1. Ratio & Proportion

Try a dosage calculation:
Solution strength of 8 mg per mL used to prepare dosage of 12 mg

8 mg : 1 mL = 12 mg : X mL

8 X = 12

X = 1.5 mL

2. Formula

Ordered Norvir liquid 40 mg PO daily
On hand NORvir 8mg/1mL
D=40 mg  Q= 1mL H= 80 mg
40mg/80mg/X1 mL=A
Cancel unit
40/80 X 1mL=A
Solve for the unknown  0.5mL=AA=amount to administer

3. Dimensional Analysis

Calculate the amount of EES to administer
Ordered EES susp 400 mg PO q6 h
On hand EES 200 mg per 5 mL
Remember Convert – no conversion factor needed in this problem because both milligrams
Unit of measure for the amount to administer will be milliliters A mL=
Dosage unit 5 mL the dose on hand is 200 mg  5mL/200mg
5mL/200mg  X 400mg/1
Cancel units solve the problem
2000mL/200  A= 10 ml
QUESTIONS FOR PRACTICE

PART 1

1. The physician orders to give IV penicillin 100,000 Units. The penicillin on hand is labeled 250,000 Units/mL. How much of the drug will you administer?

2. You are preparing an injection of morphine. The order reads 15 mg IM. The stock morphine is 48mg/2mL. You will draw up 88.8 mL.

3. The patient is to receive Pitocin (oxytocin) at a rate of 8 milliunits per minute. The IV contains 10 units of Pitocin in 1000 mL Lactated Ringers. How many ml/hr to be set on the pump to infuse the required dose?

4. Magnesium sulfate 20 grams is mixed in 500 mL Lactated Ringers. Order: infuse a maintenance dose of magnesium sulfate at 2 grams/hour. How many ml/hr will the IV run?

5. Administer a dose of Vitamin K (Aquamephyton) 0.5mg. Available: Vitamin K 1mg/1ml. How many mls would you administer?

6. Order: Morphine Sulfate 6 mg IV push q4h prn for pain On hand: Morphine Sulfate 10 mg per mL. How many mL will you give?

7. Pitocin is infusing at 12 mL/hr. Available is 20 units of Pitocin in 1000 mL LR. How many milliunits/min is the patient receiving?

8. A pitocin drip is being started on a patient to induce labor. The order is to administer 2 milliunits/minute. The drug is supplied as 10 units mixed in 1000 mL LR. How many mL/hr should the IV infusion pump be set to deliver the correct amount of the drug?

9. Your order is for meperidine (Demerol) 25 mg, IM, STAT. Available is a 2-mL vial containing 50 mg/mL meperidine. On hand is 1mL syringe. How much should you draw up into the syringe?

10. Doctor orders 10 units of insulin per hour via infusion pump. Insulin 100 units in 250 Normal Saline solution is available. How many mL will the nurse set the pump on?

11. A client with severe PIH is receiving an infusion of magnesium sulfate 6 grams that is to be administered over 20 minutes. The nurse attaches an infusion pump and the bag of solution labeled Magnesium sulfate 20 grams/500 mL of D5/W. How many mL should the nurse place in the pump?
12. A client with preclamptic is prescribed magnesium sulfate 2g/hour IV piggyback. The pharmacy sends the IV to the unit labeled Magnesium Sulfate 20g/500 ml normal saline. The nurse sets the pump to deliver how many milliliters per hour?

13. The prescriber ordered Terbutaline 0.25mg subcut. On hand vial Terbutaline 1mg/mL. How many milliliters would you administer?

14. Order: Kanamycin (Kantrex 1g, po q 6hx3days). Drug available Kantrex 500 mg. How many capsules will you administer per day?

15. In abortions, molar and ectopic pregnancies RhoGam is administer. Ordered is 300 mcg IM. On hand is RhoGam 150mcg/mL. How many milliliters would you administer?

16. In abortions Misoprostol (Cytotec) is given. Ordered: 200 mcg PO, to be given q 4hrs for 24 hrs. On hand is 100mcg tablet. How many tablets would you administer?

17. Methotrexate is given for molar pregnancy in serial IM injections. An order for Methotrexate 25mg weekly x 4 weeks was written. On hand is Methotrexate 50 mg/2ml vial. How many millileters would you administer each week?

18. Dexamethasone is used in preterm labor patients. Order: is 6mg every 12 hours for 2 doses. On hand is Dexamethasone 12mg /2ml vial. How many milliliters would you administer per dose?

19. In hyperemesis gravidarum patient Zofran (Ordansetron) is ordered. 8mg tablets po q 4-6 hrs PRN. On hand is Zofran 4mg. How many tablets would you administer?

20. A physician orders a patient to receive 1000 Units heparin IV hourly from a solution containing 20,000 Units in 500 mL D5NS. Determine the flow rate if the set calibration is 60 gtt/mL.

21. The physician orders Aprazoline 5mg slow IV push in 2 minutes to a pregnant woman who has BP 200/140 mmHg. The available vial has Aprazoline 20 mg in 4 ml. How many ml the nurse needs to draw in the syringe.

22. A client is admitted to the labor unit with BP 160/110 mm Hg. The doctor orders infuse 4 grams of Magnesium sulfate in 30 minutes as a loading dose via infusion pump. The available strength of Magnesium sulfate 40 grams in 1000 ml Lactated Ringers. How much volume the nurse will set it on the pump to infuse 4 grams/ hour?

Answers

1. 0.8 ml
2. 0.4 ml
3. 48 ml
4. 50 ml
5. 0.5 ml
6. 0.6 ml
7. 4 milliunits
8. 12 ml
9. 0.25 ml
10. 25 ml
11. 150 ml
12. 50 ml
13. 0.25 ml
14. 8 capsules
15. 2 ml
16. 12 tablets
17. 1 ml
18. 1 ml
19. 2 tablets
20. 25 gtts/mt
21. 1 ml
22. 200 ml

PART 2

1. The physician ordered: Digoxin 250 mcg po qid. The label reads 1 tablet equals 0.25 mg. How many tablets will you administer to your patient? Answer: One tablet

2. The nonsteroidal medication naproxen (Naprosyn) has been prescribed for a patient, 1375 mg/day in divided doses. Each tablet contains 0.275 g. How many tablets equal this daily dose? Answer: Five Tablets

3. The order reads: Ketrolac gr iss. The ampule reads 0.06 g per 1 ml. How many milliliters will you administer to the patient? Answer: 1.5 milliliters

4. The label reads Heparin Sodium 10,000 USP Units/mL. The order is for Heparin 6,000 U q6h sc. How many milliliters will you administer to the patient? Answer: 0.6 milliliters

5. The physician ordered 0.4 mL of potassium iodide (Iostate) expectorant. The label reads 325 mg/tsp. How many milligrams are contained in this dose? Answer: 26 mg

6. The order is to give 600 mg of Ampicillin IM q8h. The directions for dilution on the 2 gm vial reads: Reconstitute with 4.8 mL of sterile water to obtain a concentration of 400 mg per mL. How many mL will you administer per dose? Answer: 1.5 mL
7. The physician ordered 180 mg of Dilantin po q8h. The patient weighs 98 lb. The label of the drug reads 250 mg per 5 mL. How many milliliters will you administer to this patient per dose? Answer: **3.6 mL**

8. The physician ordered Amoxicillin 10 mg IM q6h. Amoxicillin is supplied in 125 mg per 5 mL. How many milliliters will you administer per dose? Answer: **0.4 mL**

9. The patient receives Keflex oz ss po q6h. Keflex oral suspension is ordered because he is not able to swallow pills. Keflex oral suspension is available as 125 mg per 5 mL. Give ___ mg or ____ Tbsp. Answer: **Give 375 mg or 1 Tbsp.**

10. Ordered: Atropine 0.6 mg IM. Label reads 0.3 mg per 0.5 mL. How many milliliters will you give per dose? Answer: **1 milliliter.**

**PART 3**

1. **Question:** Ordered 269,000 mcL D5W IV to infuse in 21.9 hr by infusion pump. What is the IV flow rate in mL/hr?

   Your answer: ________
   Correct answer: **12.3 mL/hr**

Did you remember to include the correct units? The following shows how to answer this **Volume/Time - IV mL Rate Question.**

Ordered **269,000 mcL** D5W IV to infuse in **21.9 hr** by infusion pump. What is the IV flow rate in mL/hr?

\[
\text{Flow Rate (mL/hr)} = \frac{\text{Volume (mL)}}{\text{Time (hr)}}
\]

Convert 269,000 mcL to mL.

- mcL → mL → L → kL ( ÷ by 1,000 )
- 269,000 mcL ÷ 1,000 = 269 mL

\[
269 \text{ mL} = \boxed{12.3 \text{ mL/hr}}
\]
21.9 hr

2. An infant weighs 40 lb. What is the required amount of fluid per day in mL?

Your answer: __________
Correct answer: 1,409.09 mL

Did you remember to include the correct units? The following shows how to answer this Fluid Maintenance Requirement Question.

An infant weighs 40 lb. What is the required amount of fluid per day in mL?
Convert 40 lb to kg.

- lb → kg (÷ by 2.2)
- 40 lb ÷ 2.2 = 18.1818 kg

<table>
<thead>
<tr>
<th>10-20 kg</th>
<th>1,000 mL + 50 mL per each kg above 10 kg</th>
</tr>
</thead>
</table>

- 18.1818 kg - 10 kg = 8.1818 kg (There are 8.1818 kg over 10 kg).
- 1,000 mL + (50 mL/kg x 8.1818 kg) = 1,409.09 mL

3. Infuse 695 mL over the next 900 min by infusion pump. What is the IV flow rate in mL/hr?

Your answer: __________
Correct answer: 46.3 mL/hr
Did you remember to include the correct units? The following shows how to answer this Volume/Time - IV mL Rate Question.

Infuse 695 mL over the next 900 min by infusion pump. What is the IV flow rate in mL/hr?

\[
\frac{\text{Volume (mL)}}{\text{Time (hr)}} = Y \text{ (Flow Rate in mL/hr)}
\]

Convert 900 min to hr.

- min → hr (÷ by 60)
- 900 min ÷ 60 = 15 hr

\[
\frac{695 \text{ mL}}{15 \text{ hr}} = 46.3 \text{ mL/hr}
\]