

IM 7 Math Module

Complete the required math problems and check your answers.

***Mcg/kg/min or Mcg/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)

19.5 kg

$$\frac{50,000}{500 \text{ mL}} = 100 \text{ mcg/mL}$$

$$\frac{(100 \text{ mcg/mL}) \times (142 \text{ mL/hr})}{(19.5 \text{ kg}) \times (60 \text{ min/hr})} = \frac{14,200}{4,470} = 2.9 \text{ mcg/kg/min}$$

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)

$$\frac{(70 \text{ kg}) \times (1 \text{ mcg/kg/min}) \times (60 \text{ min/hr})}{500 \text{ mcg/mL}} = 8 \text{ mL/hr}$$

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?

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

$$400 \times 12 / 60 = 80 \text{ mcg/min}$$

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)

$$\frac{(75 \text{ kg}) \times (2 \text{ mcg/kg/min}) \times (60 \text{ min/hr})}{1,600 \text{ mcg/mL}} = 5.6 \text{ mL/hr}$$

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)

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

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)

$$\frac{(50 \text{ mcg/mL}) \times (15 \text{ mL/hr})}{(65 \text{ kg}) \times (60 \text{ min/hr})} = 692.3 \text{ mcg/min}$$

***Heparin/Insulin or mg/hr

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?

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

IM 7 Math Module

Complete the required math problems and check your answers.

**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?

$$\frac{100\text{mcg}}{2\text{mL}} \times \frac{75\text{mcg}}{x}$$

$$x = 1.5\text{mL}$$

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)

$$\frac{20\text{mg}}{5\text{mL}} \times \frac{5\text{mg}}{x}$$

$$x = 1.25\text{mL}$$

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?

$$\frac{10\text{mg}}{1\text{mL}} \times \frac{2\text{mg}}{x}$$

$$x = 0.2\text{mL}$$

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)

$$\begin{array}{r} 60 \\ \times 3 \\ \hline 180 \text{ min} \end{array}$$

$$\frac{250 \text{ mL} \times 15}{180 \text{ min}}$$

$$21 \text{ gtt/min}$$

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?

$$\frac{50 \text{ mL} \times 60}{30 \text{ min}}$$

$$100 \text{ gtt/min}$$

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)

$$\begin{array}{r} 2 \overline{) 250} \\ \underline{24} \\ 10 \end{array}$$

$$\frac{65 \text{ mL} \times 15}{60 \text{ min}}$$

$$16 \text{ gtt/min}$$

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?

$$\frac{100 \text{ mL} \times 12}{60 \text{ min}}$$

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

**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?

$$\frac{1000 \text{ mL}}{8 \text{ hrs}} \times \frac{1 \text{ hr}}{1 \text{ hr}}$$

$$125 \text{ mL/hr}$$

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

$$\frac{1000 \text{ mL}}{4 \text{ hrs}} \times \frac{1 \text{ hr}}{1 \text{ hr}}$$

$$250 \text{ mL/hr}$$

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)

$$\frac{250}{1.5 \text{ hrs}} \times \frac{1 \text{ hr}}{60 \text{ min}}$$

$$166.6 \text{ mL/hr}$$

$$167 \text{ mL/hr}$$

IM 7 Math Module

Complete the required math problems and check your answers.

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.

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

***Burns (Parkland Formula) Do not round weights

$$4 \text{ mL} \times \% \text{ TBSA} \times \text{WT (kg)} \quad | \text{1000 if asking for L}$$

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)

$$\frac{4 \text{ mL} \times 0.50 \times 90.9 \text{ kg}}{1000} = 0.18 \text{ L}$$

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)

$$\frac{4 \text{ mL} \times 0.75 \times 68.18 \text{ kg}}{1000} = 0.20 \text{ L}$$