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## 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)

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

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?

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

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)

$$250/2 = 125 \text{ mL/hr} \quad \frac{125}{60} \times 15 = 31.25 = 31$$

31 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?

mL/hr Infuse over time

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

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

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

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

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

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)

$$250/1.5 = 166.6 \rightarrow 167 \text{ mL/hr}$$

### 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?

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

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?

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

# IM 7 Math Module

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Mcg/kg/min or Mcg/min

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

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)

$$\frac{100 \times 142}{79.5 \times 60} = \frac{14200}{4770} = 3$$

3 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)

$$1 \times 70 = 70 \text{ mcg/min}$$

$$\frac{70 \text{ mcg}}{1000} = 0.07 \quad \frac{250}{500} = 0.5$$

$$\frac{0.07}{0.5} = 0.14 \times 60 = 8.4$$

8 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?

$$\frac{12}{60} = 0.2 \quad \frac{100}{250} = 0.4 \text{ mg/mL}$$

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)

$$165 = 74.8$$

$$2 \times 74.842 = 149.684 \quad \frac{149.684}{1000} = 0.149$$

$$\frac{0.149}{1.6} = 0.09 \times 60 = 5.4$$

5.6 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)

$$4 \times 70 = 280 \quad \frac{280}{64} = 4.375 \rightarrow 4.4 \text{ mL/hr}$$

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)

Heparin/Insulin or mg/hr

$$\frac{15}{60} = 0.25 \text{ mL} \quad 0.25 \times 50 = 12.5 \text{ mcg/mL}$$

12.5 mcg/mL

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?

$$\frac{500}{25000} \times 250 = 5 \text{ mL/hr}$$

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.

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

Burns (Parkland Formula) Do not round weights

$$4 \text{ mL } (\%) (\text{kg})$$

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)

$$4 \times 50 \times 90.9 = 18,180/1000$$

18L

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)

$$4 \times 75 \times 68.2 = 20,460/1000 = 20.46$$

20L