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worked answers

Calculation Exercise – QUESTIONS

1. Anne Teak takes 0.025mg of Digoxin. What is the dose in micrograms? 25mcg ✓

2. Convert the following:

- 0.0126 kg to grams 12.6g
- 1.297 Litres into mL 1297mL
- 250 mg to grams 0.25g
- 3.21 Litres to mL 3210mL
- 1.206 mg to mcg 1206mcg
- 5467 mL into Litres 5.467L
- 609.2 mcg into mg 0.6092mg
- 20.3 g into mg 20300mg

✓

3. Capsules of Equalia come in 0.5 g or 500 mg strength. A dose of 2.5 g is prescribed. How many capsules does Stan Still take to give the correct dose?

5 ✓

4. Abi Nashnull is prescribed 75 micrograms of Levothyroxine daily.
The tablets are available in 25 micrograms strength.
How many tablets does the patient take to make up the correct dose?

3 ✓

5. Digoxin ampoules come in 0.5 mg in 2 mL. What is the concentration in mcg/mL?

0.25 mg/mL = 250 mcg/mL ✓

6. Teresa Green is prescribed 3mg IV Lorazepam. The ampoules contain 4mg in 1 mL. What volume do you need to administer?

$\frac{4mg}{1ml} = \frac{3mg}{x} = 0.75mL$ ✓

7. Fabri is an injection which is available in a strength of 0.05 mg/mL.
What is the amount in a 3 mL ampoule in mcg?

0.05 mg/mL
×3 = 0.15 mg → 150mcg ✓

8. Pharmatops is prescribed for emergency loading dose at 0.75 mg. It is available as 125 mcg/5mL. How many mL will provide the correct dose?

$\frac{125mcg}{5mL} = \frac{750mcg}{x}$ $125x = 3750$

$x = 30mL$ ✓

9. Calculate the dose of Sleepeze required to be administered to a child weighing 12 kg if the recommended dose is 25 mg/kg.

$\frac{25mg}{kg} \times 12kg = 300mg$ ✓

10. How much Adrenaline is present in 0.5ml of 1:1000

1g in 1000mL $\frac{1000mg}{1000mL} \quad \frac{1mg}{1mL} = \frac{0.5mg}{0.5mL}$ ✓

11. Kalmox is given 3 mg/kg daily in four divided doses for children over 3 months.

i. Calculate the dose for a 5 year old child (use tables in BNF for weight of 5 year old – 18kg) $3 \times 18 = 54$ mg ✓

ii. Calculate the amount needed for each dose.

$54 \div 4 = 13.5$mg ✓

12. A prescription for Prednisolone states: 30mg for two days then decrease by 5mg every two days to 5mg for the final two days then stop. How many 5mg tablets will the patient need in total.

30mg 2d then ↓ 5mg/2d til stop

6 · x2
5 x2
4 x2
3 x2
2 x2
1 x2

21 x 2 = 42 tabs ✓

13. Flucloxacillin syrup contains 250 mg/5mL. What volume will contain 100mg?

$\frac{250mg}{5mL} = \frac{100mg}{x} \quad 500 = 250x$

$x = 2mL$ ✓

14. Ivy Bagge is prescribed 500mg of Clarithromycin I.V. Clarithromycin has to be reconstituted with water for injection, then added to a bag of compatible infusion fluid, giving a final concentration of 2mg/ml. How much infusion fluid should be used to dilute the reconstituted Clarithromycin to achieve this final concentration?

$\frac{2mg}{1mL} = \frac{500mg}{250mL}$ ✓ Answer: 250mL

15. Sodium valproate syrup contains 200 mg in 5 mL. What volume will contain 1 g?

$\frac{200mg}{5mL} \quad (\times 5) = \frac{1000mg}{x}$

$= 25mL$ ✓

or $\frac{want}{got} \times vol$

$\frac{1000}{200} \times 5$

16. How much Glucose is there in 1L of 5% Glucose?

5g in 100mL

50g ✓ in 1000mL

17. Willy is prescribed 80mg of IV Furosemide. Given that it must be administered no faster than 4mg per minute, how long will this take?

$80 \div 4 = 20$mins ✓

18. Max Dosage is prescribed intravenous Phenytoin at a loading dose of 15 mg/kg. If Max weighs 80 kg, what dose should be prescribed?

$15 \times 80 = 1200$mg ✓

19. Ivy Bowlers is prescribed 80 mg of Rapichill. The drug is available in 100 mg in 2 mL ampoules. How much do you draw up to administer?

$\frac{100mg}{2mL} \overset{\times 0.8}{=} \frac{80mg}{x}$ $x = 1.6mL$ ✓

20. Vancomycin 750mg is diluted in 250ml of compatible infusion fluid. This infusion must be given over 90 minutes. What rate do you set the infusion pump at in mL/h to deliver this dose?

$\frac{250mL}{90min} = \frac{x}{60min}$ $90x = 15000$

$x = 166.6\ mL/h$ (167 ml/h) ✓

21. A 56 kg patient is prescribed drug Phatacid as an infusion at a dose of 0.5 mg/kg/hr. Phatacid is available as 250 mg in 10 mL. How much is required if the drug is to run over 12 hours?

0.5mg/kg/h

$0.5 \times 56 = 28\ mg/h$ $\times 12h = 336\ mg$ $\frac{250mg}{10mL} = \frac{336mg}{x}$

$336 = 25x \rightarrow x = 13.44mL$ ✓

22. An infant Baby Spicer weighs 6 kg: you are directed to give 100 mg/kg of Kwikdoze daily in four divided doses. The vial of Drug Y contains 500 mg per vial reconstituted with 2 mL of water. How much do you require for each dose?

100mg/kg daily in 4 doses → 25mg/kg each dose.

$25 \times 6 = 150mg$ $\frac{500mg}{2mL} = \frac{150mg}{x}$ $300 = 500x$

$x = 0.6mL$ ✓

23. A standard preparation is 75 mg/5mL of antibiotic A. The dose prescribed to a patient weighing 12.6 kg is 3 mg/kg. What dose do you give and what volume of suspension is that equal to?

75mg/5mL $3 \times 12.6 = 37.8\ mg$ dose ✓

$\frac{75mg}{5mL} = \frac{37.8mg}{x}$ $75x = 189$

$x = 2.52mL$ ✓

24. You are preparing an infusion of Lazalot dose 120 mg/kg in 4 divided doses for a patient weighing 72 kg. Lazalot comes in 90 mg/mL, vial size 6 mL:

1. Calculate the amount per dose
2. What volume of Product X do you need for each dose?
3. How many vials will you need for each dose?
4. How many vials are needed over 24 hours?

① 30mg/kg each dose. $30 \times 72 = 2160mg$ ✓

② $\frac{90mg}{1mL} = \frac{2160mg}{x}$ $x = 24mL$ ✓

③ $24 \div 6 = 4$ vials ✓

④ $4 \times 4 = 16$ vials ✓

25. Annette Curtain is 19 years old. She presents at A and E with severe asthma. You prescribe salbutamol IV infusion. Salbutamol solution should be 5mg in 500ml glucose 5% given at a rate of 5 micrograms per minute.

1. What is the concentration %w/v of the salbutamol solution?
2. At what rate should the infusion be given in mL/h?

① 5mg in 500mL

= 1mg in 100mL

= 0.001g in 100mL

→ 0.001% w/v ✓

② 1mg in 100mL

$\frac{1000mcg}{100mL} = \frac{10mcg}{1mL} = \frac{5mcg}{0.5mL}$ $\times 60$ $= 30mL/h$

alternatively:

5mcg/min $\times 60 = 300mcg/h$

$\frac{10mcg}{1mL} \overset{\times 30}{=} \frac{300mcg}{x}$ $x = 30mL/h$ ✓