PROFICIENCY TEST ▶ **Basic IV Problems**

Name: _____

There are 14 questions related to IV and IVPB and enteral feeding calculations. Answers are given in Appendix A. Round to the nearest whole number.

1. Order: 1000 mL D5NS; run 150 mL/hour IV
   Supply: IV bag of 1000 mL D5NS
   a. Approximately how many hours will the IV run? **6.6 hr**
   b. How many drops per minute (macrodrip 10 gtt/mL or microdrip 60 gtt/mL)? **25 gtt/min** · 10 gtt =
   c. What size tubing will you use? **Macrotubing**

   60 gtt =
   150 gtt/min

2. Order: 100 mL LR 12 noon–6 pm IV
   a. What are the drops per minute (macrodrip 10 gtt/mL or microdrip 60 gtt/mL)?
   b. What size tubing will you use? **Microdrip** **17 gtt/min**   **3 gtt/min**

3. Order: 150 mL NS IV over 3 hours
   Supply: bag of 250 mL NS for IV and macrotubing, 15 gtt/mL; microtubing, 60 gtt/mL
   a. What would you do to obtain 150 mL NS? **run 100 mL off / Set pump infused @ 150 mL**
   b. What are the drops per minute? **13 gtt (15)** **50 gtt (60)**
   c. What size tubing will you use? **microdrip or Macrodrip**

4. Order: 500 mL D5W IV KVO. Solve for 24 hours. An infusion pump is available. What should be the setting on the infusion pump? **21 mL/hr infused @ 500 mL**

5. Order: doxycycline (Vibramycin) 100 mg IVPB every day
   Supply: 100 mg powder
   Package directions: 250 mL/D5W to infuse over 1 hour; macrodrip tubing 10 gtt/mL
   a. State the amount and type of IV fluid you will use and the time for infusion you will use.
   b. What are the drops per minute? **42 gtt/min** **reconst. dvc. add 100 mg (pwd) to 250 m D5W t give over 1 hr.**

6. Order: aminophylline 500 mg in 250 mL D5W to run 8 hours IV
   Available: vial of aminophylline labeled 1 g in 10 mL; microdrip tubing
   a. How much aminophylline is needed? **5 mL**
   b. What is the drip rate? **31 gtt/min**

7. A client is receiving a primary IV at the rate of 125 mL/hour. The doctor orders cefoxitin (Mefoxin) 1 g in 75 mL D5W q6h to run over 1 hour. Calculate the 24-hour parenteral intake. **2800 mL**

8. Order: 1000 mL D51/2NS to run at 90 mL/hour; infusion pump available
   a. What will be the pump setting? **90 mL/hour**
   b. Approximately how long will the IV run? **11 hrs 6 min.**

9. A doctor orders 500 mL aminophylline 0.5 g to infuse at 50 mL/hour. How many milligrams will the client receive each hour? **50 mg**

10. Order: trimethoprim and sulfamethoxazole (Bactrim) 5 mL IVPB q6h
    Supply: vial of 5 mL; one 5-mL vial per 75 mL D5W run over 60 to 90 minutes.
    The main IV line is connected to an infusion pump. What will you do?
    a. State the type and amount of IV fluid you would use and the time for infusion. **Have not learned yet!**
    b. How would you program the infusion pump? **60 min**

    90 min 50 mL/hr   ML VOl - 75
    2nd mL : 75 mL   mL/hr rate 75
    2nd rate: 50 mL/hr

PROFICIENCY TEST   **Basic IV Problems (continued)**

11. Prepare 3/4 strength Isocal. Total volume is 150 mL. How much Isocal is to be mixed with how much water?

    112.5 mL Isocal mixed w/ 37.5 mL of water

12. Prepare 1/2 strength Vivonex. Total volume is 500 mL. How much Vivonex is to be mixed with how much water?

    250 mL Vivonex mixed w/ 250 mL of water

13. Prepare 25% Osmolite. Total volume is 400 mL. How much Osmolite is to be mixed with how much water?

    100 mL Osmolite w/ 300 mL water

14. Prepare full strength Isocal. Total volume is 500 mL. How much Isocal is to be mixed with how much water?

    500 mL Isocal w/ Ø mL water

SELF-TEST 1   Infusion Rates

Solve the following problems. Answers appear at the end of this chapter. Round the rate to the nearest whole number.

1. Order: heparin sodium 800 units/hour IV
   Supply: infusion pump, standard solution of 25,000 units in 250 mL D5W
   a. What is the rate? 8 mL/hr
   b. How many hours will the IV run? (31 hr) 18 mins

   $\frac{800 \text{ units/hr}}{25,00 \text{ units}} \times \frac{250}{\text{mL}}$

   $\frac{250 \text{ mL}}{8 \text{ mL/hr}} = 31.3$ 8 mL/hr

2. Order: acyclovir (Zovirax) 500 mg in 100 mL D5W IV over 1 hour
   Supply: infusion pump, acyclovir (Zovirax) 500 mg in 100 mL D5W
   What is the rate? 100 mL/hr

3. Order: aminocaproic acid (Amicar) 24 g over 24 hour IV
   Supply: infusion pump, aminocaproic acid (Amicar) 24 g in 1000 mL D5W
   What is the rate? 42 mL/hr $\frac{1000 \text{ mL}}{24 \text{ hrs}} = 42 \text{ mL/hr}$

4. Order: diltiazem (Cardizem) 10 mg/hour IV
   Supply: infusion pump, diltiazem (Cardizem) 125 mg in 100 mL D5W
   What is the rate? 8 mL/hr

   $\frac{10 \text{ mg/hr}}{125 \text{ mg}} \times 100 \text{ mL} = 8 \text{ mL/hr}$

5. Order: furosemide (Lasix) infuse 4 mg/hour
   Supply: infusion pump, furosemide (Lasix) 100 mg in 100 mL D5W
   What is the rate? 4 mL/hr

   $\frac{4 \text{ mg/hr}}{100 \text{ mg}} \times 100 \text{ mL} = 4 \text{ mL/hr}$

6. Order: regular insulin 15 units/hour IV
   Supply: infusion pump, standard solution of 125 units in 250 mL NS
   a. What is the rate? 30 mL/hr
   b. How many hours will this IV run? 8 hr. 18 min   30)250 8 hr 18 min 4

   $\frac{15 \text{ units/hr}}{125 \text{ units}} \times \frac{250}{\text{mL}} = 30 \text{ mL/hr}$

7. Order: nitroglycerin 50 mg in 250 mL D5W over 24 hour via infusion pump
   What is the rate? 10 mL/hr

   $\frac{250 \text{ mL}}{24 \text{ hr}} = 10 \text{ mL/hr}$

8. Order: heparin 1200 units/hour IV
   Supply: infusion pump, standard solution of 25,000 units in 500 mL D5W
   a. What is the rate? 24 mL/hr
   b. How many hours will the IV run? 20 hr + 48 min $\frac{500}{24} = 20.8$ 21 hr

   $\frac{1200}{25000} \times 500 \text{ mL}$ 24 mL/hr

9. Order: regular insulin 23 units/hour IV
   Supply: infusion pump, standard solution of 250 units in 250 mL NS
   a. What is the rate? 23 mL/hr
   b. How many hours will the IV run? 10 hr. 54 min. 11 hr.

   $\frac{23}{250} \times 250 = 23 \text{ mL/hr}$ $\frac{250}{23} = 10.9$

10. Order: streptokinase (Streptase) 100,000 international units/hour for 24 hour IV
    Supply: infusion pump, standard solution of 750,000 international units in 250 mL NS
    What is the rate? 33 mL/hr.

    $\frac{100,000}{750,000} \times 250 = 33 \text{ mL/hr}$

MATH 44
Mg/Minute
Formula

MATH 45
Mg/Minute in
Ratios and
Proportions

MATH 46
Mg/Minute in
Dimensional
Analysis

mg/minute—Calculation of Rate

The order will indicate the amount of drug added to IV fluid and also the amount of drug to administer. These medications are administered through an IV infusion pump in milliliters per hour.

Note: The dimensional analysis method will combine all of the calculation steps into one equation.