RxExam Pharmaceutical Calculations Review Book 2026 Edition



Pharmaceutical Calculations

PREPARATION

Exam

by Manan Shroff , R.Ph 2026 Edition

RxExam-Pharmaceutical Calculations Review Book

2026- EDITION

MANAN SHROFF

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PREFACE:

I am very pleased to announce to release of RxExam-Pharmaceutical Calculations Review Book 2026. It is a resourceful practice guide for preparation of the NAPLEX , FPGEE , PTCB and California Pharmacy Board exams.

This edition contains 650 calculation problems to prepare students for an actual exam. In this latest edition, I have also included some calculations on creatinine clearance and opioid conversions.

The NAPLEX , FPGEE , PTCB and California Pharmacy Board exams are currently putting more emphasis on calculation problems. A significant percentage of these exams, at least 25% to 30%, consist of calculations.

Calculations related to I.V., I.V. infusion, TPN and dosages are very important in retail and institutional pharmacy settings. This guide will provide complete practice on related calculation problems and help in the achievement of an exceptional score on the examinations.

Best of luck,

Manan Shroff

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Practice Calculation Questions

Units For Pharmaceutical Calculations

1 kilogram	=	1000 grams = 2.2 lbs
1 lb	=	454 grams
1 gram	=	1000 milligrams
1 milligram	=	1000 micrograms
1 microgram	=	0.001 milligrams = 10^{-6} grams
1 nanogram	=	10^{-9} grams
1 grain	=	65 milligrams
1 liter	=	1000 cc
1 ounce (oz)	=	30 cc
16 ounces (oz)	=	480 cc = 1 pint
1 pint	=	480 cc
1 quart	=	960 cc = 2 pints
1 gallon	=	3840 cc = 8 pints = 4 quarts
1 dropperful	=	1 cc
1 teaspoonful	=	5 cc
1 tablespoonful	=	15 cc
1 teacupful	=	120 cc
1 meter	=	100 centimeters
1 centimeter	=	10 millimeter = 0.01 meters
1 inch	=	2.54 centimeters = 0.0254 meters
Density	=	weight/volume

Equivalents, Milliequivalents, Normality..

Equivalent weight (molecule)	=	molecular weight / number of valence
Equivalent weight (atom)	=	gram atomic weight / number of valence
1 Equivalent	=	weight (gm) / equivalent weight (gm)
1 Milliequivalent (mEq)	=	weight (mg) / equivalent weight (mg)
1 Equivalent	=	1000 milliequivalents (mEqs)
NormaLITY (N)	=	It is defined as the presence of number of grams equivalent weight of solute in 1000 ml or (1L) solution.
MolaRITY (M)	=	It is defined as the presence of number of moles of solute in 1000 ml or (1L) of solution.
MolaLITY (m)	=	It is defined as the presence of number of moles of solute in 1000 grams of solvent.
OsmolaLITY	=	It measures the total number of particles dissolved in a 1 kg or 1000 grams of water – milliosmoles per liter of solution (mOsm/L)
OsmolaRITY	=	It measures the total number of particles dissolved in a 1 liter or 1000 cc of water – milliosmoles per kilogram of solution (mOsm/kg)
Osm or osmol	=	1 mole of a non ionizable substance / 1000 grams water
1 Osm or 1 osmol	=	1000 milliosmols (mOsm)

mOsmol/L (OsmolaRITY)	=	(weight of substance [g/L] x no of species x 1000) / molecular weight
mOsmol/kg (OsmolaLITY)	=	(weight of substance [g/kg] x no of species x 1000) / molecular weight

Ideal Gas Law

PV	=	nRT where P = pressure, V = volume, n = number of moles, R = 0.082 lit atm/mole deg and T = temperature in Kevin
PV	=	g/M x R x T where P = pressure, V = volume, g = grams of gas, M= molecular weight of gas, R = 0.082 lit atm/mole deg and T = temperature in Kevin

Alcohol Proof Gallon

Proof gallon	=	(U.S. gallons x % v/v alcohol) / 50
Proof gallon	=	(U.S. gallons x proof spirit) / 100
% strength	=	proof spirit / 2

Child Dose Calculation

Young	=	(age in years / age + 12) x adult dose
Clark's	=	(weight in lbs / 150) x adult dose
Child's dose	=	(body surface area of child / 1.73 m^2) x adult dose
Fried's rule	=	(age in months / 150) x adult dose

TPN Calculation

Hydrous dextrose/gm provides	=	3.4 calories
Anhydrous dextrose/gm provides	=	4 calories
Fat/gm provides	=	9 calories
Amino acid/gm provides	=	4 calories
Glycerol/gm provides	=	4.3 calories
Alcohol/cc provides	=	5.6 calories
*MCT /gm provides	=	8.3 calories

pH and Buffer Calculation

pH	=	pKa + log (salt/acid) or (ionized/unionized) (for weak acid)
pH	=	pKw - pKb + log (base/salt) (for weak base)
pKw	=	pKa + pKb

$$\beta = 2.3c\frac{k_a\left[H_3O^+\right]}{(k_a+[H_3O^+])^2}$$ (Van Slyke's Buffer Capacity Equation)

Where, C = total buffer concentration,
H_3O^+ = hydrogen ion concentration,
K_a = equilibrium constant for the reaction.

$\beta_{max} = 0.576xC$ (Maximum Buffer Capacity Equation)

where C = total buffer concentration,
where β_{max}= maximum buffer capacity.

Half Life and Kinetic Calculation

$k = \frac{2.303}{t} log \frac{Co}{C}$

where Co = initial concentration of drug,
where C = concentration of drug at time 't'.

$t_{1/2} = 0.693/K$

where $t_{1/2}$ = half-life of drug,
where K = rate constant.

Body Clearance Based Calculation

Vd = M/Cp

where Vd = volume of distribution,
where M = amount of drug in body
where Cp = plasma concentration of drug

$R_i = Css \times Vd \times K$

where R_i = rate of infusion
where Css = steady state plasma concentration
where Vd = volume of distribution
where K = drug elimination constant

$L_d = Css \times V_d$

where L_d = loading dose of drug
where Css = steady state plasma concentration
where V_d = volume of distribution

$\text{CrCl} = \frac{\text{weight(kg)x (140}-\text{age)}}{\text{72 x serum creatinine (mg/dl)}}$

$\text{CrCl (Female)} = 0.85 \text{ x male (CrCl)}$

Temperature Conversion

$°C = \frac{(°F-32)x\ 5}{9} = 0.55 \text{ x } (°F - 32)$

where °C = temperature in degree Celsius
where °F = temperature in degree Fahrenheit

$°F = \left(\frac{9}{5}x\ °C\right) + 32 = 1.8°C + 32$

where °C = temperature in degree Celsius
where °F = temperature in degree Fahrenheit

*MCT = Medium Chain Triglycerides

1.

Sulfur	3%
Salicylic acid	3%
White Petrolatum.....q.s. 80 gm	

Find out the amount of Sulfur required to fill the above prescription?

a. 1.2 grams
b. 2.4 grams
c. 3.0 grams
d. 4.8 grams

2. How many grams of Dextrose are required to prepare 5%, 500cc solution?

a. 2.5 grams
b. 25 grams
c. 55 grams
d. 5 grams

3. How much Lidocaine is required to prepare 1 : 1000, 30cc of solution of Lidocaine?

a. 10 mg
b. 0.03 mg
c. 30 mg
d. 300 mg

4. How many milligrams are equal to 1/150 grains of Nitroglycerine?

a. 150 mg
b. 65 mg
c. 55 mg
d. 0.43 mg

5. How much Atropine is required to dispense 1 quart of 1 in 100 solution?

a. 9.6 mg
b. 1.48 gm
c. 2.3 mg
d. 9600 mg

6. How many cc of 75% alcohol should be mixed with 10%, 1000 cc alcohol to prepare 30%, 500 cc alcohol solution?

a. 346.16 cc
b. 234.43 cc
c. 153.84 cc
d. 121.12 cc

7. How many grams of Heparin are required to prepare 1 quart of 0.45% solution?

a. 2.16 gm
b. 4.32 gm
c. 0.45 gm
d. 4.5 gm

8. If a prescription reads “Augmentin 875 mg po bid x 10 days,” how many cc of Augmentin 250 mg/5 cc are required to fill a
ten-day supply?

a. 350 cc
b. 35 cc
c. 17.5 cc
d. 5 cc

9. If 250 mg of Cefazolin powder are diluted with water up to the 250 cc mark, what is the % of drug in the final solution ?

a. 10%
b. 0.1%
c. 11%
d. 0.01%

10. If 1 teaspoonful of Thioridazine concentrated solution (30 mg/cc) is diluted up to the 480 cc mark with plain water, what is the strength of drug in mg/ml in the final solution?

a. 1mg/cc
b. 0.52 mg/cc
c. 0.31 mg/cc
d. 0.75 mg/cc

11. If a prescription reads “Diphenhydramine 50 mg po hs x 30 days”, what would be the dispensed quantity of drug in ml (12.5 mg / 5 cc) for thirty-day supply?

a. 20 cc
b. 5 cc
c. 300 cc
d. 600 cc

12. Erythromycin 2% 60 cc topical solution contains:

a. 2 gm erythromycin
b. 2.4 gm erythromycin
c. 0.6 gm erythromycin
d. 1.2 gm erythromycin

13. If 60 mg of elementally iron are present in 325 mg of ferrous sulfate, what is the % of elementally iron?

a. 20.00%
b. 10.25%
c. 18.46%
d. 9.25%

14. If 60 gm of 1% hydrocortisone are mixed with 80 gm of 2.5% hydrocortisone, what is the % of hydrocortisone in the final mixture?

a. 2.2% w/w
b. 1.85% w/w
c. 0.25% w/w
d. 1.75% w/w

15. If a prescription reads "100 mcg cyanocobalamin i.m. every week", how many ampuls of 1000 mcg / cc are required to fill a month supply?

a. 4
b. 3
c. 1
d. 2

16. If 1000 tablets of Risperdal 1mg cost $2250 and the mark-up on prescription is 20%, what would be the retail price for 30 tablets?

a. $150
b. $17
c. $500
d. $81

17. How much Clobetasole is present in 60 gm of 0.5% ointment?

a. 1.2 gm
b. 3.0 gm
c. 2.1 gm
d. 0.3 gm

18. If the ratio of ionized to unionized species of drugs is 10^3 and PKa = 2.2, what is the pH of the solution?

a. 2.2
b. 0.8
c. 5.2
d. 3.0

19. If a prescription reads "Augmentin 875 mg by mouth twice a day", how many cc of Augmentin 400 mg/5 cc are required to dispense a 10 day supply?

a. 10.93 cc
b. 218.75 cc
c. 75.00 cc
d. 100.00 cc

20. Find out the weight in gm of 500 cc glycerine. [Specific gravity = 1.25 gm/cc]

a. 625 gm
b. 50 gm
c. 400 gm
d. 0.25 gm

21. Find out the volume of 5 lb of glycerine. [density = 1.25 gm/cc]

a. 1816 cc
b. 6.25 cc
c. 637 cc
d. 40 cc

22. Calculate the weight of 500 cc of acid. [density of acid = 2.5 gm/cc]

a. 1000 gm
b. 1250 gm
c. 500 gm
d. 200 gm

23. Find out the ratio of ionized to unionized species of drugs at pH = 7. [pKa = 5]

a. 10
b. 1
c. 100
d. 1000

24. If the pH of the solution is 3, what is the concentration of H_3O^+ in gm ion /L?

a. 0.01 gm-ion/L
b. 1×10^3 gm-ion/L
c. 0.05 gm-ion/L
d. 10^{-3} gm-ion/L

25. What is the pH of a solution having a ratio of ionized to unionized species of drugs of 1×10^{-6} ? [PKa = 7]

a. 2
b. 5
c. 3
d. 1

26. How many 500 mg tablets of erythromycin are required to prepare 240cc, 2% solution of erythromycin?

a. 3
b. 5
c. 6
d. 10

27. How many milligrams are equal to 1/150 grains?

a. 0.65 mg
b. 1.21 mg
c. 0.43 mg
d. 1.56 mg

28. How many 975 mg tablets of aspirin are required to prepare 100 tablets each weighing 1 grain?

a. 7 tablets
b. 10 tablets
c. 5 tablets
d. 3 tablets

29. If 3 capsules each weighing 150mg Clindamycin are added to 150cc, 1% Cleocin topical solution, what is the % of Clindamycin in the final mixture?

a. 1.5%
b. 1.3%
c. 1.1%
d. 0.9%

30. The adult dose of a drug is 500 mg. What is the dose for a 2 year old child? [Use young rule]

a. 71.42 mg
b. 101.53 mg
c. 25.46 mg
d. 31.18 mg

31. The adult dose of a drug is 750 mg, what is the dose for child weighing 20 lbs?

a. 100 mg
b. 250 mg
c. 500 mg
d. 425 mg

32. If a dropper is calibrated to deliver 325 mg of iron sulfate in 0.6 cc and an adult dose of drug is 325 mg, what is the dose of a drug in cc for a 15 month old infant?

a. 1.2 cc
b. 0.3 cc
c. 0.06 cc
d. 0.01 cc

Milligrams of KCl:

= 80 x 74.5 mg
= 5960 mg
Concentration of KCl in mg/ml:

= 5960 mg/250cc
= 23.84 mg/cc

153. (d) The number of mEq present in 120cc solution (10 mEq/5cc):

= 120 x 10 / 5 = 240 mEqs of KCl

1 equivalent of KCl = 74.5 gm KCl
1 mEq of KCl = 74.5 mg KCl,

Milligram of KCl:

= 240 x 74.5 mg
= 17880 mg of KCl
= 17.88 gm of KCl

154.(d) The amount of Povidone in gm in 10% 1 lb ointment is :

= 10 x 454 / 100 = 45.4 gm of povidone

The cc of povidone required:

= 45.4 gm / 2 gm/cc = 22.7cc of Povidone

155.(c) The amount of Triamcinolone in 1% of 1 lb ointment:

= 454 / 100 = 4.54 gm of triamcinolone

If we add 5000mg of Triamcinolone:

= 4.54 gm + 5.0 gm
= 9.54 gm of Triamcinolone.

The % of triamcinolone in final mixture:

= 100 x 9.54 / 454 = 2.1% w/w

156.(c) The amount of HCl acid required to prepare 1 gallon, 2.5% HCl is:

= 3840 x 2.5 / 100 = 96 gm HCl acid

The purity of HCl acid is 35% w/w, so to get 96 gm of HCl, we need

= 96 x 100 / 35 = 274.28 gm of HCl

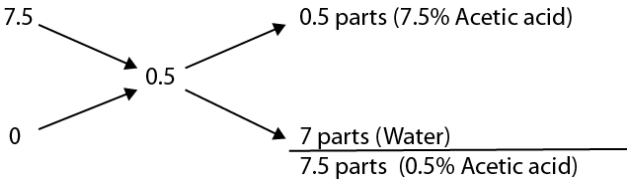
The volume of HCl acid needed to prepare 274.28 gm of HCl with a density of 1.25 gm/ml is:

= 274.28 gm / 1.25 gm/ml = 219.42 ml of HCl

157.(d) The % of elementally iron in 325mg of ferrous sulfate:

= 65 x 100 / 325 = 20% w/w

158.(d) To solve this problem, we should use the alligation method,



To prepare 7.5 (0.5%) parts 0.5 parts (7.5%)
To prepare 1 gallon ?

= 3840 x 0.5 / 7.5 = 256cc 7.5% acetic acid

256cc 7.5% acetic acid solution should mix with (3840-256) 3584cc water to prepare 1 gallon of 0.5% of acetic acid solution.

159.(d) 10% 100cc solution of Cipro will contain 10 gm of active ingredient.

A patient is taking 500 mg of the drug three times a day, therefore the total amount of Cipro will be 1500 mg per day.

A number of days = 10000 mg / 1500 mg
= 6.66 days.

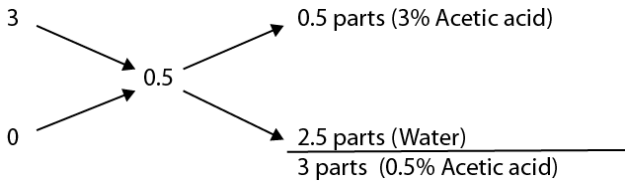
160.(a) The milligrams of erythromycin required to dispense 480cc, 0.25% topical solution are:

= 480 x 0.25 / 100 = 1.2 gm of erythromycin

We have 2% erythromycin topical solution in stock:

= 1.2 x 100 / 2 = 60cc solution.

161.(a) 166.66cc 3% acetic acid



To prepare 3 parts we need 0.5 parts
To prepare 1000 ?

= 1000 x 0.5 / 3 = 166.66cc 3% acetic acid

166.66cc 3% acetic acid should be mixed with (1000-166.66) 833.33cc of water to prepare 1000cc of 0.5% acetic acid solution.

162.(b) 25 mg/5cc.

Total milligrams of Amitriptyline:

= 8 x 150
= 1200 mg

This amount shall be present in 240cc cherry syrup:
= 1200 mg/240cc
= 5 mg/cc
= 25 mg/5cc

163.(c) The amount of hydrocortisone in 240 gm of 1% ointment is

= 240 x 0.01
= 2.4 gm hydrocortisone

164.(b) 2.5 % w/w

= 3 x 100 / 120 = 2.5% w/w

165.(a) The amount of triamcinolone in 1% 60 gm of ointment:

= 60 x 1 / 100 = 0.6 gm triamcinolone

% of Triamcinolone in final mixture:

= 0.6 x 100 / 120 = 0.5% w/w

166.(a) 1 cc of Atropine (0.4 mg) is mixed with 49cc of ocean nasal mist solution:

= 0.4 mg/50 cc
= 400 mcg/50 cc
= 8 mcg/cc

167.(b) The amount of Xylocaine present in 60 gram 2.5 % ointment:

= 60 x 2.5 / 100 = 1.5 gm Xylocaine

The number of cc of 10% Xylocaine solution required:

= 1.5 x 100 / 10 = 15cc of 10% Xylocaine

168.(c)"aa" stands for "each of" and therefore the quantity of lidocaine viscous solution should be 60cc.

169.(c) 65 mg/5cc

The amount of Dicloxacillin:

= 13 x 500 mg
= 6500 mg

These amounts are present in 500cc of Alamag solution:

= 6500 mg/500cc
= 13 mg/cc
= 65 mg/5cc

170.(d) 0.8 mg/cc

The amount of Povidone:

= 8 x 10 / 100 = 0.8 gm = 800 mg
The solution is diluted up to 1000cc with water therefore:

= 800 mg/1000cc
= 0.8 mg/cc

171.(d) 3.33% w/w.

Amount of Chloramphenicol:

= 2 x 500 mg
= 1000 mg
= 1 gram

% of Chloramphenicol:

= 100 x 1 / 30 = 3.33% w/w

172.(d) 20 mg/cc

The amount of Clindamycin:

= 8 x 150 = 1200 mg

The concentration of drug in mg/ml:

= 1200 mg/60cc = 20mg/cc

173.(c) The amount of Clindamycin required to prepare 2% 60 gm topical gel:

= 60 x 2 / 100 = 1.2 gm

We have 150 mg capsules of clindamycin:

= 1200 / 150 = 8 capsules.

174. (b) The amount of sodium hypochlorite required to prepare 1000cc 0.25% solution;

= 1000 x 0.25 / 100 = 2.5 gm

We have 5% Dakin (sodium hypochlorite) solution in stock:

= 2.5 x 100 / 5 = 50cc, 5% sodium hypochlorite solution.

175.(c) The amount of Trilafon present in 120cc (1 mg/5cc),

= 120 x 1 / 5 = 24 mg

To get this 24 mg, we need 24cc of (1 mg/cc) Trilafon solution.

176.(c) 50 mg/cc.

Vancomycin content:

= 2 x 250
= 500 mg

Concentration of Vancomycin:

= 500 mg/10cc
= 50 mg/cc

177.(d) 105.68 gm

Patient weight in kg:

= 155 = 70.45 kg
2.2

Dose of Aminoacid in grams:

= 1.5 x 70.45
= 105.68 gm

178.(a) 15.71 hours.

Patient weight in kg = 140 = 63.63 kg
2.2

Total amount that should be infused in a day:

= 60 x 63.63
= 3818.18 cc

Time required infusing 2500cc:

= 2500.00 = 0.654 day = 15.71 hours
3818.18

179.(b) 510 calories

Each gram of dextrose provides 3.4 calories or kcal.

Calories provided by 500cc D30W:

= 500 x 30 x 3.4 = 510 calories or kcal.
100

180.(b) Each gram of dextrose provides 3.4 calories and each ml of alcohol provides 5.6 calories, therefore the total calories provide by 1000cc 5% dextrose and alcohol:

Energy provided by 1000cc D5W:

= 1000 x 5 x 3.4 = 170 calories.
100

Energy provided by 1000cc 5% alcohol:

= 1000 x 5 x 5.6 = 280 calories.
100

Total calories = 170 + 280 = 450 calories

181.(c) 42.58 hours.

Patient weight in kg = 155 = 70.45 kg
2.2

Rate of infusion per hour in above patient:

= 0.1 x 70.45 gm/hour
= 7.045 gm/hour

The amount of dextrose in 1000cc $D_{30}W$:

= (1000 x 30)/100= 300 gm dextrose

The number of hours required:

= 300 = 42.58 hours
7.045

182.(a) The number of hours required to infuse 2.4 liters or 2400cc solution,

= 2400 = 7272.72 minutes = 121.21 hrs.
0.33

183.(b) No, it will not make the patient sedate since alcohol is metabolized at a rate of 20 cc/hour or 0.33 cc/min which will the same rate as alcohol is infused.

184.(c) Mr. Shroff's TPN provides 1100 nonprotein calories and 45% of nonprotein calories as fat, therefore one can say:

= 1100 x 0.45
= 495 calories from fat.

The remaining (1100-495) 605 calories are provided by dextrose, the maximum dextrose concentration is 12.5%, and each gram of dextrose provides 3.4 calories:

= 605 = 177.94 gm dextrose
3.4

The volume required to provide 177.94 gm dextrose as a 12.5% concentration:

$$= \frac{177.94 \times 100}{12.5} = 1423.52\text{cc dextrose.}$$

185.(b) The cc of solution required to prepare 3% amino acid solution containing 30 gm amino acid are:

$$= \frac{100 \times 30}{3} = 1000\text{cc}$$

186.(a) 1297.78 calories

Weight in kg = 120/2.2 = 54.54 kg
Height in cm = 62 inch = 62 x 2.54 cm
= 157.48 cm

BEE = 655.1 + 9.56 x 54.54 + 1.85 x 157.48- 4.86 x 35

= 1297.78 calories

187.(d) 1172 calories.

Total calories provided by dextrose:

$$= \frac{1200 \times 5 \times 3.4}{100} = 204 \text{ calories}$$

Calories provided by amino acid:

$$= \frac{1000 \times 10 \times 4}{100} = 400 \text{ calories}$$

Calories provided by alcohol:

$$= \frac{100 \times 5 \times 5.6}{100} = 28 \text{ calories}$$

Calories provided by fat:

$$= \frac{300 \times 20 \times 9}{100} = 540 \text{ calories}$$

Total calories provided by TPN:

= 204 + 400 + 28 + 540 = 1172 calories.

188.(c) TPN solution should provide 55% of 1500 nonprotein calories as dextrose:

= 1500 x 0.55
= 825 calories as dextrose

The grams of dextrose required:

$$= \frac{825}{3.4} = 242.64 \text{ gm dextrose}$$

The number of cc of dextrose 30% requires:

$$= \frac{242.67 \times 100}{30} = 808.82\text{cc dextrose soln.}$$

189.(d) TPN solution should provide 45% of 2000 nonprotein calories as fat:

= 2000 x 0.45
= 900 calories as fat

The number of grams of fat required:

$$= \frac{900}{9} = 100 \text{ gm fat}$$

The number of cc of 20% fat solution required:

$$= \frac{100 \times 100}{20} = 500\text{cc of 20% fat solution.}$$

190.(c) 3000cc 5% amino acid.

$$\text{Patient weight in kg} = \frac{165}{2.2} = 75 \text{ kg}$$

The number of grams of amino acid required:

= 2 x 75 = 150 gm
A number of cc of 5% amino acid:

$$= \frac{100 \times 150}{5} = 3000\text{cc 5% amino acid solution.}$$

191.(c) 53.75 calories

Calories provided by 250cc 5% glycerol:

= 250 x 5 x 4.3 = 53.75 calories
100

192.(d) 900 calories.

1 gram fat provides 9 calories. Therefore, calories provided by 500cc, 20% fat solution:

= 500 x 20 x 9 = 900 calories
100

193.(c) The amount of Alphagan present in each drop:

= 0.1 x 0.2 = 0.0002 gm = 0.2 mg
100

194.(d) 50 milligrams.

The amount of Timolol in mg:
= 0.5 x 10 = 0.05 gm = 50 mg
100

195.(a) The patient is using 75 mg twice a week for 4 months or 16 weeks, therefore the total dose of Haldol decanoate required is:

= 75 x 2 x 16
= 2400 mg
The number of vials of Haldol required:

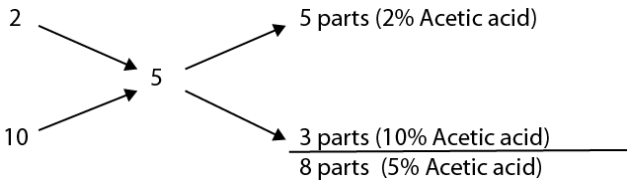
= 2400 = 24 vials
100

196.(b) 60 calories

Calories provided by 500cc 3% amino acid:

= 500 x 3 x 4 = 60 calories
100

197.(c) 312.50cc 2% acetic acid and 187.5cc 10% acetic acid:



To prepare 8cc (5%) 5cc (2%)
To prepare 500cc (5%) ?

= 500 x 5 = 312.50cc (2% acetic acid)
8

312.5cc (2% acetic acid) should be mixed with (500cc -312.5cc) 187.5cc (10% acetic acid) to prepare 500cc (5% acetic acid).

198.(c) 20 tablets.

199.(d) 297.61 mEqs

Equivalent weight = Molecular weight
Number of valence

Equivalent weight = 84 = 84 gm
1

1 equivalent weight ($NaHCO_3$) = 84 gm
1 milliequivalent ($NaHCO_3$) = 84 mg

The amount of $NaHCO_3$:

= 50 x 0.5
= 25 gm $NaHCO_3$
= 25000 mg $NaHCO_3$

Milliequivalents of $NaHCO_3$:

= 25000 = 297.61 mEq
84

200.(c) 70 days.

$$t_{1/2} = \frac{0.693}{k}$$

$$t_{1/2} = \frac{0.693}{9.9 \times 10^{-3}}$$

$t_{1/2} = 0.07 \times 10^3\ days$

$t_{1/2} = 70$ days.

201.(c) 10 grams

The amount of Amoxicillin in grams:

= $\frac{250 \times 200}{5}$ = 10000 mg = 10 grams

202.(d) 21 vials.

The total amount of Demerol required:

= 75mg x 4 x 7
= 2100 mg of Demerol

The number of vials of Demerol required:

= $\frac{2100}{100}$ = 21 vials

203.(d) The correct DEA number can be calculated by the following formula.

1. The first letter should be A or B; and generally indicates "dispensing".
2. The second letter should be the first initial of the last name of prescriber. (e.g. S for Dr. Sheghi, Rama)

3. The rest of the seven letters are numbers, and can be verified by the following formula.

4. Add the first, third and fifth numbers.

2 + 3 + 7 = 12

5. Now add the second, fourth and sixth numbers of the DEA number and multiply by 2.

3 + 2 + 6 = 11, and 11 x 2 = 22

6. Now, add the first, third and fifth numbers to the resultant sum of the second, fourth and sixth sums.

12 + 22 = 34, the right most letter of this resultant sum should match with the seventh number of the DEA number.

AS 2332764

204.(c) 8.33 minutes.

The time required to finish 250cc infusion:

= $\frac{250}{0.5}$ = 500 seconds = 8.33 minutes

205.(c) Patient weight in kg = $\frac{110}{2.2}$ = 50 kg

The recommended adult dose of drug per day:

= 5 x 50
= 250 mg per day = 250 mg/24 hours
= 41.66 mg/4 hours

206.(d) 571 calories.

Calories provided by dextrose:

= 500 x 0.05 x 3.4
= 85 calories
Calories provided by amino acids:

= 300 x 0.03 x 4
= 36 calories

Calories provided by lipids:

= 500 x 0.1 x 9
= 450 calories

Total calories: 85 + 36 + 450 = 571 calories.

207.(d) 1073.82 mEqs.

Equivalent weight of KCl = $\frac{74.5}{1}$ = 74.5 gm

1 equivalent weight of KCl = 74.5 gm
1 milliequivalent of KCl = 74.5 mg

The amount of KCl:

= 400 x 0.2
= 80 gm KCl = 80,000 mg KCl

Milliequivalents of KCl:

= 80,000 / 74.5 = 1073.82 mEqs of KCl

208.(c) Ionized/Unionized = 100:1

$$pH = pKa + \log\frac{Salt}{Acid}$$

$$6 = 4 + \log\frac{Salt}{Acid}$$

$$\log\frac{Salt}{Acid} = 2$$

Salt (Ionized)/Acid (Unionized) = 100:1

209.(c) 10:1

$$pH = pk_w - pk_b + log\frac{Base}{Salt}$$

$$6.5 = 14 - 8.5 + log\frac{Base}{Salt}$$

$$log\frac{Base}{Salt} = 6.5 - 5.5 = 1$$

Base (Unionized)/Salt (Ionized) = 10:1

210.(c) 50 scoops. Patient is taking 1250 mg twice a day (2500 mg/day).

The number of scoops of Viracept required:

= 2500 / 50 = 50 scoops

211.(d) 57.6 days.

The number of days required to finish a bottle:

= 144000 mg / 2500 mg = 57.6 days

212.(d) 10.9 mg.

Patient weight in kg = 120/2.2 = 54.54 kg

The dose of theophylline:

= 0.2 x 54.54
= 10.90 mg per day

213.(d) 24 capsules.

The amount of KCl required:

= 180 x 0.1
= 18 gm
= 18000 mg

The number of capsules required:

= 18000 / 750 = 24 capsules

214.(c) 0.329 minutes.

$$t_{1/2} = \frac{0.693}{k}$$

$$k = \frac{0.693}{t_{1/2}}$$

$$k = \frac{0.693}{9.9 \times 10^{-2}}$$

$$k = 7 \text{ minutes.}$$

$$k = \frac{2.303}{t}\log\frac{Co}{C}$$

$$t = \frac{2.303}{7}\log\frac{500}{50}$$

$$t = \frac{2.303}{7}\log 10$$

$$t = 0.329 \text{ minutes.}$$

215.(c) 22.5 mg/5cc

The amount of drug in 10cc of 10% solution:

= 10 x 0.1
= 1 gm
= 1000 mg

The amount of drug after the addition of tablets:

= 1000 mg + 1250 mg
= 2250 mg

This amount present in 500cc of solution:

= 2250 mg/500cc = 4.5 mg/cc
= 22.5 mg/5cc.

216.(a) A 5% error is permissible, therefore one can say:

For 5 mg error we can weigh 100 mg
For 4 mg sensitivity ?

$= \frac{4 \times 100}{5} = 80$ mg weighable.

217.(a) A 1% error is permissible, therefore:

For 1 mg error we can weigh 100 mg
For 3 mg sensitivity ?

= 3 x 100 = 300 mg is minimum weighable.

218.(b) The balance has 3 mg sensitivity and 150 mg minimum weighable quantity, therefore:

For 150 mg weigh 3 mg error is permitted
For 100 mg weigh ?

$= \frac{100 \times 3}{150} = 2\%$

219.(b) The volume of gas can be found by the following formula:

$\frac{P1V1}{T1} = \frac{P2V2}{T2}$

Where P = Pressure in mm Hg,
V = Volume of gas
T = Temperature in Kelvin

$V2 = \frac{P1 \times V1 \times T2}{P2 \times T1}$

$= \frac{710 \times 50 \times (273 + 0)}{760 \times (273 + 25)}$

= 42.79cc

220.(c) The calculation of molar gas constant R can be calculated by:

PV = nRT where

P = 760 mm Hg = 1 atm
V = 22.4 liters
n = 1 mole
R = ?
T = (273.16 + 0) = 273.16 K°

$R = \frac{1 \times 22.4}{1 \times 273.16} = 0.082$ atm lit/mole K°

221.(c) 74.07 liters.

PV = nRT where:

P = 740/760 atm
V = ?
n = 3 moles
R = 0.08205 lit atm/mole deg
T = 273 + 20 = 293 K°

$V = \frac{3 \times 0.08205 \times 293}{740/760}$

= 74.07 liters

222.(b) 31.41 gm/mole

$PV = \frac{g \times R \times T}{M}$ where:
P = 780/760 atm
V = 500cc = 0.5 liter
g = 0.5 gm
M = ?
R = 0.08205 lit-atm/mole deg
T = 273 + 120 = 393 K°

$M = \frac{g \times R \times T}{PV} = \frac{0.5 \times 0.08205 \times 393}{780/760 \times 0.5}$

= 31.41 gm/mole

223.(c) 0.331

Molarity is defined as the number of moles in 1000cc.

Number of moles = $\frac{50}{151}$ = 0.331 moles

0.331 moles of ferrous sulfate are present in 1000cc therefore the molarity of the solution is 0.331 M.

224.(c) 0.29%

Moles of $FeSO_4$ = $\frac{25}{151.9}$ = 0.164 moles

Moles of H_2O = $\frac{1000}{18}$ = 55.55 moles

Mole fraction of $FeSO_4$ = $\frac{0.164}{0.164 + 55.55}$

= 0.0029

% Mole fraction of $FeSO_4$ = 0.0029 x 100
= 0.29%

Mole fraction of H_2O = $\frac{55.55}{0.164 + 55.55}$

= 0.997

% Mole fraction of H_2O = 0.997 x 100
= 99.71%

225.(c) A 0.2 M solution of acetic acid is dissociated into 1.2 x 10^{-4} moles of hydrogen and acetate:

X = 1.2 x 10^{-4} moles
C = 0.2 moles

$$K_a = \frac{X^2}{(C-X)}$$

$$K_a = \frac{(1.2 \times 10^{-4})^2}{(0.2-1.2 \times 10^{-4})}$$

Since [0.2- (1.2 x 10^{-4})] is very small to calculate and can be considered equal to 0.2.

= $\frac{(1.2 \times 10^{-4})^2}{0.2}$ = 7.2 x 10^{-8}

226.(b) The ionization constant K_b for Morphine base is 3 x 10^{-6} and C is 3 x 10^{-4}:

Kb = 3 x 10^{-6}
C = 3 x 10^{-4}
OH^- = ?

$$K_b = \frac{OH^{-2}}{(C-OH^-)}$$

Since [C- OH^-] is very small to calculate and can be considered equal to C.

OH^- = $\sqrt{Kb\ x\ C}$ = $\sqrt{3\ x\ 10^{-6}\ x\ 3\ x\ 10^{-4}}$

OH^- = 3 x 10^{-5} mole/liter

227.(c) The new hydroxyl ion concentration can be calculated by the following formula:

Kw = [$H3O^+$] x [OH^-]

OH^- = Kw/H_3O^+
OH^- = 1 x 10^{-14} /1 x 10^{-1}
OH^- = 1 x 10^{-13}

228.(c) 0.66 x 10^{-8}

Kw = Ka x Kb
Ka = Kw/Kb

= $\frac{1 \times 10^{-14}}{1.5 \times 10^{-6}}$

= 0.66 x 10^{-8}

229.(b) The solubility product of the salt (strong electrolytes) can be calculated using following formula:

Ksp = (Ag^+) x (Cl^-)
= (1 x 10^{-4}) x (1 x 10^{-4})
= 1 x 10^{-8}

c. 0.7
d. 0.1

266. What is the rate of constant after 100 days if the initial concentration of drug is 5000 mcg/cc, and 50 mcg/cc after 100 days?

a. 0.21 day^{-}
b. 1.31 day^{-}
c. 2.11 day^{-}
d. 0.046 day^{-}

267. What is the apparent volume of distribution of 0.375 mg Lanoxin if the plasma concentration of the drug is 1.2 ng/ml?

a. 312.5 L
b. 101.6 L
c. 252.7 L
d. 75.8 L

268. What is the pH of a solution having a hydrogen ion concentration 10^{-5} moles/L?

a. 3
b. 5
c. 2
d. 8

269. If 1 gm of Cefazolin is reconstituted with 10cc SWFI, and the resultant solution is inserted into 100cc 0.9% sodium chloride. If this solution requires 12-hour period to infuse, what would be the flow rate of infusion in drops/min? [I.V. set delivers 20 drops per cc]

a. 2.52
b. 3.05
c. 6.75
d. 7.25

270. If 10cc, 50% KCl injection is diluted up to 500cc mark with plain water, what would be the concentration of KCl in mEqs/5 cc? [Molecular weight = 74.5 gm/mole]

a. 1.2 mEqs
b. 0.51 mEqs
c. 3.21 mEqs
d. 0.671 mEqs

271. If a prescription calls to dispense 1 pint of Li_2CO_3 solution in such a way that 1 teaspoonful of solution contains 5 mEqs of drug, how many grams of Li_2CO_3 are required to prepare above prescription? [Molecular weight = 74 gm/mole]

a. 17.76 gm
b. 15.60 gm
c. 48.11 gm
d. 60.11 gm

272. How many calories are provided by 250cc D_{10W} solution?

a. 10 calories
b. 35 calories
c. 85 calories
d. 45 calories

273. What is the volume of Dextrose solution required to prepare a peripheral parenteral solution for Mr. Mehta that provides 1400 nonprotein calories and 45 grams of amino acid? The formulation should provide 35% of nonprotein calories as fat and have a maximum dextrose concentration 15%.

a. 1800.11cc
b. 1423.23cc
c. 1351.11cc
d. 1784.31cc

274. What would be the total calories provided by TPN mixture containing 1000cc, 10% amino acid and 500cc, 10% fat emulsion?

a. 1000 calories
b. 1200 calories
c. 1320 calories
d. 850 calories

275. If 10 tablets of sodium bicarbonate each weighting 650 mg are crushed and added to 1000cc water, what would be the concentration of drug in mEqs/ml? [Molecular weight = 84 gm/mole]

a. 0.12 mEqs/ml
b. 0.030 mEqs/ml
c. 0.50 mEqs/ml
d. 0.077 mEqs/ml

276. How many cc of 2% $KMnO_4$ solution are required to prepare 10 pints, 1 in 500 solution?

a. 1 pint
b. 1 gallon
c. 1 quart
d. 1 teaspoon full

277. The ratio of ionized to unionized acetic acid is 1. What is the pH of the solution? [pKa = 5.5]

a. 3.5
b. 5.5
c. 2.5
d. 6.5

278. What is the volume of 10% amino acid solution are required to prepare a peripheral nutrition in such a way that 55% of calories are provided by dextrose and the rest by the amino acids. The formulation should provide a total of 1400 calories.

a. 1411cc
b. 1575cc
c. 1800cc
d. 1213cc

279. How much Timolol is required to dispense 15cc, 0.05% opthalmic solution?

a. 7.5 mg
b. 1.5 mg
c. 3.2 mg
d. 8.9 mg

280. If the probability of failure in a Null hypothesis is 0.2, what would be the probability of success?

a. 0.8
b. 0.7
c. 1.2
d. 2.1

281. What is the half-life of the drug in first order kinetic if 50 mg/cc of drug remain in a solution after 60 minutes? (Initial concentration of drug was 500 mg/cc)

a. 18.23 minutes
b. 5.15 days
c. 0.038 minutes^{-}
d. 12.11 months

282. The recommended therapeutic dose of Theophylline is 20mcg/kg/day. How many 500 mcg/50cc ready-infusion bags are required to fill 7-day supply? [Patient weight = 110 lbs]

a. 14
b. 12
c. 21
d. 30

283. How many milligrams of $KMnO_4$ are present in 1000cc, 0.02% $KMnO_4$ solution?

a. 0.2 mg
b. 0.02 mg
c. 2000 mg
d. 200 mg

284. If 10cc, 0.1 N $NaHCO_3$ solution is diluted with water up to 100cc mark, and 20cc of the resultant solution is diluted with water up to 50cc mark, what would be the final concentration of drug in mcg/ml? [Molecular weight = 84 gm/mole]

a. 10 mcg/cc
b. 336 mcg/cc

c. 421 mcg/cc
d. 18 mcg/cc

285. How many grams of drug are required to prepare 500cc 0.25 N solution? [Equivalent weight = 356 gm/mole]

a. 23.1 gm
b. 101.2 gm
c. 31.23 gm
d. 44.5 gm

286. How many calories are provided by 1 pint 1 in 50 solution of dextrose?

a. 15.11 calories
b. 101.23 calories
c. 32.64 calories
d. 25.16 calories

287. If 100 tablets of Synthroid 0.25 mcg are crushed and diluted with water up to 50cc, what is the % of the drug in the final solution?

a. 0.025% w/v
b. 0.0025% w/v
c. 0.00005% w/v
d. 0.0125% w/v

288. How many capsules each weighing 150 mg Clindamycin are required to prepare 100cc, 2% Clindamycin solution?

a. 11
b. 8
c. 21
d. 14

289. What is the weight in grams of 120cc of drug having a specific gravity of 2.2 gm/cc?

a. 132 gm
b. 264 gm
c. 311 gm
d. 98 gm

290. How many mEqs of Ca^{+2} are present in 500 mg of $CaCO_3$? [Molecular weight $CaCO_3$ = 100 gm/mole)

a. 15 mEqs
b. 25 mEqs
c. 10 mEqs
d. 5 mEqs

291. How many milligrams of drug are required to prepare 250cc, 1 in 750 solution?

a. 521 mg
b. 102 mg
c. 251 mg
d. 333 mg

292. If an adult dose of drug is 250mg, what would be the dose for a child having a body surface area of 0.4 m^2?

a. 102.3 mg
b. 57.8 mg
c. 15.11 mg
d. 31.12 mg

293. If an adult dose of drug is 500mg, what would be the dose for a child having a weight of 42 lbs?

a. 210 mg
b. 325 mg
c. 460 mg
d. 140 mg

294. If an adult dose of drug is 250mg, what would be the dose for a 3 months old infant?

a. 7 mg
b. 12.5 mg
c. 5 mg
d. 10 mg

295. How many calories are provided by 300cc 1 in 50 fat emulsion?

a. 110 calories
b. 54 calories
c. 70 calories
d. 91 calories

296. 50cc 3% glycerol provides:

a. 6.45 calories
b. 15.11 calories
c. 9.98 calories
d. 4.11 calories

297. 12 ounces of Kingfisher beer (5% alcohol v/v) provides:

a. 100.8 calories
b. 20.25 calories
c. 18.11 calories
d. 32.11 calories

298. How long will it take to administer 5000cc of TPN solution with a rate of 50cc/kg/day in a patient weighing 150 lbs?

a. 14.1 hours
b. 60.2 hours
c. 8.11 hours
d. 35.2 hours

299. How many calories are provided by 500cc 3% amino acid solution?

a. 23 calories
b. 15 calories
c. 40 calories
d. 60 calories

300. How many cc of 10% amino acid solution are required to provide 1gm amino acid/kg/day in a patient weighing 150 lbs?

a. 125.11 cc
b. 253.14 cc
c. 681.81 cc
d. 421.11 cc

301. If the serum creatinine value for Gina is 1.8mg/dl, what would be the creatinine clearance value in ml/min? [Patient's age = 35 years; Weight = 110 lbs.]

a. 86ml/min
b. 55ml/min
c. 43ml/min
d. 35ml/min

302. If a prescription for Erythromycin reads 500mg twice daily for 7 days, how many cc of Erythromycin oral suspension (125mg/5cc) are required to fill the complete order?

a. 320cc
b. 140cc
c. 280cc
d. 50cc

303. Below is a conversion table to identify the therapeutic dose of Valproic acid. How many cc of Valproic acid (125mg/5cc) are required to fill a 7-day supply? [Patient's weight = 120 lbs.]

Weight (Kg)	Daily Dose
10 to 25	250mg
26 to 40	500mg
41 to 60	750mg
61 to 75	1000mg
76 to 90	1250mg

a. 120cc
b. 210cc
c. 360cc
d. 280cc

304. If a prescription reads 1gram KCl twice daily for 7 days, how many cc of an oral solution of KCl (15mEq/15cc) are required to fill the whole supply? [$K^+ = 39$, $Cl^- = 35.5$]

a. 121cc
b. 156cc
c. 135cc
d. 188cc

305. Each vial of Pentobarbital sodium contains 5gm of the drug. How many cc of water for injection are required to make a final concentration of 50mg per cc?

a. 50cc
b. 100cc
c. 25cc
d. 10cc

306. If a prescription reads 2 capsules (500mg Ceclor) daily for 7 days, how many teaspoonfuls of 125mg/5cc oral suspension are required to fill the complete order?

a. 42
b. 360
c. 280
d. 56

307. The recommended dose of Panhematin is 2mg/kg/day for 10 days via IV infusion. If 1000 mcg of Panhematin is equivalent to 0.14cc of Panhematin, how many cc of Panhematin are required to fill the daily dose? [Patient's weight = 95lbs.]

a. 25.50
b. 12.10
c. 18.75
d. 35.52

308. If a 250mg tablet contains 80 mg of Nelfinavir, how many tablets are required to obtain a final concentration of 5mg Nelfinavir per cc (100cc)?

a. 7
b. 5
c. 1
d. 9

309. If 3.5gm of sterile ophthalmic ointment contains 10.5mg of Ciprofloxacin as an active ingredient, what would be the percentage of Ciprofloxacin?

a. 0.3
b. 1.6
c. 0.15
d. 2.5

310. How many cc of tobramycin injections (40mg/cc) are required to prepare a 0.5% 5gm tobramycin ointment?

a. 0.63
b. 1.52
c. 9.25
d. 3.56

311. If a prescription says to administer 50 units/kg via subcutaneously three times a week, how many vials (500 units/cc) are required to fill a four-week supply? [Patient's weight = 155 lbs.]

a. 22
b. 54
c. 85
d. 35

312. Kineret is available as a single-use, preservative-free, 1 ml pre-filled glass syringe. If the label on the syringe reads 0.001%, how many micrograms of Kineret are present in each ml of solution?

a. 0.01
b. 10
c. 0.00001
d. 100

313. If a single-dose vial of Neupogen contains 480 mcg of Filgrastim per 1.6cc of solution, how many cc are required to obtain 0.15mg dose?

a. 0.1
b. 0.25

c. 0.001
d. 0.5

314. If a vial of Cefotetan powder (0.5gm) is reconstituted with 10cc of sterile water for injection, and then inserted into 50cc 0.9%NS, what would be the final concentration of drug in mg/ml?

a. 7.76
b. 3.51
c. 8.33
d. 5.62

315. If 10cc, 0.01%KCl solution is added to 5cc 0.09%NS, how many mEqs of chloride are present in the final solution? (K^+ = 39, Cl^- = 35.5, Na^+ = 23)

a. 0.013
b. 0.09
c. 0.076
d. 0.0001

316. If the serum creatinine concentration of a 49-year-old male patient is 2.9mg/dl, what is the creatinine clearance in ml/minute? [Patient's weight = 155 lbs.]

a. 80
b. 55
c. 31
d. 46

317. Each canister of Azmacort inhaler contains 60mg of Triamcinolone. If there are 150 actuations in one canister, how many micrograms of Triamcinolone will be delivered with each actuation?

a. 200
b. 180
c. 400
d. 100

318. Each ml of DDAVP nasal spray contains:

Desmopressin acetate	0.1mg
Sodium chloride	7.5mg
Citric acid monohydrate	1.7mg
Disodium phosphate dihydrate	3.0mg
Benzalkonium chloride	0.2mg

If nasal spray delivers 0.1cc of DDAVP per spray, how many IU will be delivered per spray? [1cc DDAVP = 400 IU]

a. 100
b. 40
c. 60
d. 400

319. If a prescription says to administer 10IU of Lantus subcutaneously once a day at bed time for 1 week, and then increase by 5IU per week for 3 weeks, how many vials of Lantus (100 units/cc, 10cc) are required to furnish a 4-week supply?

a. 10
b. 5
c. 1
d. 3

320. Each dropperful (1ml) of Balamine DM Syrup contains:

Carbinoxamine maleate	2mg
Pseudoephedrine HCl	25mg
Dextromethorphan HBr	3.5mg

If a prescription says to administer 2/3 dropperful qid, how many milligrams of Dextromethorphan per day will a patient receive?

a. 5.45
b. 2.56
c. 3.69
d. 9.33

321. Each cc of Cisplatin solution contains 1mg Cisplatin and 9mg sodium chloride. If 5cc of this solution is added to a 50cc 0.9% NS infusion bag, how many mEqs of sodium ions will be present in the final mixture? [Na^+ = 23, Cl^- = 35.5, K^+ = 39, Cisplatin = 300]

a. 8.46
b. 9.65
c. 2.58
d. 1.35

322. A 46-year-old male patient is prescribed Cipro (250mg po qid x 7days) for the treatment of bacterial prostatitis. If the patient's serum creatinine concentration is 0.18mg/10cc, how many 400mg ready-to-infuse IV bags are required to fill a 7-day supply? [Patient's weight = 155 lbs.]

250mg po q12h = 200 mg I.V. q12h
500mg po q12h = 400 mg I.V. q12h
750mg po q12h = 400 mg I.V. q8h

CrCl (ml/min)	Dose
> 50	500mg po q12h
30-50	500mg po q18h
5-29	500mg po q24h

a. 14
b. 21
c. 1
d. 7

323. How many 200mg capsules of Acyclovir are required to prepare a 0.5% 1 lb. ointment?

a. 5
b. 12
c. 9
d. 23

324. How many mEqs of Mg^{+2} are present in each capsule weighing 200mg MgO? [Mg^{+2} = 24, O^- = 16]

a. 10
b. 7
c. 9
d. 5

325. The recommended dose of Atrovent nasal spray 0.06% is two sprays per nostril four times daily for the symptomatic relief of rhinorrhea. If each spray delivers 10mcg, what would be the total dose in micrograms the patient will receive a day?

a. 160
b. 240
c. 380
d. 480

326. Hypothetically, how many milligrams of clonidine should be present in Catapres-TTS 2 system? [Hint: TTS-2 delivers 0.2mg/day x 7days]

a. 0.7
b. 0.9
c. 1.4
d. 2.1

327. Golytely is available in powdered form in a disposable jug containing:

Glycol 3350	256gm
Sodium sulfate	23gm
Sodium bicarbonate	6.5gm
Potassium chloride	3.0gm
Sodium chloride	6.0gm

How many mEqs of Na^+ are present in each dispensable jug of Golytely? [Na^+ = 23, K^+ = 39, Cl^- = 35.5, S^{+6} = 32, O^- = 16, C^+ = 12, H^+ = 1]

a. 103
b. 505
c. 324
d. 51

328. How many mEqs of Calcium are present in 1.58gm of Calcium acetate? [Molecular weight = 158gm/mole, Ca^{+2} = 40, C^+ = 12, H^+ = 1, O^- = 16]

a. 10
b. 15
c. 5
d. 20

329. Below are the guidelines for initial conversion from Sinemet to Sinemet CR:

Sinemet Total daily dose Levodopa (mg)	Sinemet CR Suggested dosage
300-400	200mg bid
500-600	300mg bid
700-800	800mg per day in divided doses
900-1000	1000mg per day in divided doses

If a prescription reads Sinemet 10/100 (2) tablets po qid, how many tablets of Sinemet CR 25/100 are required to fill a 30-day supply?

a. 90
b. 120
c. 180
d. 240

330. How many micrograms of Calcipotriene are present in 10cc 0.0025% Dovonex topical solution?

a. 0.25
b. 25000
c. 250
d. 0.025

331. If Videx pediatric powder (4gm) is mixed with 100cc of Purified Water, and then 0.5cc of the resultant solution is diluted up to 5cc with Purified Water, what would be the final concentration of the drug in mg/cc?

a. 4
b. 8
c. 21
d. 17

332. 5cc Pediapred syrup contains 6.7mg of prednisolone sodium phosphate, which is equivalent to 75% prednisolone base. If a patient is taking 1 teaspoonful four times daily, what would be the daily dose of prednisolone base in milligrams?

a. 5
b. 10
c. 15
d. 20

333. AccuNeb (Albuterol sulfate) inhalation solution is available as a unit dose vial containing 0.75mg of Albuterol sulfate per 3cc of solution. If the nebulizer delivers the whole dose within 15 minutes, what is the dose of Albuterol sulfate in mcg/min?

a. 10
b. 25
c. 50
d. 75

334. How much Nitroglycerine should be present in Nitrolingual Spray if each spray delivers 400mcg of the drug? The pump will deliver 30 metered sprays.

a. 15 mg
b. 12 mg
c. 23 mg
d. 56 mg

335. How many vials of Digibind are required to detoxify Digoxin intoxication occurring due to ingestion of 30 (0.125mg) Lanoxin tablets? [Hint use following formula. Total digitals body load in mg = 30 x 0.125mg]

$$\text{Dose (in \# of vials)} = \frac{\text{Total digitalis body load in mg}}{\text{0.5 mg of Digibind vial}} \text{x} 0.8$$

a. 8
b. 3
c. 6
d. 1

336. If a prescription says Lanoxin 0.25mg po qd for 30 days, how many cc of Lanoxin elixir (50mcg/cc) are required to fill a 30-day supply?

a. 60
b. 90
c. 120
d. 150

337. A prescription for Prednisone says the following:

10mg po tid x 7 days
7.5mg po tid x 7 days
5mg po tid x 7 days
2.5mg po tid x 7 days

How many 2.5mg tablets are required to fill the whole supply?

a. 210
b. 420
c. 361
d. 481

338. The recommended dose of Targretin is 300mg/m^2/day. How many capsules of 75mg of Targretin are required per day for a patient weighing 110 lbs? [70kg = 1.73m^2]

a. 5
b. 3
c. 7
d. 9

339. A 1mg vial of Melanotan is diluted with 10cc of SWFI. If an approximate withdrawal volume after reconstitution is 10.5cc, what would be the final concentration of drug in mcg/cc?

a. 10.65
b. 95.23
c. 14.52
d. 24.76

340. A 28-year-old female patient has recently suffered from asthma. If the patient's serum creatinine concentration is 3.9mg/dl, what would be her renal creatinine clearance? [Patient's weight = 90 lbs.]

a. 85
b. 58
c. 27
d. 14

341. What would be the serum creatinine concentration (mg/100cc) for a 46-year-old male patient weighing 140 lbs.? [CrCl = 80ml/minute]

a. 1.03
b. 0.85
c. 1.20
d. 1.9

342. For the treatment of traveller's diarrhea, the usual adult dosage is 1 Septra-SS tablet by mouth every 12 hours for 7 days. If the pharmacist has Septra suspension (40/200 per 5cc) in stock, how many teaspoonfuls of suspension are required to fill the whole supply? [Hint 1 Septra SS = 80/400]

a. 44
b. 14
c. 36
d. 28

343. A prescription says 4 teaspoonfuls of Septra suspension (40/200 per 5cc) every 12 hours for 14 days, how many Septra DS tablets are required to fill a 14-day supply? [Hint 1 Septra DS = 160/800]

a. 28
b. 16
c. 32
d. 40

344. Two teaspoons of Maalox suspension neutralizes 20mEq of acid. How many grams of HCl are neutralized by a tablespoonful of Maalox suspension? [Na^+ = 23, O^- = 16, H^+ = 1, Mg^{+2} = 24, Cl^- = 35.5] {Hint: 1mEq HCl = 36.5mg HCl}

a. 1.09
b. 5.62
c. 3.21
d. 12.5

345. Nicotrol NS is available as a 10mg/cc, 10cc nasal spray. If after priming, the spray delivers approximately 200 applications, how many milligrams of nicotine would be present in each actuation?

a. 1
b. 2.5
c. 0.5
d. 0.75

346. The rate of infusion of Cipro is 50mg/hr. How long will it take to infuse 400mg/100cc Cipro?

a. 11 hr
b. 5 hrs
c. 10 hrs
d. 8 hrs

347. If an I.V. admixture contains 1gm/250cc of drug and should be infused within a 12-hour period, what would be the flow rate in drops/min? [I.V. set delivers 20 drops/cc]

a. 15
b. 5
c. 21
d. 7

348. 250mg/500cc of Rocephin solution should be administered to a patient weighing 130lbs. The recommended adult dose of drug is 5mcg/kg/min. What would be rate of flow in ml/min?

a. 0.22
b. 0.46
c. 0.59
d. 0.78

349. If 1 cc Ensure provides 1 calorie, how many total calories are provided by Ensure if a patient is taking 240cc three times daily?

a. 150
b. 900
c. 225
d. 720

350. If the standard infusion rate of a drug is 0.002mg/kg/hr, how many cc per minute will be administered to a patient weighing 165 lbs? [50-cc infusion bag 5mcg/cc]

a. 0.5
b. 2.3
c. 4.5
d. 1.6

351. A 500mg vial of Delavirdine is reconstituted with 10cc of sterile water for injection. The resultant solution is then inserted into a 250cc 5% dextrose solution. What would be the final concentration of drug in mcg/cc?

a. 126
b. 354
c. 1923
d. 1564

352. A 52-year-old male patient has recently suffered from heart stroke. If the patient's serum concentration is 1.8mg/dl, what would be his renal creatinine clearance? [Patient's weight = 130 lbs.]

a. 40
b. 80
c. 120
d. 60

353. What would be the serum creatinine concentration (mg/100ml) for a 65-year-old male patient weighing 105 lbs.? (CrCl = 72 ml/minute)

a. 0.69
b. 1.21
c. 0.95
d. 0.80

354. A 46-year-old patient is taking 30mg of Morphine by mouth, four times a day, to relieve pain associated with lymphocytic leukemia. If a prescriber wants to switch him over to Oxycodone, how many tablets of 5mg Oxycodone are required to fill a 7-day supply?

Oral Prior Opioids	Multiplication Factor	Parenteral Prior Opioids
Oxycodone	1	N/A
Codeine	0.15	N/A
Morphine	0.5	N/A
Meperidine	0.1	N/A

a. 84
b. 90
c. 240
d. 320

355. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	%DV	Serving Size
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

How many total fat calories will be provided by Ensure Plus if the patient is drinking 1200ml per day?

a. 130
b. 495
c. 342
d. 555

356. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	%DV	Serving Size
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

Normal healthy adults require 2100 calories per day from their diet. If they are getting all these calories from Ensure Plus, how many protein calories will they get per day?

a. 110
b. 234
c. 312
d. 52

357. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	%DV	Serving Size
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

How many mEqs of potassium will be present in 1.25 quart of Ensure Plus? [K^+ = 39, Cl^- = 35.5]

a. 34
b. 64
c. 26
d. 42

358. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	%DV	Serving Size
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

W.H.O. recommends 0.45 grams of protein per kilogram of ideal body weight per day. How many bottles of Ensure Plus are required daily for a person weighing 120 lbs?

a. 2
b. 5
c. 7
d. 9

359. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	%DV	Serving Size
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

If we mix 500mg of KCl powder with 8 ounces of Ensure Plus, what would be mEqs of K^+ in a final mixture? [K^+ = 39, Cl^- = 35.5]

a. 15.96
b. 19.53
c. 13.42
d. 6.71

360. A 42-year-old patient is taking 10mg of Meperidine by mouth four times a day to relieve pain associated with a knee injury. If a prescriber want to switch him over to Hydromorphone, how many mls of 0.8mg/cc Hydromorphone suspension are required to fill a 72-hour supply?

Oral Prior Opioids	Multiplication Factor	Parenteral Prior Opioids
Oxycodone	0.25	N/A
Codeine	0.04	N/A
Morphine	0.12	N/A
Meperidine	0.02	N/A
Hydromorphone	1.0	N/A

a. 10
b. 6

c. 3
d. 25

361. A prescription says to take 15mg of Morphine po q4h. Below is a chart with the recommended initial Duragesic dose based upon daily oral Morphine dose:

Morphine Dose (daily in mg)	Duragesic Dose (mcg)
45-134	25
135-224	50
225-314	75
315-404	100

How many 25mcg/hr Duragesic patches are required to fill a 9-day supply?

a. 3
b. 9
c. 12
d. 10

362. A 65-year-old patient is taking 5mg of Meperidine by mouth, six times day, to relieve pain associated with lung transplantation. If a prescriber wants to switch him over to Hydromorphone, how many cc of 0.6mg/cc Hydromorphone suspension are required to fill a 7-day supply?

Oral Prior Opioids	Multiplication Factor	Parenteral Prior Opioids
Oxycodone	0.25	N/A
Codeine	0.04	N/A
Morphine	0.12	N/A
Meperidine	0.02	N/A
Hydromorphone	1.0	N/A

a. 1
b. 21
c. 14
d. 7

363. A prescription says a 50mcg/hr patch of Duragesic TDS is to be changed every 72 hours. If a prescriber wants to switch this to Oxycodone, how many 5mg tablets of Oxycodone are required to fill a 7-day supply? (Assume 18 hrs after removal of the transdermal fentanyl patch, approximately 5mg of oxycodone q12h can be substituted for each 25mcg/hr of transdermal fentanyl to start.)

a. 140
b. 120
c. 52
d. 28

364. A prescription says to take 30mg of Morphine po q6h. Below is a chart with the recommended initial Duragesic dose based upon daily oral Morphine dose:

Morphine Dose (daily in mg)	Duragesic Dose (mcg)
45-134	25
135-224	50
225-314	75
315-404	100

How many 25mcg/hr Duragesic patches are required to fill a 30-day supply?

a. 5
b. 10
c. 15
d. 20

365. A 55-year-old patient is taking 15mg of Meperidine by mouth, four times day, to relieve pain associated with brain tumor. If a prescriber wants to switch him over to Hydromorphone, how many cc of 2mg/cc Hydromorphone suspension are required to fill a 10-day supply?

Oral Prior Opioids	Multiplication Factor	Parenteral Prior Opioids
Oxycodone	0.25	N/A
Codeine	0.04	N/A
Morphine	0.12	N/A
Meperidine	0.02	N/A
Hydromorphone	1.0	N/A

a. 6
b. 9
c. 12
d. 18

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