IM 7 Math Module

Complete the required math problems and submit to Math drop box

Name Kris Wooton

1. Infuse 1 gram of a medication over 45 minutes. The drug is supplied as 1gram/50ml. The drip factor is 15. How many gtt/min will you infuse?

gtt/MIN = total volume (mL) x drop factor (gtt/mL) / total time (MINS)

= 50mL x 15 / 45MINS = 750 / 45 = 17 gtt/MIN

2. The physician writes an order to give 1000mL of intravenous fluid over 8hrs. How many mL/hr will you infuse?

ML/HR = volume (mL) / total time (hrs)

= 1000mL / 8 (hrs)

= 125mL/hr

125mL/HR

3. Infuse 1.5 gram of a medication over 3 hours. The drug is supplied as 1.5 gram/250mL. The drip factor is 15. How many gtt/min will you infuse?

gtt/MIN = total volume (mL) x drop factor / total time (MINS)

= 250mL x 15 / 180 MINS = 3750 / 180

= 21 gtt/MIN

4. An order has been written to give 1 gram of a medication over 30 minutes. The drug is supplied as 1 gram/50mL. The gtt factor is 60. How many gtt/min will you infuse?

gtt/MIN = tv (mL) x df / tt (MINS)

= 50mL x 60 / 30MINS = 3,000 / 30MINS = 100 gtt/MIN

5. The nurse is to give 500mg IV of a medication over 1 hr. The drug is supplied as 1gram/250mL. The gtt factor is 15. How many gtt/min will you infuse?

gtt/MIN = total volume (mL) x drop fact / total time (MINS)

= 250mL x 15 / 60 MINS = 3750 / 60MINS

= 63 gtt/MIN

6. An order is received for 75mcg IV of a medication now. The drug is supplied as 100mcg/2mL. How many mL will you give?

100MCG / 2ML = 75MCG / X

100X / 100X = 150 / 100X

X = 1.5 ML

7. Infuse 1000 mLs of intravenous fluid over 4 hrs. How many mL/hr will you set on the pump?

ML/HR = volume (mL) / total time (HR)

= 1000mL / 4HOURS

= 250ML/HR

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8. The patient is to receive 5mg of a medication. The drug is supplied as 20mg/5mL. How many mL will you give? (Do not round your final answer)

$\frac{20mg}{5mL} = \frac{5mg}{x}$

$\frac{20x}{20x} = \frac{25}{20x}$

$x = 1.25mL$

9. The order is to give 2mg IV of a medication now. The drug is supplied as 10mg/mL. How many mL will you give?

$\frac{10mg}{1mL} = \frac{2mg}{x}$

$\frac{10x}{10x} = \frac{2}{10x}$ $x = 0.2mL$

10. Infuse 500mg IV of a medication over 8 hrs. The drug is supplied as 500mg/100mL. The drip factor is 60. How many gtt/min will you infuse?

$gtt/min = \frac{\text{total volume (mL)} \times \text{drop factor}}{\text{total time (mins)}}$

$= \frac{100mL \times 60}{480 mins}$

$= 12.5\ gtt/min$

11. The patient is receiving an intravenous medication currently infusing at 142 mL/hr. The IV bag of reads 50 mg in 500 mL D5W. The patient weighs 175 lbs. How many mcg/kg/min are infusing? Round to the nearest tenth.

↳ 50,000mcg

$mcg/kg/min = \frac{\text{concentration (mcg/mL)} \times \text{infusion rate (mL/hr)}}{\text{weight (kg)} \times 60 (min/hr)}$

$= \frac{(50,000/500) \times 142}{79.5kg \times 60(min/hr)}$ $\frac{14,220}{4770} = 2.97 \rightarrow$ 3mcg/kg/min

12. The physician has ordered a medication that states to start at 1 mcg/kg/min, and titrate as needed. The IV bag of medication contains 250 mg in 500 mL D5W. The patient weighs 70 kg. How many mL/hr should the IV pump be set at to achieve the starting dose? Round to the nearest whole number.

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

$= \frac{31.8kg \times 1 mcg/kg/min \times 60(min/hr)}{250,000mcg / 500mL}$ $= \frac{1908}{500} = 3.816 \rightarrow 4mL$

250,000 mcg

13. The patient is currently receiving a medication at 12 mL/hr. The bottle reads 100 mg in 250 mL D5W. How many mcg/min is the patient receiving?

100,000 mcg

$mcg/min = \frac{\text{concentration (mg/mL)} \times \text{INF RATE (mL/hr)}}{60 (min/hr)}$

$= \frac{(100,000mcg/250mL) \times 12mL/hr}{60 min/hr} = \frac{4800}{60}$

$= 80\ mcg/min$

14. The physician orders a heparin infusion at 500 units/hr. The IV bag of medication reads 25,000 units in 250 mL D5W. How many mL/hr should be showing on the IV pump?

$mL/hr = \frac{dose (units/hr)}{\text{CONCENTRATION (units/mL)}}$ $= \frac{500 units/hr}{25,000 units/250mL} = \frac{500}{250} =$ 2mL/hr

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15. The physician has ordered a medication to start at 2 mcg/kg/min. The patient weighs 165 lbs. The IV bag reads 800 mg in 500 mL D5W. What rate would the nurse set on the infusion pump? Round to the nearest tenth.

(75kg) (800,000 mcg)

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

$$= \frac{75\text{kg} \times 2\text{mcg/kg/min} \times 60 \text{ (min/hr)}}{800{,}000 / 500} = \frac{9000}{1600} = \boxed{5.6 \text{ ML/HR}}$$

16. The physician in the previous questions has now written an order to increase the medication to 4 mcg/kg/min. Using the information in the previous question, what rate would the nurse set on the IV pump? Round to the nearest tenth.

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

$$= \frac{75\text{kg} \times 4\text{mcg/kg/min} \times 60 \text{ (min/hr)}}{800{,}000 / 500} = \frac{18{,}000}{1{,}600} = \boxed{11.3 \text{ ML/HR}}$$

17. The patient is on a regular insulin drip infusing at 5 units/hr. The bag is labeled 100 units in 250 mL NS. At what rate should the pump be infusing? Round to the nearest whole number.

$$\text{ML/HR} = \frac{\text{dose (units/hr)}}{\text{concentration (units/mL)}}$$

$$= \frac{5 \text{ UNITS/HR}}{100 \text{ UNITS}/250\text{ML}}$$

$$= 5 \div 0.4 = \boxed{12.5 \text{ ML/HR}}$$

18. The patient is on a medication drip infusing at 35 mL/hr. The label reads 400 mg in 500 mL D5W. The patient weighs 62 kg. How many mcg/kg/min is the patient receiving? Round to the nearest tenth.

(400 mg x 1000 = 400,000 mcg)

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

$$= \frac{(400{,}000/500) \times (35\text{mL/HR})}{62\text{kg} \times 60} = \frac{28{,}000}{3720} = \boxed{7.5\text{mcg/kg/min}}$$

19. The physician has ordered 1 gram IV of a medication over 30 minutes. Pharmacy has sent an IV bag labeled 1 gram in 50 mL D5W. The IV tubing delivers 15 gtt/mL. How many drops per minute (gtt/min) will the nurse deliver?

$$\text{gtt/min} = \frac{\text{total volume (mL)} \times \text{drop factor (gtt/mL)}}{\text{total time (mins)}}$$

$$= \frac{50\text{mL} \times 15 \text{ gtt/mL}}{30 \text{ mins}} = \frac{750}{30}$$

$$= \boxed{25 \text{ gtt/min}}$$

20. The patient is to receive 400 mg IV of a medication over 1 hour. You receive an IV bag from the pharmacy labeled 400 mg in 100 mL D5W. The IV tubing delivers 12 gtt/mL. How many drops per minute (gtt/min) will the nurse deliver?

$$\text{gtt/min} = \frac{\text{total volume (mL)} \times \text{drop factor (gtt/mL)}}{\text{total time (mins)}}$$

$$= \frac{100\text{mL} \times 12}{60 \text{ mins}}$$

$$= \boxed{20 \text{ gtt/min}}$$