Medication Calculation Worksheet #3

1. Medication order: Heparin 25,000 units in 500 mL, infuse 4000 units/hr. How many mL per hour do you need to infuse to deliver 4000 units/hr?

$$\frac{4{,}000\ u/hr}{25{,}000\ u} \times 500\ mL = \boxed{80\ mL/hr}$$

2. Medication order: Lidocaine 8 mg in 250 mL, infuse at 10 mcg/min. How many mL per hour do you need to infuse to deliver 10 mcg/min?

$$\frac{10\ mcg}{1\ min} \times \frac{1\ mg}{1000\ mcg} \times \frac{250\ mL}{8\ mg} \times \frac{60\ min}{1\ hr} = \frac{10 \times 250 \times 60}{1000 \times 8} = \boxed{18.75\ mL/hr}$$

3. Medication order: Aminophylline 1 gram in 250 mL, infuse 25 mg/hr. How many mL per hour must you infuse to deliver 25 mg/hr?

$$\frac{25\ mg/hr}{1000\ mg} \times 250\ mL = \boxed{6.25\ mL/hr}$$

4. Medication on hand: Insulin 75 units in 125 mL. How many units per mL?

$$75/125 = \boxed{0.6\ units/mL}$$

5. Medication order: Unipen 750 mg IM q6h. Available: Unipen 1 g/2.5 mL after it has been reconstituted. How many mL of the reconstituted solution will you administer? Round answer to the nearest tenth.

$$\frac{750\ mg}{1} \times \frac{1\ g}{1000\ mg} \times \frac{2.5\ mL}{1\ g} = \boxed{1.9\ mL}$$

6. A nurse is administering an antibiotic via IVPB. The pharmacy dispenses 150 milligrams (mg) of antibiotic mixed in 250 milliliters (mL) of normal saline to infuse over 30 minutes. The nurse will set the infusion pump at _____ mL/hour to administer the IVPB.

$$\frac{250\ mL}{0.5\ hr} = \boxed{500\ mL/hr}$$

7. Administer 3.5 mL of aminophylline liquid (250 mg/2.5mL) PO for pain now. The nurse will administer [1] milligrams.

$$\frac{3.5\ mL}{1} \times \frac{250\ mg}{2.5\ mL} = \frac{875}{2.5} = \boxed{350\ mg}$$

8. Order: Administer cephazolin 60 mg IM daily. Available is a 5 mL vial of cephazolin 100 mg/mL. The nurse should administer how many mL?

$$\frac{60\ mg}{1} \times \frac{1\ mL}{100\ mg} = \frac{60}{100} = \boxed{0.6\ mL}$$

9hrs

9. From 0700 to 1600 the nurse calculates the patient's total intravenous fluid intake as 1 milliliters. An IV is infusing at 150 mL/hour. At 1200, the patient will receive IVPB of 75 mL for 30 minutes. What is the total amount the patient will receive during this time?

9hrs - 0.5 = 8.5hrs (150 mL/hr) = 1275 + 75 = 1350mL

10. Administer 5 milligrams of acyclovir in 75 milliliters of normal saline over 15 minutes. The nurse will set the IV pump at 1 mL/hour.

$\frac{60\text{min}}{1\text{hr}} \times \frac{75\text{mL}}{15\text{min}} = \frac{60 \times 75}{15} =$ 300mL/hr

11. Phenytoin (Dilantin), 7,000,000 mcg PO, is ordered to be given through a nasogastric tube. Phenytoin is available as 5,000 mg / 18 mL. How much would the nurse administer? Round to a whole number.

$\frac{7{,}000{,}000\text{mcg}}{1} \times \frac{1\text{mg}}{1000\text{mcg}} \times \frac{18\text{mL}}{5000\text{mg}} = \frac{126{,}000{,}000}{5{,}000{,}000} =$ 25mL

12. Solumedrol 1.5 mg/kg is ordered for a patient weighing 74.8 lb. Solumedrol is available as 125 mg / 2mL. How many mL should the nurse administer?

$\frac{1.5\text{mg}}{1\text{kg}} \times \frac{1\text{kg}}{2.2\text{lb}} \times \frac{74.8\text{lb}}{1} \times \frac{2\text{mL}}{125\text{mg}} = \frac{224.4}{275} =$ 0.82 mL

13. Give patient 24.4 mg of dopamine in 363 mL of D5W to be infused at a rate of 9,818 mcg/hr. Calculate the flow rate in mL/hr.

$\frac{9{,}818\text{mg}}{24.4\text{mg}} \times 363 =$ 146.1 mL/hr

14. Give patient 10.1 mg of dopamine in 251 mL of D5W to be infused at a rate of 6 mg/hr. Calculate the flow rate in mL/hr.

$\frac{6\text{mg}}{10.1\text{mg}} \times 251\text{mL} =$ 149.1 mL/hr

15. Ordered Lasix 12,000,000 mcg IV push now. Available: 0.025 kg in 15 mL. How much will the nurse draw up?

$\frac{12{,}000{,}000\text{mcg}}{1} \times \frac{1\text{mg}}{1000\text{mcg}} \times \frac{1}{1000\text{mg}} \times \frac{1\text{kg}}{1000} \times \frac{15\text{mL}}{0.025\text{kg}} =$

7.2 mL

16. Order: Zithromax 250 mg p.o. daily. Available:

a. How many milliliters of diluent must be added to the bottle?

9 mL

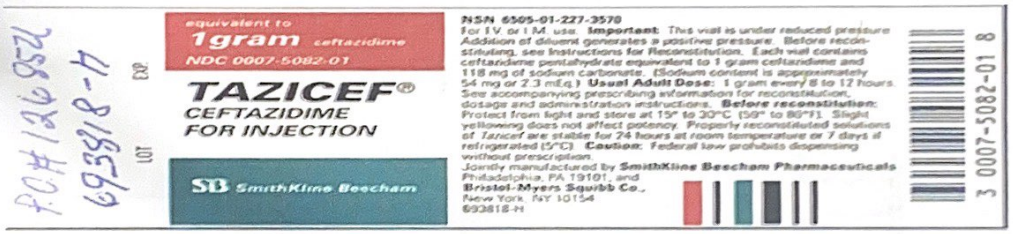
b. What is the final concentration of the prepared solution?

300 mg | 15 mL

c. How many mL should the nurse administer?

12.5 mL

17. Scenario: Order: Tazicef 250 mg IM q8h. The nurse reconstituted the medication with 10.6 mL of diluent and administered 2.6 mL to the patient.



RECONSTITUTION

Single Dose Vials:

For I.M. injection, I.V. direct (bolus) injection, or I.V. infusion, reconstitute with Sterile Water for injection according to the following table. The vacuum may assist entry of the diluent. SHAKE WELL.

Table 5

Vial Size	Diluent to Be Added	Approx. Avail. Volume	Approx. Avg. Concentration
Intramuscular or Intravenous Direct (bolus) Injection			
1 gram	3.0 mL	3.6 mL	280 mg./mL
Intravenous Infusion			
1 gram	10 mL	10.6 mL	95 mg./mL
2 gram	10 mL	11.2 mL	180 mg./mL

Withdraw the total volume of solution into the syringe (the pressure in the vial may aid withdrawal). The withdrawn solution may contain some bubbles of carbon dioxide.

NOTE: As with the administration of all parenteral products, accumulated gases should be expressed from the syringe immediately before injection of 'Tazicef'.

These solutions of 'Tazicef' are stable for 18 hours at room temperature or seven days if refrigerated (5°C). Slight yellowing does not affect potency.

For I.V. infusion, dilute reconstituted solution in 50 to 100 mL of one of the parenteral fluids listed under COMPATIBILITY AND STABILITY.

a. What error occurred here?

reconstituted for IV infusion not IM

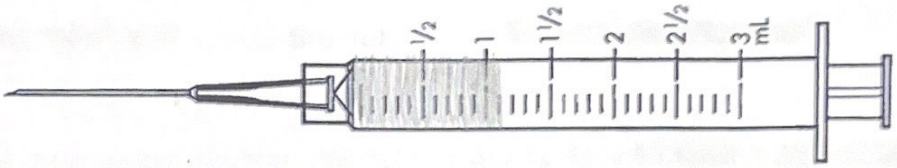
b. What concentration should have been made?

280 mg | mL

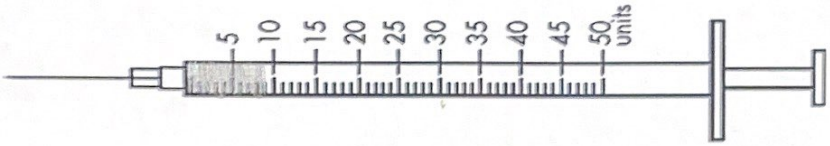
18. Order: Kefzol 250 mg IM q4h. Available is Kefzol 500 mg that must be reconstituted with 2 mL sterile water. The nurse now has 2.2 mL (225 mg/mL).

a. How many milliliters will you administer to provide the ordered dosage? $\frac{250\text{mg}}{225\text{mg}}(1\text{mL}) = 1.1\text{mL}$

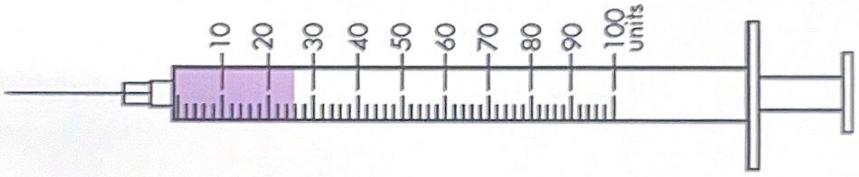
b. Shade the dosage in on the syringe provided.



19. Order: Novolin R U-100 9 units subcut daily. Shade in the correct dosage.



20. How many units are measured? 26 units



21. Administer an IV medication of 50 mL NS in 20 min. Drop factor: 60 gtt/mL. At what rate in gtt/min should the IV be regulated?

$\frac{50 \times 60}{20\text{min}} = \frac{3000}{20} = \boxed{150}$ gtt/min.

22. Administer 1,000 mL D5W to infuse in 12 hr. Drop factor: 20 gtt/mL. At what rate in gtt/min should the IV be regulated? Round answer to a whole number.

$\frac{1000 \times 20}{720\text{min}} = \boxed{28\text{ gtt/min}}$

23. Administer 10 units of Humulin regular insulin per hour. 50 units of insulin is placed in 250 mL NS. How many mL/hr should the IV infuse?

$\frac{10\text{units}(250\text{mL})}{50\text{units}} = \boxed{50\text{ mL/hr}}$

24. Ativan 3 mg IV push stat. Available: Ativan 4 mg per mL. The literature states not to exceed 2 mg/min.

1. How many mL of Ativan should the nurse prepare? (Express in hundredths.)

$$\frac{3\text{ mg}}{1} \times \frac{1\text{ mL}}{4\text{ mg}} = \frac{3}{4} = \boxed{.75\text{ mL}}$$

2. Over how many min should the nurse administer the medication?

$$\frac{3\text{ mg}}{1} \times \frac{1\text{ min}}{2\text{ mg}} = \frac{3}{2} \quad \boxed{1.5 - 2\text{ min}}$$

25. A patient is receiving Pronestyl 60 mL/hr. Available is Pronestyl 2 g in 500 mL D5W. Calculate: (1) the mg/hr and (2) the mg/min the patient will receive.

$$\frac{1\text{ hr}}{60\text{ min}} \times \frac{60\text{ mL}}{1\text{ hr}} \times \frac{2\text{ g}}{500\text{ mL}} \times \frac{1000\text{ mg}}{1\text{ g}} = \frac{120{,}000}{500} = \boxed{240\text{ mg/hr}}$$

$$\boxed{4\text{ mg/min}}$$