Infusion Rate Calculations

1. Your patient has an order to infuse 100 mL of D51/2NS with 10 MEq of KCl over the next 30 minutes. The set calibration is 10 gtt/mL. What is the correct rate of flow for this patient? (*Answer in gtt/min rounded to the nearest whole number*).

   a. 43 gtt/min
   b. 33 gtt/min
   c. 23 gtt/min
   d. 13 gtt/min

2. The physician orders an IV infusion of D5W 1000 mL to infuse over the next 8 hours. The IV tubing that you are using delivers 10 gtt/mL. What is the correct rate of flow (drops per minute)? (*Answer in gtt/min rounded to the nearest whole number*).

   a. 12 gtt/min
   b. 21 gtt/min
   c. 24 gtt/min
   d. 33 gtt/min

3. The 10:00 am medications scheduled for your patient include Keflex 2.0 g in 100 mL of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in 30 minutes. The IV tubing on your unit delivers 10 gtt/mL. What is the correct rate of flow in drops per minute? (*Answer in gtt/min rounded to the nearest whole number*).

   a. 43 gtt/min
   b. 33 gtt/min
   c. 23 gtt/min
   d. 13 gtt/min

4. The doctor orders 1.5 litres of Lactated Ringers solution to be administered to your patient over the next 12 hours. Calculate the rate of flow if the IV tubing delivers 60 gtt/mL. (*Answer in gtt/min rounded to the nearest whole number*).

   a. 75 gtt/min
   b. 100 gtt/min
   c. 125 gtt/min
   d. 130 gtt/min

5. The medications scheduled for your patient include Keflex 1.5 grams in 50 mL of a 5% Dextrose solution. According to the pharmacy, this preparation should be administered in 30 minutes. The IV tubing on your unit delivers 15 gtt/mL. What is the correct rate of flow in drops per minute?

   a. 15 gtt/min
   b. 20 gtt/min
   c. 25 gtt/min
   d. 30 gtt/min

6. An intravenous line has been inserted into a patient. Fluid is being delivered at a rate of 42 mL/h. How much fluid will the patient receive in 12 hours?

   a. 504 mL
   b. 252 mL
   c. 420 mL
   d. 640 mL

7. A boy is to be given dextrose 5% via an infusion pump. If the pump is set at 60 mL/h, how much dextrose will he receive in 1.5 hours (1 hour and 30 minutes)?

   a. 60 mL
   b. 120 mL
   c. 85 mL
   d. 90 mL

8. A young male patient is to be given one litre of dextrose 4% in 1/5 normal saline. The infusion pump is set at a rate of 80 mL/h. How long will it take to give the litre of solution?

   a. 6 hours, 30 minutes
   b. 10 hours, 30 minutes
   c. 12 hours, 30 minutes
   d. 14 hours, 30 minutes

9. What is the required flow rate of a volumetric infusion pump to deliver 500 mL of dextrose 5% over 12 hours? (*Answer in mL/h rounded to the nearest whole number*).

   a. 42 mL/h
   b. 21 mL/h
   c. 62 mL/h
   d. 34 mL/h

10. What is the required flow rate of a volumetric infusion pump to deliver 500 mL of dextrose 5% over 8 hours? (*Answer in mL/h rounded to the nearest whole number*).

    a. 126 mL/h
    b. 53 mL/h
    c. 87 mL/h
    d. 63 mL/h

11. What is the required flow rate of a volumetric infusion pump to deliver 100 mL of metronidazole 500 mg over 30 minutes? (*Answer in mL/h rounded to the nearest whole number*).

    a. 300 mL/h
    b. 200 mL/h
    c. 150 mL/h
    d. 100 mL/h

12. What is the correct setting for a burette pump to administer 50 mL of fluid containing 0.5 g of potassium chloride in half an hour? (*Answer in mL/h rounded to the nearest whole number*).

    a. 100 mL/h
    b. 50 mL/h
    c. 150 mL/h
    d. 125 mL/h

13. What is the correct setting for a burette pump to administer 70 mL of fluid containing 1.2 g of penicillin in 25 minutes? (*Answer in mL/h rounded to the nearest whole number*).

    a. 84 mL/h
    b. 168 mL/h
    c. 225 mL/h
    d. 145 mL/h

14. 750 mL of normal saline is to be given to a patient over 9 hours using a giving set which emits 20 drops/mL. What is the required drip rate in drops per minute? (*Round answer to the nearest whole number*).

    a. 21 gtt/min
    b. 32 gtt/min
    c. 28 gtt/min
    d. 36 gtt/min

15. A patient is to have 400 mL of normal saline infused over 10 hours using a microdrip set that delivers 60 drops/mL. What is the required drip rate in drops per minute? (*Round answer to the nearest whole number*).

    a. 40 gtt/min
    b. 50 gtt/min
    c. 60 gtt/min
    d. 67 gtt/min

16. 300 mL of autologous blood is to be transfused over 2 hours using an administration set which gives 20 drops per mL. What is the required drip rate in drops per minute for the blood infusion? (*Round answer to the nearest whole number*).

    a. 15 gtt/min
    b. 45 gtt/min
    c. 50 gtt/min
    d. 55 gtt/min

17. A 350 mL unit of packed cells is to be run over 2 1/2 hours using an I.V. giving set which delivers 15 drops/mL. What is the required drip rate in drops per minute for the blood infusion? (*Round answer to the nearest whole number*).

    a. 28 gtt/min
    b. 35 gtt/min
    c. 38 gtt/min
    d. 32 gtt/min

18. One litre of Hartmann's solution is to be given I.V. For the first 6 hours the solution is delivered at 85 mL/h, then the rate is reduced to 70 mL/h. Find the total time taken to give the full volume.

    a. 13 hrs.
    b. 11 hrs.
    c. 8 hrs.
    d. 16 hrs.

19. A patient is to receive one litre of dextrose 4% in 1/5 normal saline. For the first 3 1/2 hours the fluid is delivered at 160 mL/hr. A specialist then orders the rate slowed so that the remaining fluid will run over the next 8 hours. Calculate the required flow rate.

    a. 110 mL/h
    b. 45 mL/h
    c. 85 mL/h
    d. 55 mL/h

20. A patient is to receive one litre of Hartmann's solution. If an infusion pump is set at 120 mL/h, how long will the pump take to deliver the solution?

    a. 6 h 40 minutes
    b. 8 h 20 minutes
    c. 10 h 10 minutes
    d. 7 h 30 minutes

21. 600 mL of normal saline is to be infused over 12 hours using a micro-drop giving set. The set delivers 60 drops per millilitre. Calculate the required drip rate in drops per minute.

    a. 45 gtt/min
    b. 55 gtt/min
    c. 50 gtt/min
    d. 65 gtt/min

22. A patient is receiving fluid from two I.V. lines. One line is running at 65 mL/h; the other at 70 mL/h. What volume of fluid would the patient receive via I.V. over 12 hours?

    a. 1820 mL
    b. 1620 mL
    c. 840 mL
    d. 780 mL

23. A patient ordered ampicillin 500 mg dissolved in 100 mL D5W to run for 1 hour. The drop factor is 10 gtt/mL. What is the correct flow rate? (*Answer to the nearest whole number*).

    a. 10 gtt/min
    b. 16 gtt/min
    c. 17 gtt/min
    d. 60 gtt/min

24. The patient is to get 0.9% sodium chloride IV infusing at 65 mL/h for 4 hrs. The drop factor is 25 gtt/mL. What is the total volume that will be infused?

    a. 260 mL
    b. 240 mL
    c. 360 mL
    d. 130 mL

25. The order is for Lactated Ringer's 1000 mL at 100 mL/h. The drop factor is 10 gtt/mL. What is the infusion time in hours and minutes?

    a. 8 hrs.
    b. 8 hrs. 24 min
    c. 10 hrs.
    d. 10 hrs. 12 min

Answer Key to Infusion: Quiz 3

Q01	b	(100 mL x 10 gtt/mL) ÷ 30 min = 33.33 --> 33 gtt/min
Q02	b	(1000 mL x 10 gtt/mL) ÷ (8 hrs. x 60 min) = 20.83 --> 21 gtt/min
Q03	b	(100 mL x 10 gtt/mL) ÷ 30 min = 33.33 --> 33 gtt/min
Q04	c	1.5 L x 1000 = 1500 mL; (1500 mL x 60 gtt/mL) ÷ (12 hrs. x 60 min) = 125 gtt/min
Q05	c	(50 mL x 15 gtt/mL) ÷ 30 min = 25 gtt/min
Q06	a	42 mL/h x 12 hrs. = 504 mL
Q07	d	60 mL/h x 1.5 hrs. = 90 mL
Q08	c	1000 mL (1 litre) ÷ 80 mL/h = 12.5 hours or 12 hours and 30 minutes
Q09	a	500 mL ÷ 12 hrs. = 41.6 --> 42 mL/h
Q10	d	500 mL ÷ 8 hrs. = 62.5 --> 63 mL/h
Q11	b	100 mL x (60 min ÷ 30 min) = 200 mL/h
Q12	a	50 mL x (60 min ÷ 30 min) = 100 mL/h
Q13	b	70 mL x (60 min ÷ 25 min) = 168 mL/h
Q14	c	(750 mL x 20 gtt/mL) ÷ (9 hrs. x 60 min) = 27.7 --> 28 gtt/min
Q15	a	(400 mL x 60 gtt/mL) ÷ (10 hrs. x 60 min) = 40 gtt/min
Q16	c	(300 mL x 20 gtt/mL) ÷ (2 hrs. x 60 min) = 50 gtt/min
Q17	b	(350 mL x 15 drops/mL) ÷ (2.5 hrs. x 60 min) = 35 gtt/min
Q18	a	1 L x 1000 = 1000 mL; 1000 mL - (85 mL/h x 6 hrs.) = 490 mL left; 490 mL ÷ 70 mL/h = 7 hours; 6 hours + 7 hours = 13 hours total
Q19	d	1000 mL - (160 mL/h x 3.5 hours) = 440 mL remaining; 440 mL ÷ 8 hours = 55 mL/h
Q20	b	1 L x 1000 = 1000 mL; 1000 mL ÷ 120 mL/h = 8 1/3 hours = 8 hours 20 minutes
Q21	c	(600 mL x 60 gtt/mL) ÷ (12 hrs. x 60 min) = 50 gtt/min
Q22	b	(65 mL/h + 70 mL/h) = 135 mL/h x 12 hrs. = 1620 mL
Q23	c	(100 mL x 10 gtt/mL) ÷ (1 hrs. x 60 min) = 16.7 --> 17 gtt/min
Q24	a	65 mL/h x 4 hrs. = 260 mL
Q25	c	1000 mL ÷ 100 mL/h = 10 hours