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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)

~~40 gtt/min~~       $\frac{250 \times 15}{180}$       21 gtt/min      ~~0.00615~~

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?

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

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)

$\frac{125 \times 15}{60}$       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?

$\frac{100 \times 12}{60}$       20 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 mL/hr

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

$\frac{1000}{4}$       250 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)

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

#### 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?

$\frac{100}{2} \times 50 \times \frac{75}{100} = 1.5$       1.5 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)

$\frac{20}{5} \times 4 \text{ mg/mL} \times \frac{5}{4} = 1.25 \text{ mL}$

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?

0.2 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  $\frac{50}{500}$  mcg/kg/min are infusing? (Round to the nearest tenth)  $79.5 \text{ kg}$   
 $\frac{100 \times 142}{175 \times 2.20} = \frac{14200}{385} = 36.62 = 36.6 \text{ mcg/kg/min}$

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)  $\frac{250}{500} = 500 \text{ mcg}$   
 $8 \text{ mL/hr}$

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?  $\frac{100}{250} = 400 \text{ mcg}$   
 $\frac{4800}{60} = 80 \text{ mcg/min}$

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)  $1.6 \text{ kg} = 1600 \text{ mcg}$   
 $\frac{2 \times 165}{2.2} = 150 \text{ kg}$   
 $\frac{2 \times 175}{2.2} = 159 \text{ kg}$   
 $\frac{9000}{1600} = 5.6 \text{ mL/hr}$

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)  
 $\frac{240}{6.1} = 3.8 \text{ mL/hr}$

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)  
 Heparin/Insulin or mg/hr  $65 \times 50 = 3250$   
 $\frac{3250}{60} = 54.16$   
 $\frac{50 \times 15}{60} = 12.5 \text{ mcg/min}$

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?  
 $\frac{25000}{250} = 100 \text{ U}$   
 $\frac{500}{100} = 5 \text{ mL/hr}$

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

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)  
 $4 \text{ mL} \times 90.9 \times 50 = 18180 \div 1000 = 18$

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)  
 $4 \text{ mL} \times 68.2 \times 75 = 20460 \div 1000 = 20$