

$$\frac{V}{H} \times D =$$

$$\frac{\text{Volume} \times \text{drop factor}}{\text{time (minutes)}} = \text{gtt/minute}$$

1. The IV order is for D₅W to infuse at 100 mL/hr. The drop factor is 10 gtt/mL. How many drops per minute (gtt/min) should the pump be set to run? Round final answer to whole number.

$$\text{Vol} = 100 \text{ mL}$$

$$\text{drop} = 10 \text{ gtt/mL}$$

$$\text{Time} = 1 \text{ hr.}$$

$$\frac{100 \times 10}{60} = 16.\bar{6} = \boxed{17 \text{ gtt/min}}$$

2. Medication order: Rocephin 1 g IV every 12 hours over 30 minutes.

Available: rocephin 1 g in 150 mL NS. At what rate would you set your pump?

$$D = 1 \text{ g } q 12 \text{ hrs.}$$

$$H = 1 \text{ g}$$

$$V = 150 \text{ mL}$$

$$\frac{150 \text{ mL}}{1 \text{ g}} \times 1 \text{ g} = 150 \text{ mL/30 minutes}$$

$$\boxed{300 \text{ mL/hr}}$$

3. Medication order: Vistaril 20 mg IM q4h PRN for nausea. The 10 mL vial that you have available is labeled 25 mg/mL. How many mL will you draw up to give?

$$D = 20 \text{ mg } q 4 \text{ hrs.}$$

$$H = 25 \text{ mg}$$

$$V = 1 \text{ mL}$$

$$\frac{1 \text{ mL}}{25 \text{ mg}} \times 20 \text{ mg} = \boxed{0.8 \text{ mL}}$$

4. Medication order: Haldol 3 mg IM q6h PRN for agitation. The 1 mL vial that you have available is labeled 5 mg/mL. How many mL will you draw up to give?

$$D = 3 \text{ mg}$$

$$H = 5 \text{ mg}$$

$$V = 1 \text{ mL}$$

$$\frac{1 \text{ mL}}{5 \text{ mg}} \times 3 \text{ mg} = \frac{3 \text{ mg}}{5} = \boxed{0.6 \text{ mL}}$$

5. Medication order: heparin 5000 units subQ every 12 hours. Drug available: heparin 10,000 units/2 mL. How many mL will you administer for the day?

$$D = 5000 \text{ units}$$

$$H = 10,000 \text{ units}$$

$$V = 2 \text{ mL}$$

$$\frac{2 \text{ mL}}{10,000} \times 5000 = 1 \text{ mL} \times 2 = \boxed{2 \text{ mL}}$$

6. A patient has an order for 200 mg q8h of cimetidine (Tagamet) to be administered intramuscularly. The vial of 8 mL contains 300 mg per 2 mL. How many mL would you give q8h?

$$D = 200 \text{ mg}$$

$$H = 300 \text{ mg}$$

$$V = 2 \text{ mL}$$

$$\frac{2 \text{ mL}}{300 \text{ mg}} \times 200 \text{ mg} = \frac{400 \text{ mg}}{300 \text{ mg}} = \boxed{1.3 \text{ mL}}$$

7. Medication order: Garamycin 80 mg IVPB over 30 minutes. Available: Garamycin (gentamicin sulfate) 80 mg in 50 mL of D₅W. Calculate the flow rate in mL/hr.

$$D = 80 \text{ mg}$$

$$H = 80 \text{ mg}$$

$$V = 50 \text{ mL}$$

$$50 \text{ mL/30 min} \times 2 = \boxed{100 \text{ mL/hr}}$$

8. You have an IV infusing at 125 mL/hr. How long will it take 1500 mL to infuse?

$$\frac{1500}{125} = \boxed{12 \text{ hrs.}}$$

9. Medication order: rocephin g 1 IV every 12 hours over 30 minutes.

Available: rocephin 1 g in 150 mL NS. At what rate would you set your pump?

$$D = 1g$$

$$H = 1g$$

$$V = 150mL$$

$$150mL / 30 \text{ min} \times 2 =$$

$$300mL/hr$$

10. An infusion pump is set to administer 75 mL/hr to a patient. How many hours will it take for the patient to receive 600 mL of fluid?

$$600 / 75 = 8 \text{ hrs}$$

11. A patient is to receive lidocaine hydrochloride (Xylocaine) 100 mg as an intravenous bolus. The Xylocaine is labeled 20 mg/mL. How many milliliters should be administered?

$$D = 100mg$$

$$H = 20mg$$

$$V = 1mL$$

$$\frac{1mL}{20mg} \times 100mg =$$

$$5mL$$

12. Medication order: 50 mg/kg/day. Patient weight: 85.8 pounds. The patient will receive _____ mg/day.

$$D = 50mg/kg$$

$$85.8 / 2.2 = 39kg \times 50 =$$

$$1950mg/day$$

13. Medication order: Amoxicillin 2.5 mL every 8 hours. Available is Amoxicillin

250 mg/5mL. The nurse will administer how many mg for the day?

$$D = 2.5mL$$

$$H = 250mg$$

$$V = 5mL$$

q 8hr.

$$2.5mL \times 3 = 7.5mL/day$$

$$\frac{250mg}{5mL} = \frac{x}{7.5mL}$$

$$375mg$$

$$\frac{5x}{5} = \frac{1875}{5}$$

14. Medication order: Ondansetron 2 mg – 4 mg/kg/Q 4 hours po PRN nausea.

The patient weighs 66 lbs. What is the minimum amount of medication in grams that can be administered every 4 hours?

$$D = 2mg/kg$$

$$66 / 2.2 = 30kg \times 2mg = 60mg / 1000 =$$

$$0.06g$$

15. Medication order: 5 mL of normal saline is added to a vial of Lasix 20 mg/5 mL. How many milligrams of Lasix are in each millimeter of fluid?

$$5mL$$

$$+ 5mL$$

$$10mL$$

$$\frac{20mg}{10mL} =$$

$$2mg/mL$$

16. Medication order: administer 1,000 mL of normal saline IV over 6 hours. At which rate should the nurse administer the medication?

$$D = \frac{1000mL}{6} =$$

$$166.7mL/hr$$

17. Administer gentamicin 1 G/100 mL IVPB over 1 hr. At what rate should the nurse administer the medication?

$$\boxed{100 \text{ mL/hr}}$$

18. Administer 1,000 mL D5W to at a rate of 125 mL/hour. How many hours will it take to infuse 1 L? 1 L = 1000 mL

$$\frac{1000}{125} = \boxed{8 \text{ hrs}}$$

19. Administer heparin sodium 1,300 units/hour by IV. The pharmacy prepares the medication and delivers an IV bag 20,000 units/250 mL D5W.

At what rate should the nurse administer the medication?

$$\begin{aligned} D &= 1300 \text{ un/hr} \\ H &= 20,000 \text{ units} \\ V &= 250 \text{ mL} \end{aligned}$$

$$\frac{250 \text{ mL}}{20,000} \times 1300 = 16.25 \text{ mL/hr}$$

$$\boxed{16.3 \text{ mL/hr}}$$

20. Administer D5 1/2 at 100 mL/hour. The drop factor is 15 gtt/mL. How many drops per minute (gtt/min) should the pump be set to run?

$$\frac{100 \text{ mL} \times 15}{60} = \frac{1500}{60} = \boxed{25 \text{ gtt/min}}$$

21. Medication order: Administer an IV at 30 mL/hour. The IVAC indicates that 270 mL are remaining in the present IV bag. The time is exactly 10:30 am.

At what time will the infusion be completed?

$$270/30 = 9 \text{ hr} \quad 10:30 + 9 \text{ hr} = 19:30 = \boxed{7:30 \text{ pm}}$$

22. Administer Magnesium Sulfate 2 gm/ hour IV. Sent from the pharmacy is Magnesium Sulfate 40 gm/1000 mL. The nurse should set the pump at _____ mL/hour.

$$\begin{aligned} D &= 2 \text{ gm/hr} \\ H &= 40 \text{ gm} \\ V &= 1000 \text{ mL} \end{aligned} \quad \frac{1000 \text{ mL}}{40 \text{ gm}} \times 2 \text{ gm} = \frac{2000 \text{ gm}}{40 \text{ gm}} = \boxed{50 \text{ mL/hr}}$$

23. Administer Ritodrine IV 50 mcg/min. The pharmacy sent Ritodrine 150 mg premixed in 500 mL D5W. The nurse should set the IV pump at _____ mL/hour.

$$\begin{aligned} D &= 50 \text{ mcg/min} \\ H &= 150 \text{ mg} \\ V &= 500 \text{ mL} \end{aligned} \quad \frac{500 \text{ mL}}{150 \text{ mg}} \times \frac{1 \text{ mg}}{1000 \text{ mcg}} \times 50 \text{ mcg} = \frac{25,000}{150,000}$$

24. Administer Keflex 2.0 g /100 mL in D5W in thirty minutes. The nurse should set the IV pump at _____ mL/hour.

$$2.0 \text{ g}/100 \text{ mL} \times 30 \text{ min} \times 2 = \boxed{200 \text{ mL/hr}}$$

$$\begin{aligned} 0.17 \text{ mL} \times \\ 60 \text{ min} = \\ \boxed{10.2 \text{ mL/hr}} \end{aligned}$$

25. Administer 1.5 L Lactated Ringers in 12 hours. Calculate the rate of flow if the drop factor is 20 gtt/mL.

$$1.5 \text{ L} = \frac{1500 \text{ mL} \times 20}{12 \times 60} = \frac{30,000}{720} = \boxed{41.7 \text{ gtt/min}}$$