

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)

$$\frac{250 \text{ mL} \times 15 \text{ gtt}}{180 \text{ min}} = 20.8\bar{3} = 21 \text{ gtt/min}$$

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)

$$\frac{500}{1000} \times 250 = 125 \text{ mL} \quad \frac{125 \text{ mL} \times 15 \text{ gtt}}{60 \text{ min}} = 31.25 = 31 \text{ gtt/min}$$

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?

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

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?

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

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

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

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)

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

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?

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

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)

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

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?

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

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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)

$$\frac{50,000 \text{ mcg}}{500 \text{ mL}} \times \frac{142 \text{ mL/hr}}{79.5 \text{ kg} \times 60 \text{ min}} = \frac{14200}{4770} = 2.97 = \boxed{3 \text{ mcg/kg/min}}$$
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)

$$\frac{250,000 \text{ mcg}}{500 \text{ mcg/mL}} \times \frac{1 \text{ mcg/kg/min} \times 60 \text{ min}}{70 \text{ kg}} = \frac{4200}{500} = 8.4 = \boxed{8 \text{ mL/hr}}$$
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?

$$\frac{100,000 \text{ mcg}}{250 \text{ mL}} \times \frac{12 \text{ mL/hr}}{60 \text{ min/hr}} = \frac{4800}{60} = \boxed{80 \text{ mcg/min}}$$
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)

$$\frac{800,000 \text{ mcg}}{500 \text{ mL}} \times \frac{2 \text{ mcg/kg/min} \times 60 \text{ min}}{75 \text{ kg}} = \frac{19200}{375} = 51.2 = \boxed{51.2 \text{ mL/hr}}$$
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)

$$\frac{4 \text{ mcg/min} \times 60 \text{ min}}{64 \text{ mcg/mL}} = 3.75 = \boxed{3.8 \text{ mL/hr}}$$
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)

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

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?

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

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

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)

$$4 \text{ mL} \times 50 \times 90.9 = 18180 \text{ mL} = 18.18 = \boxed{18 \text{ L}}$$
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)

$$4 \times 75 \times 68.2 = 20460 \text{ mL} = 20.46 = \boxed{20 \text{ L}}$$

$$\frac{20.46}{20.5} = \boxed{21 \text{ L}}$$