

IM 7 Math Module

Complete the required math problems and submit to Math drop box
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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?

$$\frac{50 \text{ ml} \times 15 \text{ gtt}}{45 \text{ min}} = 16.67 \text{ gtt/min} \approx 17 \text{ gtt/min}$$

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

$$\frac{1,000}{8} = 125 \text{ mL/hr}$$

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?

$$\frac{250 \times 15}{180} = 20.83 \text{ gtt/min} \approx 21 \text{ gtt/min}$$

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?

$$\frac{50 \times 60}{30 \text{ min}} = 100 \text{ gtt/min}$$

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?

$$1 \text{ gm} = 1,000 \text{ mg} \quad \frac{1000}{250} = 4 \quad \frac{500}{4} = 125 \quad \frac{125 \times 15}{60 \text{ min}} = 31.25 \approx 31 \text{ gtt/min}$$

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?

$$\frac{100}{2} = 50 \quad \frac{75}{50} = 1.5 \text{ mL}$$

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

$$\frac{1000}{4} = 250 \text{ mL/hr}$$

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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)

$$\frac{20}{5} = 4 \text{ mL} \qquad \frac{5}{4} = 1.25 \text{ mL}$$

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?

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

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?

$$\frac{500}{100} = 5 \qquad \frac{500}{8} = 62.5 \qquad \frac{62.5}{5} = 12.5 \approx 13 \text{ gtt/min}$$

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.

$$\text{pt wt: } 175 \text{ lbs} \rightarrow 79.54 \text{ Kg} \qquad \frac{50 \text{ mg}}{500 \text{ mL}} = 0.1 \times 1,000 = 100 \text{ mcg/mL} \qquad \frac{100 \text{ mcg} \times 142 \text{ mL/hr}}{79.54 \text{ Kg} \times 60 \text{ min}} = \frac{14,200}{4,772.4} = 2.97 \approx 3 \text{ mcg/Kg/min}$$

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.

$$\frac{250 \text{ mg}}{500 \text{ mL}} = 0.5 \text{ mg/mL} \qquad \times 1,000 = 500 \text{ mcg/mL} \qquad \frac{70 \text{ Kg} \times 1 \text{ mcg/Kg/min} \times 60 \text{ min}}{500 \text{ mcg/mL}} = \frac{4,200}{500} = 8.4 \approx 8 \text{ mL/hr}$$

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?

$$\frac{100 \text{ mg}}{250 \text{ mL}} = 0.4 \text{ mg/mL} \qquad \times 1,000 = 400 \text{ mcg/mL} \qquad \frac{400 \text{ mcg/mL} \times 12 \text{ mL/hr}}{60 \text{ min/hr}} = \frac{4,800}{60} = 80 \text{ mcg/min}$$

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?

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

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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.

$$\begin{aligned} \text{Pt wt: } 165 \text{ lbs} &\rightarrow 75 \text{ kg} & \frac{800 \text{ mg}}{500 \text{ mL}} &= 1.6 \text{ mg/mL} \\ & & & \times 1000 \\ & & & = 1,600 \text{ mcg} \end{aligned} \qquad \frac{75 \text{ kg} \times 2 \text{ mcg/kg} \times 60 \text{ min}}{1,600 \text{ mcg}} = \frac{9,000}{1,600} = 5.625 \approx 6 \text{ mL/hr}$$

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.

$$\frac{75 \text{ kg} \times 4 \text{ mcg/kg} \times 60 \text{ min}}{1,600 \text{ mcg}} = \frac{18,000}{1,600} = 11.25 \approx 11.3 \text{ mL/hr}$$

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.

$$\frac{100 \text{ units}}{250 \text{ mL}} = 0.4 \text{ units/mL} \qquad \frac{5 \text{ units/hr}}{0.4 \text{ units/mL}} = 12.5 \approx 13 \text{ mL/hr}$$

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.

$$\frac{400 \text{ mg}}{500 \text{ mL}} = 0.8 \times 1,000 = 800 \text{ mcg/mL} \qquad \frac{800 \text{ mcg} \times 35 \text{ mL/hr}}{62 \text{ kg} \times 60 \text{ min}} = \frac{28,000}{3,720} = 7.5 \text{ mcg/kg/min}$$

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?

$$\frac{50 \times 15}{30} = 25 \text{ gtt/min}$$

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?

$$\frac{100 \times 12 \text{ gtt}}{60} = 20 \text{ gtt/min}$$