Meredith Huber

IM 7 Math Module
Complete the required math problems and submit to Math drop box

Name: Meredith Huber

1. Infuse 1 gram of a medication over 45 minutes. The drug is supplied as 1gram/50ml.

$gtt/min = \dfrac{mL \times gtt/mL}{mins}$

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

$\dfrac{50\ mL \times 15\ gtt/mL}{45\ min} = 16.67 = 17\ gtt/min$

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

$1000\ ml / 8\ hr = 125\ ml/hr$

3. Infuse 1.5 gram of a medication over 3 hours. The drug is supplied as 1.5 gram/250mL.

$\dfrac{mL \times gtt/mL}{mins}$

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

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

4. An order has been written to give 1 gram of a medication over 30 minutes. The drug is

$\dfrac{mL \times gtt/mL}{mins}$

supplied as 1 gram/50mL. The gtt factor is 60. How many gtt/min will you infuse?

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

5. The nurse is to give 500mg IV of a medication over 1 hr. The drug is supplied as

$\dfrac{mL \times gtt/mL}{min}$

1gram/250mL. The gtt factor is 15. How many gtt/min will you infuse?

$\dfrac{125\ mL \times 15\ gtt/mL}{60\ min} = 31.25 = 31\ gtt/min$

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?

$\dfrac{75\ mcg}{x} \quad \dfrac{100\ mcg}{2\ mL} \quad \dfrac{100x}{100} = \dfrac{150\ mL}{100}$

$x = 1.5\ mL$

7. Infuse 1000 mLs of intravenous fluid over 4 hrs. How many mL/hr will you set on the pump? $1000\ ml / 4\ hr = 250\ ml/hr$

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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)

$$\frac{5\ mg}{x} \quad \frac{20\ mg}{5\ mL} \qquad \frac{20x}{20} = \frac{25\ mL}{20}$$

$$x = 1.25\ mL$$

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?

$$\frac{2\ mg}{x} \quad \frac{10\ mg}{1\ mL} \qquad \frac{10x}{10} = \frac{2\ mL}{10} \qquad x = 0.2\ mL$$

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?

$$\frac{mL \times gtt/mL}{min}$$

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

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.

$$mcg/kg/min = \frac{mcg/mL \times mL/hr}{kg \times 60}$$

$$lbs \to kg$$
$$mg \to mcg$$
$$amount/volume$$

$$175\ lbs/2.2 = 79.5\ kg$$
$$50\ mg \times 1000\ mcg = 50,000\ mcg$$
$$50,000\ mcg/500\ mL = 100\ mcg/mL$$

$$\frac{100\ mcg/mL \times 142\ mL/hr}{79.5\ kg \times 60} = \frac{14200}{4770} = 2.97 = 3\ mcg/kg/min$$

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.

$$mcg/kg/min\ to$$
$$find\ mL/hr =$$
$$\frac{kg \times mcg/kg/min \times 60}{mcg/mL}$$

$$mg \to mcg \quad 250\ mg \times 1000\ mcg = 250,000\ mcg$$
$$amount/volume \quad 250,000\ mcg/500\ mL = 500\ mcg/mL$$
$$mcg/mL$$

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

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?

$$mcg/min = \frac{mcg/mL \times mL/hr}{60}$$

$$100\ mg \times 1000\ mcg = 100,000\ mcg$$
$$100,000\ mcg/250\ mL = 400\ mcg/mL$$

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

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?

$$mL/hr = \frac{units/hr\ or\ mg/hr}{units/mL\ or\ mg/mL}$$

$$25,000\ units/250\ mL = 100\ units/mL$$

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

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mcg/kg/min to find ml/hr **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**

kg × mcg/kg/min × 60 / mcg/ml **infusion pump? Round to the nearest tenth.**

165 lbs/2.2 = 75 kg

800 mg × 1000 mcg = 800,000 mcg

800,000 mg / 500 ml = 1600 mcg/ml

$$\frac{75 \, kg \times 2 \, mcg/kg/min \times 60}{1600 \, mcg/ml} = 5.625 = 5.6 \, ml/hr$$

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.

$$\frac{75 \, kg \times 4 \, mcg/kg/min \times 60}{1600 \, mcg/ml} = 11.25 = 11.3 \, ml/hr$$

ml/hr =
mg/hr or units/hr
mg/ml or units/ml

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.

100 units/250 ml = 0.4 units/ml

$$\frac{5 \, units/hr}{0.4 \, units/ml} = 12.5 = 13 \, ml/hr$$

mcg/kg/min =
mcg/ml × ml/hr
kg × 60

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.

400 mg × 1000 mcg = 400,000 mcg

400,000 mcg / 500 ml = 800 mcg/ml

$$\frac{800 \, mcg/ml \times 35 \, ml/hr}{62 \, kg \times 60} \quad \frac{28000}{3720} = 7.52 = 7.5 \, mcg/kg/min$$

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?

$$\frac{50 \, ml \times 15 \, gtt/ml}{30 \, min} = 25 \, gtt/min$$

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?

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