

## 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)

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

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?

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

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)

$$\frac{250 \text{ mL} \times 15 \text{ gtt}}{60 \text{ min}} = 62.5 \rightarrow 63 \text{ gtt/min}$$

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?

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

## 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?

$$\frac{1000}{8} = 125 \text{ mL/hr}$$

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

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

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)

$$\frac{250 \text{ mL}}{1.5 \text{ hrs}} = 166.\bar{6} \rightarrow 167 \text{ mL/hr}$$

## 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?

$$\frac{75 \text{ mcg}}{100 \text{ mcg}} \times 2 \text{ mL} = 1.5 \text{ mL}$$

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)

$$\frac{5 \text{ mg}}{20 \text{ mg}} \times 5 \text{ mL} = 1.25 \text{ mL}$$

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?

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

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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)  $199.5$

$$\frac{142 \text{ mL/hr} \times (50 \text{ mg/mL})}{175 \text{ kg} \times 60 \text{ min}} = 2.97 \rightarrow 3$$

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)

$$70 \text{ kg} \times 1 \text{ mcg} = 70 \text{ mcg} \quad 250 \text{ mg} \times 1000 \text{ mcg} = 250,000 \text{ mcg} \quad \frac{250,000 \text{ mcg}}{500 \text{ mL}} = 500 \text{ mcg} \quad \left| \frac{70 \text{ mcg}}{500 \text{ mcg}} \times 60 \text{ min} = 8.4 \text{ mL/hr} \right.$$

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?

$$\frac{100 \text{ mg}}{250 \text{ mL}} = 0.4 \text{ mg/mL} \times 1000 = 400 \text{ mcg} \quad 12 \text{ mL} \times 400 \text{ mcg} = 4800 \quad \frac{4800}{60 \text{ min}} = 80 \text{ mcg/min}$$

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)

$$75 \text{ kg} \times 2 \text{ mcg/kg/min} = 150 \text{ mcg/min} \quad \frac{800 \text{ mg} = 800,000 \text{ mcg}}{500 \text{ mL} = 1600 \text{ mcg}} = 5.6 \text{ mL/hr}$$

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)

$$\frac{4 \text{ mcg} \times 75 \text{ kg} \times 60 \text{ min}}{64 \text{ mcg/mL}} = 281.3 \text{ mL/hr}$$

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)

$$\frac{15 \text{ mL}}{1 \text{ hr}} \times \frac{50 \text{ mcg}}{1 \text{ mL}} \times \frac{1 \text{ hr}}{60 \text{ min}} = 12.5 \text{ mcg/min}$$

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?

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

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.

$$\frac{5 \text{ units}}{100 \text{ units}} \times 250 \text{ mL} = 12.5 \rightarrow 13 \text{ mL/hr}$$

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)  $90.9 \text{ kg}$

$$4 \text{ mL} \times \% \text{ burn} \times \text{weight (kg)} \quad 4 \text{ mL} \times 50\% \times 90.9 = \frac{18,180}{1000} = 18.18 = 18 \text{ L}$$

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)  $68.1 \text{ kg}$

$$4 \text{ mL} \times 75\% \times 68.1 = \frac{20,430}{1000} = 20.43 = 20 \text{ L}$$