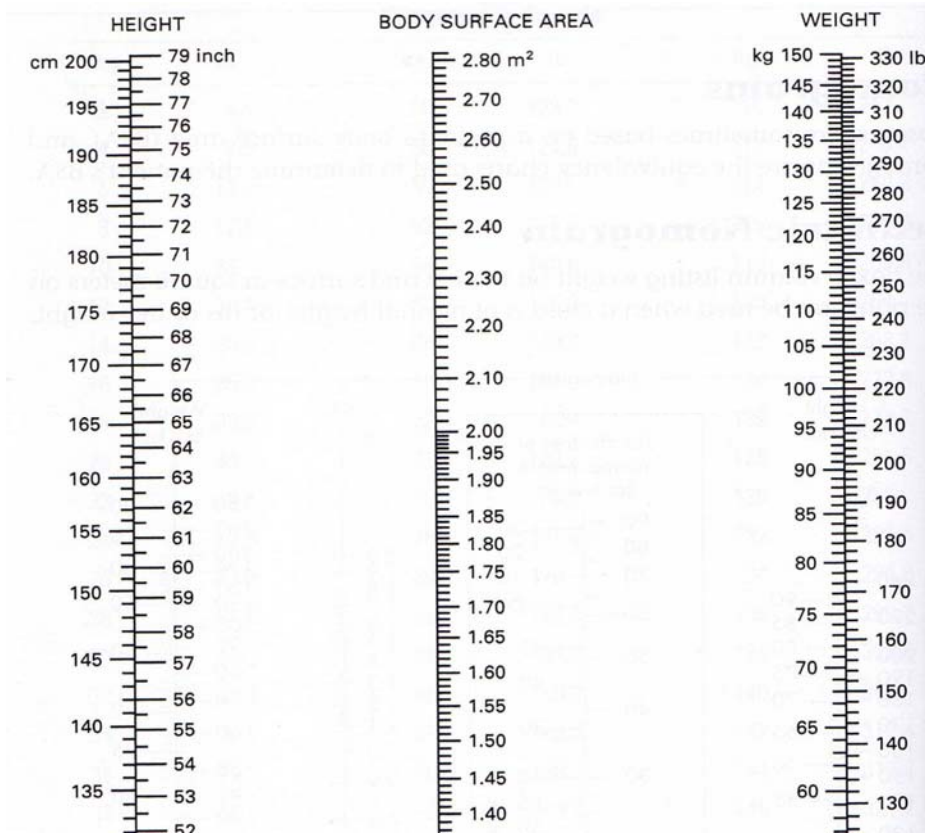


Part I: **No Calculator.** No books. No notes. Answer all the questions. Do it by yourself.

1. Use the given nomogram to find the BSA of a patient who is 168 cm tall and who weighs 74 kg. Give your answer accurate to 2 decimal places. Write down the appropriate unit.



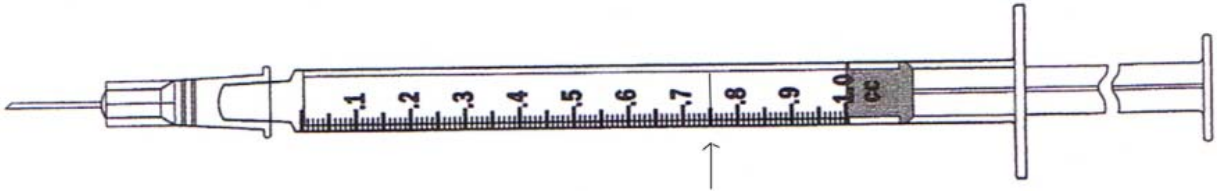
2. Write down the equivalent time in the military clock. 12:40 a.m. _____

3. Write as a decimal number. 130% _____

4. How many significant figures are there in 0.02601? _____

5. Write 0.000000328 in scientific notation. _____

6. Suppose medication is filled to the line.
How much liquid is in the syringe? Give an appropriate unit. _____



7. Suppose medication is filled to the line.
How much liquid is in the syringe? Give an appropriate unit. _____



8. List the Five “Rights” of Medication Administration

_____ , _____ , _____ , _____ , _____



Refer to the drug label on the left.

9. Find the generic name. _____

10. Find the amount of pure drug per tablet. _____

Interpret the following symbols/notations:

11. qam _____

12. \bar{s} _____

13. OU _____

14. AS _____

15. IM _____

Answer the following.

16. The medication order reads: *350 mL 0.9% NS in 5 h IV*.
Note that there are 60 microdrops in a milliliter.
Find the flow rate in microdrops per minute.

17. The order states: *1750 mL of 10% dextrose solution*.
Find the same dose in liters.

18. Convert the following to decimal.

$$\frac{7.5}{1,000}$$

19. Find the number of grams of pure potassium permanganate in 100 milliliters of a 5% potassium permanganate solution.

20. Simplify. $\log 10,000$

21. Write as a logarithm equation. $2^5 = 32$

22. Use the properties of logarithms to write $3\log_5 x + 2\log_5 y$ as a single logarithm.

23. Simplify and write your answer using positive exponents only.

$$\left(\frac{9x^{-1}y}{3x^3}\right)^{-1}$$

Fill in the blanks.

24. 2 inches ~ _____ cm

25. 88 pounds ~ _____ kg

26. 2 cups ~ _____ fl. oz.

27. grains 3 ~ _____ mg

28. 4 quarts = _____ pints

29. 142 cc = _____ mL

30. 2 tablespoons = _____ mL

Part II: You will need a **Calculator**. No books. No notes. Answer all the questions.

Show all your work. Do it by yourself.

31. Describe how you would prepare 220 mL of a $\frac{1}{4}$ solution of Ensure from a can labeled 100% Ensure.

32. How would you prepare 6 L of a 1 : 40 solution from a 1 : 25 stock solution?
(Give your answer correct to the nearest milliliter.)

33. An infusion of 1000 milliliters of 5% D/W is infusing at a rate of 31 drops per minute. The drop factor is 18 drops per milliliter. How many milliliters per hour is the patient receiving?
(Give your answer correct to 2 decimal places.)

34. A patient is to receive 400 mL of 5% D/W with 20 units of synthetic oxytocin (Pitocin) IV at a rate of 0.002 units per minute. How many milliliters per hour will the patient receive?

35. An IV of 1000 mL of 5% D/W is started at 9 a.m. The flow rate is 36 drops per minute, and the drop factor is 10 drops per milliliter. When will the infusion finish? (Round to the nearest minute.)

36. The order reads: *Morphine sulfate 0.35 mg IV stat.*
The recommended dose is 0.01 milligram per kilogram. Your patient is a cute little boy who weighs 15.4 kg. Is this a safe dose? Show your steps.

37. The drug vial contains 1,000,000 units of Penicillin G.
The label directions state: *Add 2.3 mL of sterile water to the vial.*
Each 1.2 mL contains 500,000 units. How many milliliters equal 300,000 units?

38. A child's BSA is 1.27 m^2 . How many milligrams of the antibiotic gentamicin sulfate (Garamycin) should this child receive if the prescribed amount is 45 milligrams per square meter po? (Give your answer correct to 2 decimal places.)

39. The order reads: 152 mL 5% D/W IV in 2 hour
The drop factor is 60 microdrops per milliliter. What is the flow rate in microdrops per minute?

40. Given

$$\text{BSA} = \sqrt{\frac{\text{weight in kg} \times \text{height in centimeters}}{3600}} \quad \text{and} \quad \text{BSA} = \sqrt{\frac{\text{weight in lb} \times \text{height in inches}}{3131}}$$

Use an appropriate formula to find the body surface area of a person who is 5 feet 9 inches tall and who weighs 172 pounds. (Round to 2 decimal places and write down the appropriate unit.)

41. Given $K_w = [\text{H}_3\text{O}^+][\text{OH}^-] = 1.0 \times 10^{-14}$. Calculate $[\text{H}_3\text{O}^+]$ if $[\text{OH}^-] = 5.3 \times 10^{-12}$.

42. Given $\text{pH} = -\log[\text{H}_3\text{O}^+]$. Calculate the pH of the following solution.

$$[\text{H}_3\text{O}^+] = 6.5 \times 10^{-9} \text{ M}$$

43. Calculate. Write your answer in scientific notation. Round to 2 decimal places.

$$\frac{44,000 \times 0.0002}{0.001 \times 0.03}$$

44. Perform the following calculations to the correct number of significant figures.

$$87.2 + 7.312 - 4.99$$

45. Perform the following calculations to the correct number of significant figures.

Write your answer in scientific notation.

$$(8.9 \times 10^4) \div (3.214 \times 10^9)$$

46. Order: Amiodarone 140 mg in 15 mL D₅W IVPB; infuse over 10 minutes. The label of Amiodarone reads 50 mg/mL. The drop factor is 60 µgtt/mL. Calculate the flow rate in µgtt/min. Round to the nearest microdrop.

47. Dexamethasone (Decadron), a steroid, 3 milligrams po q8h has been ordered for a patient. The label of Dexamethasone states 1.5 mg per tablet. Calculate the number of tablets that the patient will receive in 2 days.

48. The prescriber ordered 1000 mL 5% D/W in 9 hr IV
The flow rate is 28 drops per minute. When the nurse assessed the infusion, 400 milliliters had infused in 3 hours. Calculate the new flow rate, in drops per minute, if the drop rate is 15 drops per milliliter. Round to the nearest drop.

49. The prescriber ordered: digoxin 0.72 mg/m² po stat as a loading dose. The child's BSA is 0.78 square meter. How many milligrams would you administer to this child?
Round to two decimal places.

50. Your patient is 6 feet and 3 inches tall. Find the equivalent height in meter. Round to two decimal places.

Form 1 answers:

1. 1.88 or 1.89 m²
2. 0040 hours
3. 1.3 (No trailing zero)
4. 4
5. 3.28×10^{-7}
6. 0.75 cc
7. 42 units
8. Patient, drug, dose, route, time
9. Digoxin
10. 250 mcg or 0.25 mg
11. every morning
12. without
13. both eyes
14. left ear
15. Intramuscular
16. 70 μ gtt/min
17. 1.75 L (No trailing zero)
18. 0.0075
19. 5 g
20. 4
21. $\log_2 32 = 5$
22. $\log_5 x^3 y^2$
23. $\frac{x^4}{3y}$
24. 5.08 cm
25. 40 kg
26. 16 fl. Oz.
27. 180 mg or 200 mg
28. 8 pints
29. 142 mL
30. 30 mL

Form A answers:

31. Put 55 mL of pure Ensure in a container and add enough solvent.
32. Put 3.75 L of 1:25 stock solution in a container and add enough solvent.
33. 103.33 mL/h
34. 2.4 mL/h
35. 1:38 p.m.
36. No.
37. 0.72 mL
38. 57.15 mg
39. 76 μ gtt/min
40. 1.95 m²
41. 1.9×10^{-3}
42. 8.19
43. 2.93×10^5
44. 89.5
45. 2.8×10^{-5}
46. 107 μ gtt/min
47. 12 tablets
48. 25 gtt/min
49. 0.56 mg
50. 1.91 m