

Instructions for Medications Quiz & Study Guide for Medication Quiz
N432

If you do not pass the medication quiz with 90% or greater you will have to take the medication remediation quiz. You will need to arrange a time to take the remediation quiz with your instructor

Review math conversions for medications from your pharmaceutical class.

Conversions

- milliliters (mL) to cubic centimeters (cc) 1 milliliters (mL) = 1 cubic centimeters (cc)
- kilograms to grams 1 kilogram (kg) = 1000 grams (g)
- grams to milligrams 1 gram (g) = 1000 milligrams (mg)
- milligrams to micrograms 1 milligram (mg) = 1000 micrograms (mcg)
- micrograms (mcg) to milligrams (mg) 1000 micrograms (mcg) = 1 milligram (mg)
- kilograms to pounds 1 kilogram (kg) = 2.2 pounds (lb)
- pounds to kilograms 2.2 pounds (lb) = 1 kilogram (kg)
- grams to pound 454 grams (g) = 1 pound (lb) (actually 453.59 if you are a purist)
- ounces to pounds 16 ounces (oz) = 1 pound (lb)
- teaspoons to milliliters 1 teaspoon (tsp) = 5 milliliters (mL)
- milliliters to ounces 30 milliliters (mL) = 1 ounce
- mu to units 1000 milliunits = 1 unit
- kilograms to ounces 1 kg = 32 ounces (actually 32.15 ounces if you're a purist)
- ounces to grams 1 ounce = approx 30 gram (actually 31.1 grams if you're a purist)
- Liters to milliliters 1 liter = 1000 mL
- Pounds to ounces 1 pound = 16 ounces

Review newborn intramuscular injection sites

Sample questions and how they are calculated:

1. The doctor has ordered Tylenol 600mg. You have available Tylenol tablets, 300mg each. How many tablets will you give?

The known quantity is 600mg

The unit you are solving for is tablet

Now, set up the problem:

$300\text{mg}/1 \text{ tablet} = 600 \text{ mg}/X$

$X/600 \text{ mg} \times 300 \text{ mg} / 1 \text{ tablet} = X/600 \text{ mg} \times 600 \text{ mg}/X$

$$\text{Tabs}/1 = 600\text{mg}/1 \times 1 \text{ tab}/300\text{mg}$$

Cross cancel the mg's to eliminate them.

$$\text{Tabs}/1 = 600\cancel{\text{mg}}/1 \times 1 \text{ tab}/300\cancel{\text{mg}}$$

This leaves only the unit you are solving for.

You now have only one unit left –tablets. This is the unit you are solving for.

Reduce 600 and 300 by eliminating 2 zeroes from each

$$\text{Tab} = 6/1 \times 1 \text{ tab}/3 = 6 \text{ tab}/3 = 2 \text{ tabs}$$

Or set it up like this:

$$X \text{ Tabs} = 600\text{mg}$$

$$300\text{mg}/1 \text{ tablet} = 600\text{mg}/X \text{ tablet}$$

Multiply through by X tab/300mg:

$$X \text{ tab}/300\text{mg} \times 300\text{mg}/1 \text{ tab} = X \text{ tab}/300\text{mg} \times 600\text{mg}/X \text{ tab}$$

Cross cancel the tabs; the 300mg on the left side and the X tab and the mg on the right side.

$$X \cancel{\text{tab}}/300\cancel{\text{mg}} \times 300\cancel{\text{mg}}/1 \cancel{\text{tab}} = X \cancel{\text{tab}}/300\cancel{\text{mg}} \times 600\cancel{\text{mg}}/X \cancel{\text{tab}}$$

$$X = 600/300 = 2$$

Does the answer make logical sense?

Never consider a problem solved until you think about whether or not the answer makes sense.

The order was for 600mg. Each tablet contains 300mg. Does the patient need more than 1 tablet or less? The patient needs more than 1 tablet because he needs more than 300mg.

2. Order: Demerol 50mg IM. Available: Demerol 75mg per ml. Give ___ml

$$75\text{mg}/\text{mL} = 50\text{mg}/X$$

$$75\cancel{\text{mg}}/\text{mL} = 50\cancel{\text{mg}}/X$$

$$X \times 1\text{mL}/75\text{mg} \times 75\text{mg}/1\text{mL} = X \times 1\text{mL}/75\text{mg} \times 50\text{mg}/X$$

$$X \times 1\cancel{\text{mL}}/75\cancel{\text{mg}} \times 75\cancel{\text{mg}}/1\cancel{\text{mL}} = X \times 1\text{mL}/75\cancel{\text{mg}} \times 50\cancel{\text{mg}}/X$$

$$X = 50/75 \text{ mL}$$

$$0.666 = X \text{ mL} \text{ rounded to 1 decimal point} = 0.7 \text{ mL}$$

3. A newborn lost 7% of birth weight of 3648 gm. How much do they now weigh in gr, kg, lbs.

Conversion factor: 1000 gms=1 kg=2.2lbs

Subtract the % change (in this case 7) from 100 = 93

Multiply the original weight by .93

$3648 \times .93 = 3392.7\text{gm}$ This is the current weight in grams.

To change to pounds $3392.7 \text{ grams} / 1000 = 3.3927 \text{ kilograms} \times 2.2 = 7.46 \text{ lbs}$

1 kg = 2.2 pounds

Whenever you see a word problem asking for a percentage of something you are looking at a multiplication problem. Expressing the answer in grams, kg or pounds involves applying a conversion factor to the final answer. all of this can be easily accomplished using dimensional analysis (factor label method), like this:

$7/100$ (percentage) $\times$ (of) $3648 \text{ grams} / 1$ (baby's weight) = 255.36, or 255 grams (rounded off)

That is the 7% weight loss.

To find the baby's weight now, subtract that from the starting weight so that 3648 grams (starting weight) - 255 (7% weight loss) = 3393 grams (current weight)

To convert to kg:

$3393 \text{ grams} / 1$ (baby's current weight) $\times 1 \text{ kg} / 1000 \text{ grams}$ (conversion factor) = **3.393 kg**

4. Ordered: 2000 mg Cefotaxime IV one time. You check the vials of Ceftriaxone and see they contain 1gm of drug in 10ml of solution. Because you yourself are taking Awesome-Sauce regularly, you know how to do the calculation:

$2000 \text{ mg} / 1 \times 1 \text{ gm} / 1000 \text{ mg} \times 10 \text{ ml} / 1 \text{ gm}$

Next you get to crossing things off that cancel each other out:

$2000 \cancel{\text{mg}} / 1 \times 1 \cancel{\text{gm}} / 1000 \cancel{\text{mg}} \times 10 \text{ ml} / 1 \cancel{\text{gm}}$

You're just left with ml, which is exactly what you need to know. Now it's time to do some math!

1) Multiply across the top: $2000 \times 1 \times 10$

2) Divide across the bottom: $\div$ by 1000 $\div$ by 1

$2000 \cancel{\text{mg}} / 1 \times 1 \cancel{\text{gm}} / 1000 \cancel{\text{mg}} \times 10 \text{ ml} / 1 \cancel{\text{gm}} = 20\text{ml}$

5. Ordered 1000 mL D5W IV to infuse in 10 hours by infusion pump.

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

$$\frac{1000 \text{ mL}}{10 \text{ hr}} = 100 \text{ mL/hr}$$

Now try some on your own.

6. The nurse is to administer Ibuprofen 600mg po q 6 hours pain. Available dose is 200mg/tablet. How many tablets should the nurse administer?
- 7.
8. A nurse is preparing to administer Amoxicillin 250 mg by IV bolus over 30 min Q 8 hours. Available is Amoxicillin 250 mg premixed in 100 mL 0.90% sodium chloride (NaCl). The nurse should set the IV pump to deliver how many mL/hr? (Round the answer to the nearest whole number. Use a leading zero if it applies. Do not use a trailing zero.)
9. A nurse is preparing to administer 10 mcg of Engerix-B (Hepatitis B vaccine) IM. The medication is available in 0.01 mg/0.5 mL. How much should the nurse administer? (Round to the nearest tenth. Use a leading zero when applicable. Do not use a trailing zero.)
10. The order reads: begin a Pitocin infusion @ 3mu/min. You have on hand Pitocin 30 units in 500ml of Lactated Ringers. How should you set the pump?
11. Magnesium sulfate 30 grams is mixed in 500 ml Lactated Ringers. Order: infuse a maintenance dose of magnesium sulfate @ 4 grams/hour. How many ml/hr will the IV run?

Answers:

6. Prescribed: 600mg per dose q 6 hours
On hand: 200 mg/1 tab
Give: $600\text{mg} \times 1 \text{ tab}/200\text{mg} = 3 \text{ tabs}$
 7. Ordered is 250mg
What you have is 250 mg/100 ml
So to get 100 ml in over 30 minutes:
 $100 \text{ ml} / 30 \text{ minutes} \times 60 \text{ minutes} / 1 \text{ hr} = 200 \text{ ml} / 1 \text{ hr}$
 8. 1000 mcg/1mg so $0.01 \text{ mg} \times 1000\text{mcg}/1 \text{ mg} = 10 \text{ mcg}$ so on hand is 10 mcg/0.5 ml so you will give 0.5ml of Engerix-B
 9. $30 \text{ units} \times 1000 \text{ mu}/1\text{unit} = 30,000 \text{ mu}$
 $30,000 \text{ mu in } 500 \text{ ml} = 30,000/500 = 60 \text{ mu}/1 \text{ ml}$
 $3 \text{ mu} / \text{min} = 3 \text{ mu} / \text{min} \times 60 \text{ min}/1 \text{ hr} = 180 \text{ mu} / \text{hr}$
 $1 \text{ ml}/60 \text{ mu} \times 180 \text{ mu}/1 \text{ hr} = 3\text{ml}/\text{hr}$
 10. $30 \text{ grams}/500 \text{ ml} = 0.06 \text{ grams}/1 \text{ ml}$
 $4 \text{ gm}/1 \text{ hr} \times 1 \text{ ml}/0.06 \text{ gm} = 66.66666\text{ml}/1 \text{ hr}$ rounded to 66.7 ml/hr or rounded to a whole number = 67 ml/hr
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Some practice questions from Henke's Med -Math 9th Ed. Author: Susan Buchholz

1. The physician ordered 100 mg of Cleocin (clindamycin) IM q6h. The drug is available in a vial labeled 300 mg/2 mL. Using a 1-mL syringe and rounding off to the nearest tenth, how many milliliters of Cleocin would the nurse give for each dose? Use the formula method to calculate the dosage.

- A) 0.4
- B) 0.5
- C) 0.6
- D) 0.7

2. The physician ordered 50 mg of gentamicin IM three times daily. The drug is available in a vial labeled 40 mg/mL. Using a 3-mL syringe and rounding off to the nearest tenth, how many milliliters of gentamicin would the nurse give for each dose? Use proportion (ratios) to calculate the dosage.

- A) 1.1
- B) 1.2
- C) 1.3
- D) 1.5

Ans: C

3. The patient/client is to receive Sandostatin 0.05 mg subcutaneously daily. The medication is available as Sandostatin 100 mcg/1 mL. Which syringe should the nurse use to administer the medication? Use proportion (fractions) to calculate the dosage.

- A) 3 mL
- B) Insulin U-50
- C) Insulin U-100
- D) 1-mL precision

4. The physician ordered 1.5 mg of subcutaneous epinephrine stat. The medication is available in an ampule labeled 1:1000. How many milliliters should the nurse give?

- A) 0.5
- B) 1
- C) 1.5
- D) 2

5. The physician ordered 10 mg of subcutaneous lidocaine. The medication is available in a multidose vial labeled lidocaine 2%. How many milliliters should the nurse prepare?

- A) 0.5
- B) 1
- C) 1.5
- D) 2

6. The patient/client is to receive morphine sulfate 4 mg IV stat. The medication is available as morphine sulfate 10 mg/mL. How many milliliters of medication would the patient/client receive?

- A) 0.04
- B) 0.4
- C) 0.45
- D) 0.5

7. The patient/client is to receive Dilantin (phenytoin sodium) 300 mg IV daily. The medication is available as Dilantin (phenytoin sodium) 250 mg/5 mL. How many milliliters of medication would the patient/client receive?

- A) 5.5
- B) 6

- C) 6.5
- D) 7

8. The patient/client is to receive Nembutal sodium (pentobarbital sodium) 120 mg IM at bedtime prn. The medication is available as Nembutal sodium (pentobarbital sodium) 50 mg/mL. How many milliliters of medication would the patient/client receive?

- A) 1.2
- B) 1.4
- C) 2.4
- D) 2.8

9 The patient/client is to receive AquaMEPHYTON (phytonadione) 5 mg subcutaneously every day for 3 days. The medication is available as AquaMEPHYTON (phytonadione) 10 mg/mL. How many milliliters should the nurse give each day?

- A) 0.25
- B) 0.5
- C) 0.75
- D) 1

10. The patient/client is to receive Compazine (prochlorperazine) 10 mg IM every 4 hours prn for nausea and vomiting. The medication is available as Compazine (prochlorperazine) 5 mg/mL. How many milliliters should the nurse administer?

- A) 0.5
- B) 1
- C) 1.5
- D) 2

11. The directions for reconstitution of a 500 mg vial of Omnipen (ampicillin sodium) in powder format for injection reads: "Reconstitute with 1.8 mL of sterile water for 500 mg. Each mL of reconstituted solution will contain 250 mg of Omnipen." The patient/client is to receive 500 mg of Omnipen every 6 hours. How many milliliters would the nurse administer?

- A) 0.5
- B) 1
- C) 15
- D) 2

12. The physician ordered Vancomycin (vancomycin hydrochloride) 500 mg IVPB every 24 hours. The medication was placed in 100 mL of D5W to infuse over 60 minutes. What is the correct volume for infusion and rate for infusion on the infusion pump that has a microdrip tubing?

- A) Secondary volume: 100 mL; Secondary rate: 100 mL
- B) Secondary volume: 500 mL; Secondary rate: 10 gtt/mL
- C) Secondary volume: 100 mL; Secondary rate: 60 minutes
- D) Secondary volume: 500 mL; Secondary rate: 60 minutes

13. The physician ordered 1000 mL, D5 $\frac{1}{2}$ NS with KCL 10 mEq IV over 8 hours. The nurse located a vial of potassium chloride 40 mEq/20 mL. How many milliliters of KCL should the nurse add to the IV bag?

- A) 5
- B) 10
- C) 15

D) 20