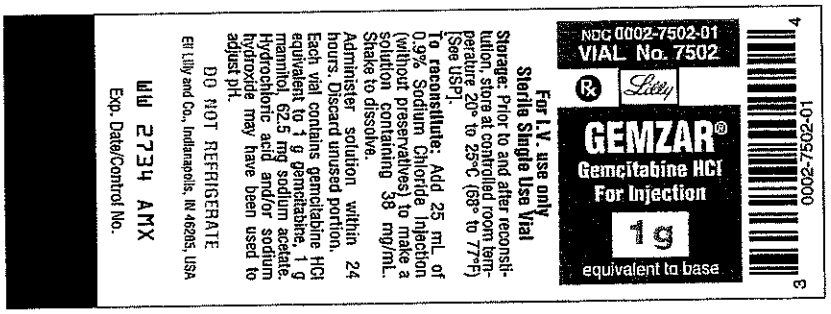
    a. How many mL will the nurse add to the IV? _____

    b. Shade the dosage in on the syringe provided.



42. Order: Gemzar 900 mg IV weekly

    Available:



    How many mL will the nurse add to the IV? _____

43. Using a full strength hydrogen peroxide (3%) solution, prepare 180 mL of 1/3 strength hydrogen peroxide solution for wound care, using normal saline as the diluent.
    Answer _____

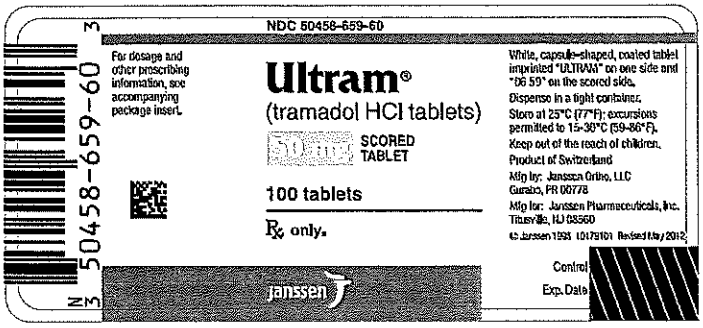
44. Refer to the following medication orders and correct them according to the ISMP published list of Error Prone Abbreviations and Symbols.

    a. MS 4 mg sc q4h prn pain _____

    b. Digoxin .375 mg p.o. qd _____

45. Order: Ultram 0.1 g po q6h prn for pain.

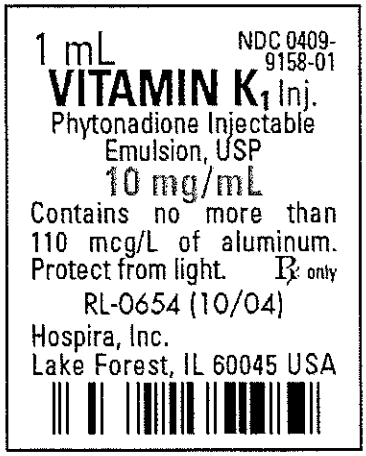
    Available:



    How many tab(s) will the nurse administer? _____

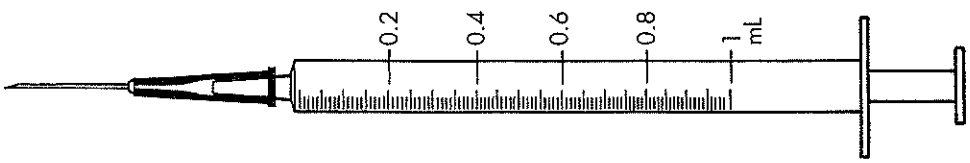
46. Order: Vitamin K 2.5 mg subcut stat.

    Available:



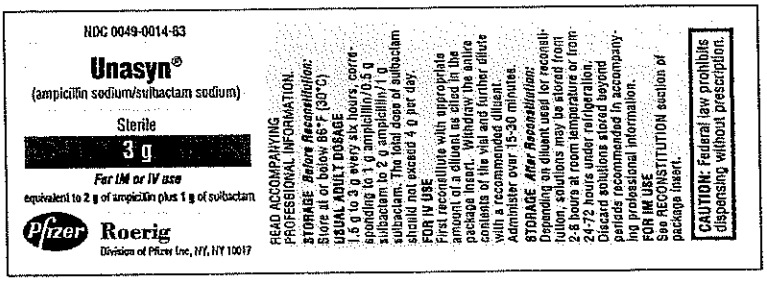
    a. How many mL will the nurse administer? _____

    b. Shade the dosage on the syringe provided.



47. Order: Unasyn 1,550 mg IV q6h

Available: Refer to label and portion of the package insert.

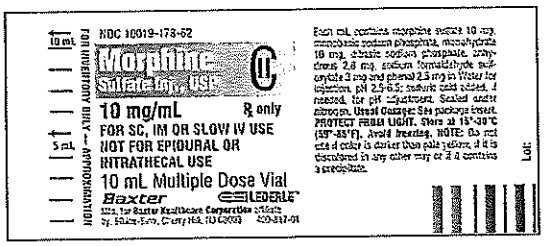


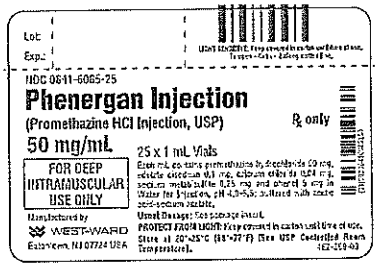
Unasyn Vial Size	Volume of Diluent to Be Added	Withdrawal Volume
1.5 g	3.2 mL	4 mL
3 g	6.4 mL	8 mL

How many mL will the nurse administer? _____

48. Order: Morphine Sulfate 6 mg IM and Phenergan (promethazine HCl). 20 mg IM q6h prn for pain post operatively.

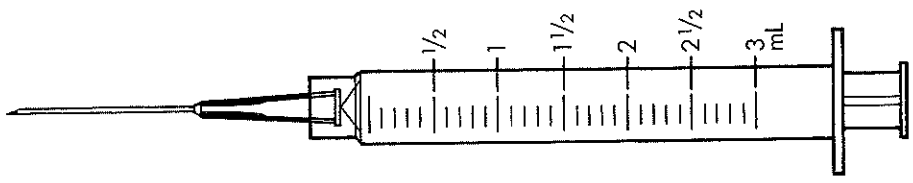
Available:





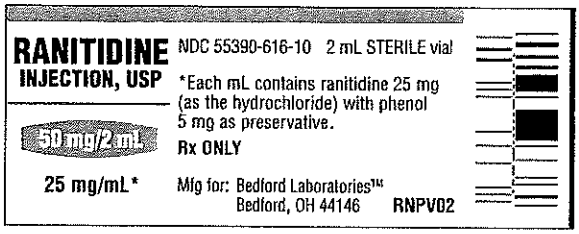
a. What is the total dose in mL the nurse will administer? _____

b. Shade the dosage on the syringe provided.



49. Order: Zantac (ranitidine) 15 mg IV q8h for a child weighing 33 lb. According to *The Harriet Lane Handbook,* the recommended dosage of ranitidine is 2-4 mg/kg/24hr ÷ q6-8hr.

Available:



a. Is the dosage ordered safe? (prove mathematically)

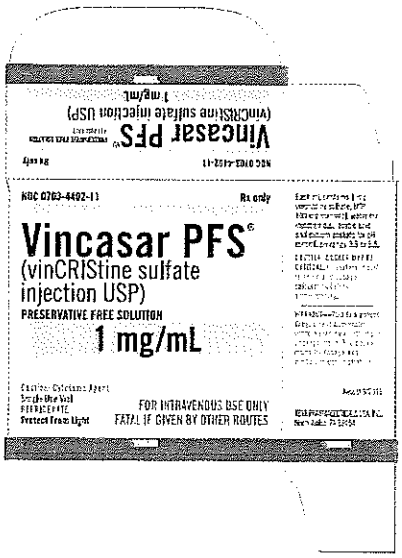
b. If the dosage ordered is safe, calculate the mL the nurse would administer _____.

If not safe, explain why and describe what the nurse should do. _____

_____.

50. Order: Vincristine 4 mg IV q Thursday for a child who weighs 45 kg and is 155 cm. The recommended dose of Vincristine is 1.5-2 mg/m^2 in a single dose weekly. (Use the BSA Formula.) Round dosage to nearest tenth.

Available:



a. Is the dose ordered safe? (Prove mathematically)

b. If the dosage ordered is safe, calculate the mL you would administer _____.

If not safe, explain why and describe what you should do. _____

_____.

51. Calculate the I & O from 7 am–3 pm

A client has IV fluids D_5 ½ NS with 20 meq potassium chloride (KCl) infusing at 75 mL/hr at 7 am. An order is received to increase the IV fluid to 100 mL/hr at 10 am. The IV fluids are held for 1 hour while Ampicillin 1 g in 100 mL of 0.9% NS is infused from 12pm to 1pm. The client consumes the following:

Breakfast: 1½ glasses of cranberry juice (glass = 6oz)

2½ cups of tea (cup = 8oz)

Lunch: ¾ can of gingerale (can = 12oz)

½ bowl of broth (bowl = 6oz)

4oz ice cream

The client voids four times during the shift for 375 mL, 250 mL, 400 mL, and 300 mL of urine.

Intake _____ mL

Output _____ mL

52. A continuous heparin infusion is to begin at 15 units/kg/hr for a client weighing 82 kg. Available: 25,000 units in 250 mL D_5W. Calculate the mL/hr (the pump is capable of delivering in tenths of a mL).

_____ mL/hr

For questions 53-55, calculate the daily fluid maintenance and hourly IV rate using the following formula:

100 mL/kg/day for the first 10 kg of body weight

50 mL/kg/day for next 10 kg of body weight

20 mL/kg/day for each kg of body weight above 20 kg

53. Child weighs 32 kg

Infuse _____ mL of _____ mL/hr (pump delivers in tenths of a mL).

54. Infant weighs 2,500 g

Infuse _____ mL at _____ mL/hr (pump delivers in tenths of a mL)

55. Child weighs 78 lb (round weight to the nearest tenth)

Infuse _____ mL at _____ mL/hr (pump delivers in whole mL)

Answers on pp. 734-741