

## Math Module Worksheets

## 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 1gram/50ml.

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

$$\frac{50 \text{ mL} \times 15 \text{ gtt/mL}}{45 \text{ min}} = 17 \text{ gtt/min}$$

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

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

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?

$$\frac{250 \text{ mL} \times 15 \text{ gtt/mL}}{180 \text{ min}} = 20.83 = 21 \text{ gtt/min}$$

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?

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

5. The nurse is to give 500mg IV of a medication over 1 hr. The drug is supplied as 1gram/250mL. The gtt factor is 15. How many gtt/min will you infuse?

$$\begin{aligned} 500 \text{ mg} &= 0.5 \text{ g} = 125 \text{ mL} \\ \frac{125 \text{ mL} \times 15 \text{ gtt/mL}}{60 \text{ min}} &= 31.25 = 31 \text{ gtt/min} \end{aligned}$$

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?

$$\begin{aligned} \frac{75 \text{ mcg}}{x} &= \frac{100 \text{ mcg}}{2 \text{ mL}} \\ \frac{150}{100} &= \frac{100x}{100} \times 1.5 \text{ mL} \end{aligned}$$

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

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

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)

$$\frac{5 \text{ mg}}{x} = \frac{20 \text{ mg}}{5 \text{ mL}}$$

$$\frac{25}{20} = \frac{20x}{20}$$

$$1.25x = 1.25 \text{ mL}$$

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?

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

$$\frac{2 \cdot 10}{10} = \frac{10x}{10}$$

$$2 = 1x \quad x = 0.2 \text{ mL}$$

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?

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

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.

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

$$\frac{50 \text{ mg} \times 1000 \text{ mcg}}{500 \text{ mL}} = 100 \text{ mcg/mL}$$

$$\frac{100 \text{ mcg/mL} \times 142 \text{ mL/hr}}{79.5 \text{ kg} \times 60 \text{ min/hr}} = 2.97 \quad \boxed{3 \text{ mcg/kg/min}}$$

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.

$$\frac{250 \text{ mg} \times 1000}{500 \text{ mL}} = 500 \text{ mcg/mL}$$

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

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?

$$\frac{100 \text{ mg} \times 1000}{250 \text{ mL}} = 400 \text{ mcg/mL}$$

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

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?

$$\frac{25000 \text{ units}}{250 \text{ mL}} = 100 \text{ units/mL}$$

$$\frac{500 \text{ units/hr}}{100 \text{ units/mL}} = 5 \text{ mL/hr} \quad \boxed{5 \text{ mL/hr}}$$

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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.

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

$$\frac{800 \text{ mg} \times 1000}{500 \text{ mL}} = 1600 \text{ mcg/mL}$$

$$\frac{75 \text{ kg} \times 2 \text{ mcg/kg/min} \times 60 \text{ min/hr}}{1600 \text{ mcg/mL}} = 5.625 = \boxed{5.6 \text{ mL/hr}}$$

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.

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

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.

$$\frac{100 \text{ units}}{250 \text{ mL}} = 0.4 \text{ units/mL}$$

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

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.

$$\frac{400 \text{ mg} \times 1000}{500 \text{ mL}} = 800 \text{ mcg/mL}$$

$$\frac{800 \text{ mcg/mL} \times 35 \text{ mL/hr}}{62 \text{ kg} \times 60 \text{ min}} = 7.526 = \boxed{7.5 \text{ mcg/kg/min}}$$

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?

$$\frac{50 \text{ mL} \times 15 \text{ gtt/mL}}{30 \text{ min}} = \boxed{25 \text{ gtt/min}}$$

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?

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