

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)
 $250\text{mL} \times 15\text{gtt} / 180\text{min} = 21\text{gtt/min}$
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?
 $50\text{mL} \times 60\text{gtt} / 30\text{min} = 100\text{gtt/min}$
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)
 $1000\text{mg}/250\text{mL} \rightarrow 500\text{mg}/125\text{mL}$
 $125\text{mL} \times 15\text{gtt} / 60\text{min} = 31\text{gtt/min}$
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?
 $100\text{mL} \times 12\text{gtt} / 60\text{min} = 20\text{gtt/min}$

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?
 $1000\text{mL} / 8\text{hr} = 125\text{mL/hr}$
6. Infuse 1000 mLs of intravenous fluid over 4 hrs. How many mL/hr will you set on the pump?
 $1000\text{mL} / 4\text{hr} = 250\text{mL/hr}$
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)
 $250\text{mL} / 1.5\text{hr} = 167\text{mL/hr}$

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?
 $75\text{mcg} / 100\text{mcg} \times 2\text{mL} = 1.5\text{mL}$
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)
 $5\text{mg} / 20\text{mg} \times 5\text{mL} = 1.25\text{mL}$

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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?

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

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)

$$175 \text{ lbs} / 2.2 = 79.5\text{kg}$$

$$50\text{mg} / 500\text{mL} = 0.1\text{mg/mL} \rightarrow 100\text{mcg/mL}$$

$$100\text{mcg/mL} \times 142\text{mL/hr} / 79.5\text{kg} \times 60\text{min} = 3.0\text{mcg/kg/min}$$

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)

$$250\text{mg} / 500\text{mL} = 0.5\text{mg/mL} \rightarrow 500\text{mcg/mL}$$

$$1\text{mcg} \times 70 \text{ kg} \times 60 \text{ min} / 500\text{mcg/mL} = 8.4\text{mL/hr} \rightarrow 8\text{mL/hr}$$

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?

$$100\text{mg} / 250 \text{ mL} = 0.4\text{mg/mL} \rightarrow 400\text{mcg/mL}$$

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

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)

$$165\text{lb} / 2.2 = 75\text{kg}$$

$$800\text{mg} / 500\text{mL} = 1.6\text{mg/mL} \rightarrow 1,600\text{mcg/mL}$$

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

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)

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

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)

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

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?

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

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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.

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

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)

$$200\text{lb} / 2.2 = 90.9\text{kg}$$

$$4\text{mL} \times 50 \text{ TBSA} \times 90.9\text{kg} = 18,180\text{mL} \rightarrow 18\text{L}$$

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)

$$150\text{lb} / 2.2 = 68.2\text{kg}$$

$$4\text{mL} \times 75 \text{ TBSA} \times 68.2\text{kg} = 20,460\text{mL} \rightarrow 20\text{L}$$