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Additional Math Practice 1

1. A patient is to receive dobutamine at a rate of 10 mL/hr. The drug is labeled 250 mg/250 mL. The patient weighs 82 kg. How many mcg/kg/min are infusing?

$$mcg/kg/min = \frac{con \times IR}{kg \times 60} = \frac{1 \times 10}{82 \times 60} = \frac{10mg \times 1000}{4920} = \frac{10000}{4920} = \boxed{2\ mcg}$$

2. If norepinephrine is infusing at 13 mL/hr, what would the nurse expect the dose to be in mcg/min? The bag is labeled norepinephrine 4 mg/250 mL. The patient weighs 94 kg. Round to the nearest tenth.

$$mcg/min = \frac{con \times IR}{60} = \frac{16 \times 13}{60} = \frac{208}{60} = \boxed{3.5\ mcg/min}$$

0.016×1000

3. A patient's blood pressure has decreased to 70/48 mmHg following a significant head injury. The primary healthcare provider writes an order to start a Dopamine infusion at 10 mcg/kg/min. Pharmacy sends a bag labeled Dopamine 400 mg/250 mL. The patient weighs 68 kg. What rate will the pump need to be set on to achieve the desired dose?

$$mL/hr = \frac{kg \times mcg \times 60}{con.} = \frac{68 \times 10 \times 60}{1600} = \frac{40800}{1600} = \boxed{25.5\ mL/hr}$$

$\frac{400}{250} = 1.6 \times 1000 = 1600$

4. The nurse receives an order to titrate propofol for sedation. The patient is currently receiving 8 mcg/kg/min. Determine the rate that is currently infusing in mL/hr. The bottle is labeled propofol 1 GM/100mL. The patient weighs 90 kg.

$$mL/hr = \frac{kg \times mcg \times 60}{con.} = \frac{90 \times 8 \times 60}{10,000} = \frac{43,200}{10,000} = \boxed{4.32\ mL/hr}$$

$\frac{1000}{100} = 10 \times 1000 = 10,000$

5. The nurse receives an order to initiate a Cordarone infusion at 0.5 mg/min. The drug is labeled 450 mg/250mL. How many mL/hr should the pump be set on to deliver the correct dose? $0.5 \times 60 = 30$

$\frac{30\ mL}{x} = \frac{450}{250} = 16.\overline{6}$

$\boxed{= 17\ mL/hr}$

6. Nicardipine is to be given at a rate of 5 mg/hr. The drug is supplied as 50 mg/250 mL. How many mL/hr should the pump be set on to deliver the correct dose?

$$\frac{5mg}{x} = \frac{50mg}{250ml} = \frac{50x}{50} = \frac{250 \times 5}{50} = \frac{1250}{50} = \boxed{25 \, ml/hr}$$

7. Heparin is ordered at 800 units/hr. The drug is supplied as 25000 units/500 mL. What rate should the pump be set at?

$$\frac{25000}{500} = 50 \qquad\qquad \frac{800}{50} = \boxed{16 \, ml/hr}$$

8. The patient is to receive 10 mcg/min of norepinephrine. The drug is supplied as 16 mg/250 mL. The patient weighs 83 kg. How many mL/hr will you place the pump on?

$10 \times 60 = 600 \, mcg/hr$

$$\frac{600 \, mcg \times 16000}{x} = \frac{16000x}{16000} = \frac{600 \times 250}{16000}$$
$$= 9.4$$
$$= \boxed{9}$$

9. The patient is to receive Rocephin 1 GM over 90 minutes. The drug is supplied as 1 GM/100 mL. The drop factor is 20. How many gtt/min should be delivered?

$$\frac{100ml}{90} \times 20 = 22.\overline{2}$$
$$= \boxed{22 \, gtt}$$

10. The patient is to receive Cipro 400 mg IV over 1 hour. The bag of Cipro comes from the pharmacy labeled Cipro 400 mg in 100 mL D5W. The IV tubing delivers 12 gtt/mL. How many drops per minute (gtt/mL) will you deliver?

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

11. The patient is on a dopamine drip infusing at 35 mL/hr. The label reads 400 mg Dopamine is 500 mL D5W. The client weights 62 kg. How many mcg/kg/min is the client receiving? Round to the nearest tenth.

$$mcg/kg/min = \frac{con \times IR}{kg \times 60} = \frac{800 \times 35}{62 \times 60} = \frac{28,000}{3720} = \boxed{7.5 \, mcg/kg/min}$$

$400/500 = 0.8 \, mg = 800 \, mcg$

12. The nurse receives an order to infuse Nitroclycerine at 60 mcg/min. It is supplied as 25 mg in 250 mL of normal saline. What rate (mL/hr) would the rate need to be set at? $60 \times 60 = 3600 \, mcg = 3.6 \, mg$

$$\frac{3.6mg}{X} = \frac{25mg}{250ml} = \frac{250 \times 3.6}{25} = \frac{900}{25} = \boxed{36 \, ml/hr}$$

13. The patient is on an insulin drip. The current dose is 6 units/hr. The pharmacy sends a bag with 50 units regular insulin in 100 mL normal saline. At what rate (mL/hr) would you set the IV pump?

$$\frac{50}{100} = 0.5 \qquad \frac{6}{0.5} = \boxed{12 \, ml/hr}$$

14. The patient is to receive 3 units of blood over 5 hours. Each unit contains 250 mL or blood. How many drops per minute (gtt/min) is needed to give the blood over the required time? The IV tubing drop factor is 20 gtt/mL

$250 \times 3 = 750$

$$\frac{750}{300} \times 20 = \boxed{50 \, gtt/min}$$

Math Practice 2

1. The order is to infuse Cordarone 0.5 mg/min. Supplied is 450 mg/250 mL. What rate would you place on the pump? Round to the nearest tenth.

$0.5 \times 60 = 30 \, mg$

$$\frac{30mg}{X} = \frac{450mg}{250ml} = \frac{7500}{450} = 16.\overline{6}$$

$$= \boxed{16.7 \, ml/hr}$$

2. The order is for Cordarone 16.7 mL/hr. Supplied is 450mg/250mL. How many mg/min

are infusing? $\frac{450}{250} = 1.8$ $\frac{1.8 \times 16.7}{60} = \frac{30.06}{60} = 0.501$

$= 0.5mg$

3. Dobutamine is infusing at 15 mL/hr. The client weighs 203 lbs. The concentration is

500mg/250mL. Calculate the dose in mcg/kg/min.

$mcg/kg/min = \frac{con \times IR}{kg \times 60} = \frac{2000 \times 15}{92.3 \times 60} = \frac{30,000}{5,538} = 5.4 \ mcg/kg/min$

4. Heparin is ordered at 1200 units/hr. The drug is supplied as 25000 units/500mL. What

rate should be placed on the pump?

$\frac{25000}{500} = 50$ $\frac{1200}{50} = 24 \ mL/hr$

5. The client is receiving Levophed 10 mcg/min. ~~The client weighs 83 kg.~~ The drug is

supplied as 8mg/250mL. Calculate the appropriate rate for the pump. Round to

the nearest whole number. $mcg/min = \frac{10 \times 60}{32} = \frac{600 \ mcg}{32 mcg} = 18.75$

$10 \times 60 = 600 \ mcg/hr.$ $= 19$

$8/250 = 0.032 \ mcg$

6. Infuse propofol at 17 mL/hr. The drug is supplied as 1 GM/100mL. The client weighs

80 kg. Calculate the dose in mcg/kg/min. Round to the nearest tenth.

$mcg/kg/min = \frac{con \times IR}{kg \times 60} = \frac{10,000 \times 17}{80 \times 60} = \frac{170,000}{4800} = 35.4 \ mcg/kg/min$

7. The client is on an Insulin drip. The current dose is 8 units/hr. The bag is labeled 50 units/100 mL. What rate should you set on the pump to achieve the appropriate dose?

$^{50}/_{100} = 0.5$ $\dfrac{8}{0.5} = \boxed{16 \text{ ml} / \text{hr}}$

8. Heparin is infusing at 10 mL/hr. The bag is labeled 25,000 units/500 mL. How many unit/hr are infusing?

$\dfrac{10 \text{ ml}}{x} = \dfrac{500 \text{ ml}}{25,000 \text{ units}} = \dfrac{500x}{500} = \dfrac{25,000 \times 10}{500}$

$= \dfrac{250,000}{500} = \boxed{500}$

(4 con)

9. Lidocaine 2 GM/500mL is infusing at 30 mL/hr. How many mg/min are infusing?

$30/60 = 0.5 \text{ ml} / \text{min}$ $\dfrac{2000 mg}{500 ml} = \dfrac{x}{0.5}$ $\dfrac{1000}{500} = \boxed{2 mg / min}$

10. The order is to infuse Fentanyl 100 mcg/hr. The bag is labeled 1 mg/250mL. How many mL/hr should you infuse?

$\dfrac{100 mcg}{x} = \dfrac{1000 mcg}{250} = \boxed{25 \text{ ml} / \text{hr}}$

11. Labetolol is infusing at 30 mL/hr. The bag is labeled 100mg/100mL. How many mg/ min are infusing?

$\dfrac{30}{x} = \dfrac{100}{100} = \dfrac{100x}{100} = \dfrac{30 \times 100}{100} = \dfrac{3000}{100} = 30$

$30/60 = 0.5 \text{ mg} / \text{min}$

12. Heparin is infusing at 24 mL/hr. The bag is labeled 25,000 units/500mL. How many units/hr are infusing?

$\dfrac{25000}{500} = \dfrac{x}{24} = \dfrac{500x}{500} = \dfrac{24 \times 25000}{500}$

$= \dfrac{600000}{500}$

$= \boxed{1200 \text{ units} / \text{hr}}$

Math Practice 3

1. The patient is on an Insulin drip infusing at 5 units/hr. The bag is labeled 100 units

   insulin in 250 ml normal saline. At what rate should the pump be set?

   $\frac{100}{250} = 0.4$ $\frac{5}{0.4} = \boxed{12.5 \, ml/hr}$

2. Heparin is ordered to be given at 800 units/hr. The drug is supplied as 25000

   units/500ml. At what rate should the pumped be set?

   $\frac{25000}{500} = 50 \, units/ml$ $\frac{800}{50} = \boxed{16 \, ml/hr}$

3. ~~The patient is receiving norepinephrine (Levophed)~~ at 23 ml/hr to ~~maintain a mean~~

   ~~arterial pressure greater than 90.~~ The drug is supplied as 4 mg/250ml. The patient

   weighs 87kg. How many mcg/min are infusing? $4/250 = 0.016 = 16$

   $mcg/min = \frac{conc \times IR}{60} = \frac{16 \times 23}{60} = \frac{368}{60} = 6.13$
   $\boxed{= 6.1}$

4. ~~The patient is to receive ceftriaxone (Rocephin)~~ 500mg over 40 minutes. The drug is

   supplied as 1GM/50ml. The drop factor is 60. How many gtt/min should you deliver?

   $\frac{50}{40} \times 60 = \boxed{75 \, gtt/min}$

5. Give promethazine (Phenergan) 12.5mg IV now. The drug is supplied as 40mg/10ml.

   How many mLs will you deliver?

   D: 12.5mg
   H: 40 mg $\frac{12.5(10)}{40} = \frac{125}{10} = \boxed{12.5 \, ml}$
   V: 10ml
   X: ?

6. Dobutrex (Dobutamine) is infusing at 15 ml/hr. Calculate the dose in mcg/kg/min. The

concentration is 500mg/250ml. The patient weighs 203 lbs.

$$mcg/kg/min = \frac{2000 \times 15}{92.3 \times 60} = \frac{30,000}{5538} = \boxed{5.4 \ mcg/kg/min}$$

$500/250 = 2mg = 2000 \ mcg$

7. The order is to infuse amiodarone (Cordarone) 0.5 mg/min. The drug is supplied as

450mg/250 ml of D5W. At what rate should the pump be set at? (hours)

$0.5 \times 60 = 30 \ mg$

$$\frac{30mg}{X} \bowtie \frac{450}{250} \qquad \frac{450}{450}x = \frac{250 \times 30}{450} = \frac{7500}{450}$$

$$= 16.7$$

$$\boxed{= 17 \ ml/hr}$$

8. Propofol (Diprivan) is infusing at 7 ml/hr. The drug is supplied as 1GM/100ml. The

patient weighs 160 lbs. How many mcg/kg/min is the patient receiving?

$$mcg/kg/min = \frac{con \times IR}{kg \times 60} = \frac{10,000 \times 7}{72.7 \times 60} = \frac{70,000}{4362} = \boxed{16 \ mcg/kg/min}$$

$$\frac{1000}{100} = 10 \ mg = 10,000$$

9. Nitroprusside (Nipride) is ordered to maintain a systolic blood pressure less than 180.

The starting dose is 0.4mcg/kg/min. The drug is supplied as 50mg/250ml and the

patient weighs 94kg. What rate should be set on the pump?

$$\frac{50}{250} = 0.2 = 200$$

$$ml/hr = \frac{kg \times mcg \times 60}{con} = \frac{94 \times 0.4 \times 60}{200} = \frac{2256}{200}$$

$$= 11.28$$

$$\boxed{= 11.3 \ ml/hr}$$

10. The order is for metoprolol (Lopressor) 2.5mg IV push for acute chest pain. The drug

is supplied as 10mg/2ml. How many mL's should you deliver?

D: 2.5 mg
H: 10 mg
V: 2 ml
X: ?

$$\frac{2.5(2)}{10} = \frac{5}{10} = \boxed{0.5 \ ml}$$

11. The patient is receiving diltiazem (Cardizem) 10ml/hr. The drug is supplied as

250mg/500ml. How many mg/hr are infusing?

$$\frac{250mg}{500ml} = \frac{x}{10ml} \qquad \frac{2500}{500} = \boxed{5\ mg/hr}$$

12. ~~Xylocaine (Lidocaine)~~ is infusing at 30ml/hr for ~~ventricular tachycardia~~. The drug is

supplied as 2GM/500ml. How many mg/min are infusing?

$$\frac{2000\ mg}{500\ ml} = \frac{x}{30ml} = \frac{500x}{500} = \frac{2000\times30}{500} = \frac{60,000}{500} = 120/60 = 2\ ng/min$$

13. The patient is to receive Cipro 400 mg IV over 1 hour. You receive a bag from the

pharmacy labeled Cipro 400 mg in 100 ml D5W. The IV tubing delivers 12 gtt/ml.

How many drops per minute (gtt/min) will you deliver?

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

14. The patient is on a Dopamine drip infusing at 35 ml/hr. The label reads 400 mg

Dopamine in 500 ml D5W. The patient weighs 62 kg. How many mcg/kg/min is the

patient receiving?

$$400/500 = 0.8 = 800$$

$$= \frac{800\ mcg \times 35}{62 \times 60} = \frac{28,000}{3720} = \boxed{7.5\ mcg/kg/min}$$

15. The order is to begin a Nitroglycerin infusion at 5 mcg/min. The bottle is labeled 25

mg/ 250 ml D5W. At what rate will you set the pump?

$$5 \times 60 = 300$$

$$\frac{300\ mcg}{x} = \frac{25,000\ mcg}{250} \qquad \frac{75,000}{25,000}$$

$$\boxed{= 3\ ml/hr}$$