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1. Order: 1000mL D5NS; runs 150mL/hr IV
   Supply: IV Bag of 1000mL D5NS
   A.) Approximately how many hours will the IV run?

   $$1000 \div 150 = 6.6 \text{ hour} \quad or \quad 6 \text{ hours } 36 \text{ min}$$

   B.) How many drops per minute? (macro 10gtt/mL, micro 60gtt/mL)
   $$\frac{150 \times 10}{60} \quad \frac{1500}{60} = 25 \text{ gtt/min} \qquad \frac{150 \times 60}{60} = \frac{9000}{60} = 150 \text{ gtt/min}$$

   C.) What size tubing will you use?

   Macro tubing

2. Order: 100mL LR 12noon - 6pm IV
   A.) What are the drops per minute (macro 10 gtt/mL, micro 60gtt/mL)
   6 hours = 360 min
   $$\frac{100 \times 10}{360} \quad \frac{1000}{360} = 2.7 \text{ or } 3 \text{ gtt/min} \qquad \frac{100 \times 60}{360} = \frac{6000}{360} = 16.6 \text{ or } 17 \text{ gtt/min}$$

   B.) What size tubing will you use?

   microtubing

3. Order: 150mL NS IV over 3 hours
   Supply: 250mL NS for IV & macrotubing, 15gtt/mL; micro. 60gtt/mL
   A.) What would you do to obtain 150mg. NS
   allow 100mL to run out leaving 150mL in the bag

   3x60min
   180min

   B.) What are the drops per minute
   $$\frac{150 \times 15}{180} = 12.5 \text{ gtt or } 13 \text{ gtt/min} \qquad \frac{150 \times 60}{180} = 50 \text{ gtt/min}$$

   C.) What size tubing will you use?
   microdrip due to the flow rate

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?

   $\frac{500}{24} = 20.8 = 21 \text{ mL/hr}$

5.) Order: doxycycline (Vibramycin) 100mg IVPB every day
   Supply: 100 mg powder
   Package directions: 250mL/D5W to infuse over 1hr; macrodrip tube 10gtt/mL
   A.) State the amount and type of IV fluid you will use and the
       time for infusion you will use?

   $\frac{250mL}{60min} \times 10 = \frac{2500}{60} = 41.6 \text{ gtt} = 42 \text{ gtt/min}$ D5W IVPB

   B.) what are the drops per minute?
       42 gtt/min

6.) Order: aminophylline 500mg in 250 mL D5W to run 8 hrs IV.
   Available: Vial of aminophylline labeled 1g in 10mL; microdrip tubing
   A.) How much aminophyline is needed?

   $500mg \ \frac{10mL}{1000mg} = \frac{5000}{1000} = 5 mL$ of aminophyline in D5W

   B.) What is the drip rate?

   $\frac{250mL}{8hrs} = 31.2 = 31 mL/hr = \boxed{31 \text{ gtt/min}}$

7.) A Client is recieving a primary IV at the rate of 125ml/hr. The doctor orders Cefoxitin (mefoxin) 1g in 75mL D5W q6h to run over 1 hour. Calculate the 24 hour parenteral intake.

$$125 \times 20 = 2500mL$$
$$75 \times 4 = \underline{300 \ mL}$$
$$2800mL \ total$$

8.) Order: 1000mL D51/2NS to run 90mL/hour; infusion pump Available

    A.) What is the pump Setting?

$$\frac{1000}{90} = 11.1$$

    B.) Approximately how long will the pump run?

        11 hours 6min

9.) A doctor Orders 500mL aminophylline 0.5g to infuse 50mL/hour. How many mg will the Client receive each hour?

$$\frac{500mg}{500mL} = 1mg/1mL = 50mg/hour$$

10.) Order: trimethoprim + Sulfamethoxazole (Bactrim) 5mL IVPB q6h.
Supply: Vial of 5mL; One 5-mL vial per 75mL D5W run over 60-90 min
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.   IVPB   75mL/hour

   B.) How would you program the infusion pump?
   60min   90min $\frac{75 \times 60}{90}$ = 50mL/hr
   Secondary Volume: 75mL
   Secondary rate: 75 mL/hr   Secondary Volume: 75mL
                                               Secondary rate: 50 mL/hr

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

   3/4 x 150mL = 112.5 mL Isocal
   150 - 112.5 = 37.5 mL water

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

   1/2 x 500mL = 250 mL Vivonex
   500 mL - 250 mL = 250 mL water

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

0.25 = 1/4

.25 × 400 = 100 Osmolite

400 - 100 = 300mL water

14.) Prepare full Strength Isocal. Total Volume is 500mL. How much Isocal is to be mixed with how much water?

500mL Isocal
0mL water

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1.) Order: heparin Sodium 800 units/hour Iv
   Supply: Infusion pump, Standard Solution of 25,000 un in 250 mL D5W
   A.) What is the rate?

   $\frac{250mL}{25,000} = \frac{800}{hr}$, $\frac{200,000}{25,000} = 8mL/hr$

   B) How many hours will the Iv run?

   $\frac{250}{8} = 31.25$ hours

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

   $\frac{100mL}{500mg} = \frac{500mg}{1hr} = \frac{50,000}{500} = 100mL/hr$

3.) Order: aminocaproic acid (Amicar) 24g over 24 hour IV   2400mg
   Supply: infusion pump, aminocaproic acid (Amicar) 24g over 24 hour IV
   A.) What is the Rate?

   $\frac{2400mg}{24hr} =$

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

   $\frac{10mg}{1hr} \cdot \frac{100mL}{125mg} = \frac{1000}{125} = 8mL/hr$

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

$$\frac{4mg}{1hr} = \frac{100mL}{100mg} - \frac{400}{100} = 4 mL/hr$$

6.) Order: Regular insulin 15 units/hour IV 3
Supply: infusion pump, Standard Solution of 125 units in 250 mL NS
A.) What is the rate?

$$\frac{15u}{1hr} = \frac{250mL}{125} - \frac{3750}{125} = 30 mL/hr$$

B.) How many hours will the IV run?

$$250/3 = 8.3 \text{ or } 8 hr 20 min$$

7.) Order: nitroglycerin 50mg in 250 mL D5W over 24 hours via infusion pump
A.) What is the rate

$$\frac{250 mL}{24 hr} = 10.4 mL/hr = 10 mL/hr$$

8.) Order: heparin 1200 units/hour IV
Supply: infusion pump, Standard Solution of 25,000 units in 50mL D5W
    A.) what is the rate?

$$\frac{1200u}{1hr} \cdot \frac{50mL}{25000u} = \frac{60,000}{25,000} = 2.4 \, mL/hr = 2 \, mL/hr$$

    B.) How many hours will the IV run?

    50/2 = 25 hours

9.) Order: regular insulin 23 units/hour IV
Supply: Infusion pump, Standard Solution of 250 unit in 250mL NS.
    A.) what is the rate?

$$\frac{23u}{1hr} = \frac{250mL}{250u} = \frac{5750}{250} = 23 \, mL/hr$$

    B.) How many hours with the IV run?

        250/23 = 10.8 = 11 hours

10.) Order: Streptokinase (Streptase) 100,000 IU/hour for 24 hours.
Supply: Infusion pump, Standard Solution of 750,000 IU in 250mL NS
    A.) what is the rate?

$$\frac{100,000IU}{24hr} \cdot \frac{250mL}{750,000} = \frac{25,000,000}{18,000,000} = 0.14 \, mL/hr$$