Jonathan Paredes

IM 7 Math Module

1) $\frac{\text{total volume (mL)} \times \text{drop factor (gtts)}}{\text{time (min)}}$

$\frac{50(mL) \times 15(gtts)}{45(min)} = 750/45 = \boxed{16.6}$ or $\boxed{17 gtts/min}$

2) $mL/hr = \frac{\text{volume (mL)}}{\text{total time (hr)}} = 1,000mL/8hrs = \boxed{125mL/hr}$

3) $\frac{mL \times gtts}{time(min)} = \frac{250mL \times 15gtts}{180min} = 3,750/180 = \boxed{20.83}$ or $\boxed{21 gtts/min}$

4) $\frac{mL \times gtts}{time(min)} = \frac{50mL \times 60gtts}{30min} = 3,000/30 = \boxed{100gtts/min}$

5) $\frac{mL \times gtts}{time(min)} = \frac{250mL \times 15gtts}{60min} = 3,750/60 = \boxed{62.5}$ or $\boxed{63gtts/min}$

6) D = 75 mcg
H = 100 mcg
V = 2mL

$\frac{2mL}{100mcg} \times \frac{75mcg}{} = 150/100 = \boxed{1.5mL}$

7) $mL/hr = \frac{\text{volume (mL)}}{\text{total time (hr)}} = 1,000mL/4hrs = \boxed{250mL/hr}$

8) D = 5mg
H = 20mg
V = 5mL

$\frac{5mL}{20mg} \times \frac{5mg}{} = 25/20 = \boxed{1.25mL}$

IM 7 Math Module

9) D = 2mg
H = 10mg
V = 1mL

$\frac{1mL}{10mg} \times 2mg = 2/10 =$ **0.2 mL**

10) $\frac{mL \times gtts}{time(min)} = \frac{100mL \times 60gtts}{480min} = 6,000/480 =$ **12.5** or **13 gtts/min**

11) $mcg/kg/min = \frac{conc.(mcg \times mL) \times infusion\ rate(mL/hr)}{wt(kg) \times (60\ min/hr)}$

i) 175lbs ÷ 2.2 = **79.54 kg**

ii) conc. = 50mg/500mL = 0.1mg/mL or **100mcg/mL**

iii) infusion rate = **142 mL/hr**

$mcg/kg/min = \frac{100 \times 142}{79.54 \times 60} = 14,200/4,772.4 = 2.975$ or **3 mcg/kg/min**

12) $mL/hr = \frac{wt(kg) \times dose(mcg/kg/min) \times (60\ min/hr)}{concentration\ (mcg/mL)}$

wt → **70kg**

dose → **1mcg/kg/min**

concentration → 250mg/500mL → 0.5mg/mL → **500mcg/mL**

$mL/hr = \frac{70kg \times 1mcg/kg/min \times 60\ min/hr}{500\ mcg/mL}$

$mL/hr = \frac{70 \times 60}{500}$

mL/hr = **8.4** or **8mL/hr**

IM 7 Math Module

13) $\text{mcg/min} = \frac{\text{conc. (mcg/mL)} \times \text{infusion rate (mL/hr)}}{(60 \text{ min/hr})}$

infusion rate = 12 mL/hr

conc. = 100mg / 250mL = 0.4mg / mL or 400 mcg/mL

$\frac{(400\text{mcg/mL}) \times (12\text{mL/hr})}{(60\text{min/hr})} = 4{,}800 / 60 \text{ min/hr} = 80 \text{ mcg/min}$

14) $\text{mL/hr} = \frac{\text{dose (units/hr)}}{\text{Conc. (units/mL)}}$ *Heparin

i) conc. = 25,000 u / 250 mL = 100 u/mL

ii) dose = 500 u/hr

$\frac{500 \text{ u/hr}}{100 \text{ u/mL}} = 5 \text{ mL/hr}$

15) $\text{mL/hr} = \frac{\text{wt (kg)} \times \text{dose (mcg/kg/min)} \times 60 \text{ (min/hr)}}{\text{(concentration (mcg/mL)}}$

dose = 2 mcg/kg/min

wt = 165 lbs ÷ 2.2 = 75 kg

conc. = 800mg / 500 mL = 1.6mg/mL or 1,600 mcg/mL

$\text{mL/hr} = \frac{75 \times 2 \times 60}{1{,}600} = 9{,}000 / 1{,}600 = 5.625$ or 5.6 mL/hr

16) $\text{mL/hr} = \frac{75 \times 4 \times 60}{1{,}600} = 18{,}000 / 1{,}600 = 11.25$ or 11.3 mL/hr

17) concentration = 100 units / 250mL = 0.4 u/mL *Insulin

$\text{mL/hr} = \frac{\text{dose (u/hr)}}{\text{(concentration (u/mL)}} = \frac{5 \text{ u/hr}}{0.4 \text{ u/mL}} = 12.5 \text{ units/hr}$ or 13u/hr

18) IM 7 Math Module

$$\text{mcg/kg/min} = \frac{\text{conc. (mcg/mL)} \times \text{infusion rate (mL/hr)}}{\text{wt (kg)} \times 60 \text{ (min/hr)}}$$

conc. → 400mg / 500 mL = 0.8mg/mL or **800mcg/mL**

inf rt. → **35mL/hr**

$$\text{mcg/kg/min} = \frac{800 \times 35}{62 \times 60} = \frac{28{,}000}{3{,}720} = 7.5268$$

7.5 or **8**

wt → **62 kg**

19) $\frac{\text{mL} \times \text{gtts}}{\text{time (min)}}$ $\frac{50\text{mL} \times 15\text{gtts}}{30\text{min}}$ 750/30 = **25 gtts/min**

20) $\frac{\text{mL} \times \text{gtts}}{\text{time (min)}}$ $\frac{100\text{mL} \times 12\text{gtts}}{60\text{ min}}$ 1,200/60 = **20 gtts/min**

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