Audrie Gomez

IM 7 Math Module

Complete the required math problems and check your answers.

Drop Factor Problems

1. 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? (Round to the nearest whole number) $\frac{250mL \times 15gtt}{180} = 20.83$ $60 \times 3 = 180$ = 21 gtt/min

2. 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? $\frac{50mL \times 60gtt}{30min} = 100$ gtt/min

3. The nurse is to give 500mg IV of a medication over 1 hr. The drug is supplied as 1 gram/250mL. The gtt factor is 15. How many gtt/min will you infuse? (Round to the nearest whole number) $\frac{250mL \times 15gtt}{60min} = 63$ gtt/min

4. 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? $\frac{100mL \times 12gtt}{60min} = 20$ gtt/min

mL/hr Infuse over time

5. The physician writes an order to give 1000mL of intravenous fluid over 8hrs. How many mL/hr will you infuse? $\frac{1000mL}{8hrs} = 125$ mL/hr

6. Infuse 1000 mLs of intravenous fluid over 4 hrs. How many mL/hr will you set on the pump? $\frac{1000mL}{4} = 250$ mL/hr

7. A physician orders 1000 mg of a medication to be given every 6 hours over 1.5 hours. The medication is delivered with 1000 mg in 250 mL. How many mL/hr will you set the pump? (Round to the nearest whole number) $\frac{250mL}{1.5} = 167$ mL/hr (4x)

IV Push

8. An order is received for 75mcg IV push of a medication now. The drug is supplied as 100mcg/2mL. How many mL will you give? $\frac{75mcg}{100mcg} \times 2mL = 1.5$ mL

9. The patient is to receive 5mg of a medication IV push. The drug is supplied as 20mg/5mL. How many mL will you give? (Do not round your final answer) $\frac{5mg}{20mg} \times 5mL = 1.25$ mL

10. The order is to give 2mg IV push of a medication now. The drug is supplied as 10mg/1mL. How many mL will you give? $\frac{2mg}{10mg} \times 1mL = 0.2$ mg

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Mcg/kg/min or Mcg/min

conc x inf rate / wt x 60

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)

79.5 kg $\frac{50\text{ mg}}{500\text{ mL}} = 0.1\text{ mg/mL}$ $\frac{100\text{ mcg} \times 142\text{ mL/hr}}{79.5\text{ kg} \times 60\text{ min/hr}} = \frac{14{,}200}{4{,}770} = 2.97$ → 3 mcg/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)

1 mcg/70/60min

250/500 = 0.5 mg/mL

$\frac{70\text{kg} \times 1\text{ mcg} \times 60\text{min}}{500\text{mcg/mL}} = \frac{4200}{500} = 8.4$ mL/hr

0.4

conc x rate / wt x 60

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?

$\frac{100\text{mg}}{250\text{mL}} = 0.4\text{mg/mL}$ $\frac{0.4\text{mg/mL} \times 12\text{mL/hr}}{60\text{ min/hr}} = \frac{4.8}{60} = 0.08$ → 80 mcg/min

14. 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)

75 kg

800mg/500mL = 1.6mg/mL → 5.6 mL/hr

$\frac{75 \times 2\text{mcg/kg/min} \times 60\text{min/hr}}{1600\text{mcg}} = \frac{9{,}000}{1600}$

15. The physician has written an order to increase the medication to 4 mcg/kg/min. The IV bag reads 64 mcg/mL. What rate would the nurse set on the IV pump? (Round to the nearest tenth)

mL/hr = $\frac{4\text{mcg/kg/min} \times 60\text{min/hr}}{64\text{mcg/mL}} = \frac{240}{64} = 3.75$ mcg → 3.8 mcg/mL

16. The patient is on a medication drip infusing at 15 mL/hr. The label reads 50 mcg/mL. The patient weighs 65 kg. How many mcg/min is the patient receiving? (Do not round)

$\frac{50\text{mcg} \times 15\text{mL/hr}}{65 \times 60\text{min/hr}} = \frac{750}{3900} = 0.19$ mcg/min

Heparin/Insulin or mg/hr

mL/hr = dose / conc

17. 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?

$\frac{25{,}000\text{ units}}{250\text{mL}} = 100\text{ units/mL}$ $\frac{500\text{ units/hr}}{100\text{ units/mL}} = 5\text{ mL/hr}$

18. 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.

$\frac{100\text{units}}{250\text{mL}} = 0.4\text{ units/mL}$ $\frac{5\text{ units/hr}}{0.4\text{ units/mL}} = 12.5$ mL/hr

Burns (Parkland Formula) Do not round weights

19. A ~~200~~-pound patient presents to the emergency department with 50% total body surface area (TBSA) burn. How many liters of fluid would be given in the first 24 hours? (Round to the nearest whole number)

90.9 kg 4mL x 50% x 90.9 = 18,180mL/1000 → 18 L/24hrs

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20. A 150-pound patient presents to the emergency department with 75% total body surface area (TBSA) burn. How many liters of fluid would be given in the first 24 hours? (Round to the nearest whole number)

68.2 kg 4mL x 75% x 68.2 = 20,460mL / 1000

= 20.46 L / 24 hrs