

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 **1 gram/50ml**.

The **drip factor is 15**. How many **gtt/min** will you infuse?

$$\frac{50 \text{ mL} \times 15 \text{ df}}{45 \text{ min}} = 16.66 \text{ gtt/min}$$

↳ **17 gtt/min**

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

$$1000 \text{ mL} / 8 \text{ hr}$$

↳ **125 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?

$$\frac{250 \text{ mL} \times 15 \text{ df}}{180 \text{ min}} = 20.83 \text{ gtt/min}$$

↳ **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?

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

↳ **100 gtt/min**

5. 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?

$$\frac{250 \text{ mL} \times 15 \text{ df}}{60 \text{ min}} = 62.5 \div 2 = 31.25 = 31 \text{ gtt/min}$$

↳ **31 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?

$$\frac{2 \text{ mL}}{100 \text{ mcg}} \times \frac{75 \text{ mcg}}{1} = 1.5 \text{ mL}$$

↳ **1.5 mL**

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

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

↳ **250 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)

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

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?

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

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?

$$\frac{100 \text{ mL} \times 60 \text{ dF}}{480 \text{ min}} = 12.5 \text{ gtt/min} \rightarrow 13 \text{ gtt/min}$$

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**.

$$\begin{aligned} 50 \text{ mg} / 500 \text{ mL} &= 0.1 \text{ mg/mL} \\ 0.1 \text{ mg} \times 1000 &= 100 \text{ mcg/mL} \\ 100 \text{ mcg} \times 142 \text{ mL} &= 14,200 \\ 14,200 &\div 79.55 \text{ kg} \times 60 = 2.97 \end{aligned}$$

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.

$$\begin{aligned} 250 \text{ mg} / 500 \text{ mL} &= 0.5 \text{ mg/mL} \\ 0.5 \text{ mg} \times 70 \text{ kg} &= 35 \text{ mg} \\ 35 \text{ mg} &\div 60 \text{ min} = 0.58 \text{ mg/min} \\ 0.58 \text{ mg/min} &\times 1000 = 580 \text{ mcg/min} \\ 580 \text{ mcg/min} &\times 70 \text{ kg} = 40,600 \text{ mcg} \\ 40,600 \text{ mcg} &\div 1000 = 40.6 \text{ mg} \\ 40.6 \text{ mg} &\div 0.5 \text{ mg/mL} = 81.2 \text{ mL} \end{aligned}$$

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?

$$\frac{100 \text{ mg}}{250 \text{ mL}} \times \frac{4.8 \text{ mL}}{12 \text{ mL}} \times 1000 = 4,800 \text{ mcg} \div 60 \text{ min} = 80 \text{ mcg/min}$$

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?

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

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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.

75 kg

$$800 \text{ mg} / 500 \text{ mL} = 1.6 \text{ mg/mL}$$

$$1.6 \text{ mg} \times 1000 = 1600 \text{ mcg/mL}$$

$$(75 \text{ kg}) \times (2 \text{ mcg}) \times (60 \text{ min}) = \frac{9000}{1600}$$

$$5.6 \text{ mL/hr}$$

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.

$$(4 \text{ mcg}) \times (75 \text{ kg}) \times (60 \text{ min}) = \frac{18000}{1600 \text{ mcg/mL}} = 11.25 \rightarrow 11.3 \frac{\text{mL}}{\text{hr}}$$

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.

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

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.

$$400 \text{ mg} / 500 \text{ mL} = 0.8 \text{ mg/mL}$$

$$0.8 \text{ mg} \times 1000 = 800 \text{ mcg}$$

$$\frac{800 \text{ mcg} \times 35 \text{ mL}}{62 \text{ kg} \times 60 \text{ min}} = \frac{28000}{3720} = 7.5$$

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?

$$(50 \text{ mL}) (15 \text{ gtt/mL}) = \frac{750}{30} = 25 \text{ gtt/min}$$

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?

$$100 \text{ mL} \times 12 \text{ gtt/mL} = 1200$$

$$\frac{1200}{60 \text{ min}} = 20 \text{ gtt/min}$$