ANSWER KEY

Chapter 1 - Numeral Systems Used in Pharmacy

Worksheet 1-1

1) i
2) ii
3) iii
4) iv
5) v
6) vi
7) vii
8) viii
9) ix
10) x
11) xx
12) xl
13) xlv
14) c
15) cd
16) m
17) cm
18) lxix
19) xxiv
20) mcmxcix
21) 9
22) 18
23) 24
24) 36
25) 3
26) 240
27) 55
28) 555
29) 1111
30) 999
31) 4
32) 7
33) 12
34) 16
35) 22
36) 42
37) 31
38) 1337
39) 2008
40) 1783

Worksheet 1-2

1) 29
2) 23
3) 5
4) 24
5) 4
6) 12
7) xx
8) xxx
9) iv
10) xii
11) v
12) xxiv
13) ix
14) vii

	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**
I	i	ii	iii	iv	v	vi	vii	viii	ix	x
II	ii	iv	vi	viii	x	xii	xiv	xvi	xviii	xx
III	iii	vi	ix	xii	xv	xviii	xxi	xxiv	xxvii	xxx
IV	iv	viii	xii	xvi	xx	xxiv	xxviii	xxxii	xxxvi	xl
V	v	x	xv	xx	xxv	xxx	xxxv	xl	xlv	l
VI	vi	xii	xviii	xxiv	xxx	xxxvi	xlii	xlviii	liv	lx
VII	vii	xiv	xxi	xxviii	xxxv	xlii	xlix	lvi	lxiii	lxx
VIII	viii	xvi	xxiv	xxxii	xl	xlviii	lvi	lxiv	lxxii	lxxx
IX	ix	xviii	xxvii	xxxvi	xlv	liv	lxiii	lxxii	lxxxi	xc
X	x	xx	xxx	xl	l	lx	lxx	lxxx	xc	c

Worksheet 1-3

1) hundreds place
2) hundred-thousands place
3) ten-millions place
4) tenths place
5) ten-thousandths place
6) ones place
7) 12,004,025
8) 31,337
9) 5,318,008
10) 0.7
11) 0.39
12) 15.7
13) 6.07
14) 705.0107

15) 0.7
16) 95.07
17) 0.57
18) 0.0019
19) 406.0214
20) 507.0112
21) $\frac{6}{10}$
22) $\frac{85}{100}$
23) $\frac{6}{1,000}$
24) $\frac{574}{10,000}$
25) $13\frac{13}{1,000,000}$
26) $80\frac{8,135}{100,000}$

Worksheet 1-4
1) 103
2) 1
3) 88
4) 100
5) 187
6) 29,002
7) 1.0
8) 99.7
9) 2.5
10) 29,001.5
11) 187.5
12) 13.0
13) 187.50
14) 12.99
15) 29,000.50
16) 1,234,567.87
17) 66.67
18) 5,454.55
19) 3
20) 4
21) 2
22) 3
23) 3
24) 1
25) 2
26) 2
27) 1

Worksheet 1-5
1) 55,886
2) 5.25
3) 43.79
4) 97.16
5) 35.75
6) 86.964
7) 73
8) 8238
9) 54.17
10) 88.10
11) 37.03
12) 34.342
13) 696
14) 4.91
15) 6.39
16) 96.98
17) 26.35
18) 83.436
19) 1664
20) 15.97
21) 88.06
22) 0.958
23) 0.45
24) 0.839
25) 0.086 kg
26) 37.4° C

Worksheet 1-6
1) 780,690,145
2) 1.015
3) 366.212
4) 4.1454
5) 370.962
6) 41.8481
7) 8,238
8) 669.837
9) 1.7616
10) 0.01164
11) 18.225
12) 0.106512
13) 81 mg
14) $210.72
15) 734.4 mg

Worksheet 1-7
1) 105
2) 16.24
3) 1.362
4) 1151.5
5) 6.774
6) 0.043
7) 0.015
8) 1.836
9) 440.4
10) 80.833
11) 0.9
12) 8.491
13) 32 bottles
14) 200 days
15) 120 capsules
16) 8 days' supply

Worksheet 1-8
1) xxxviii
2) dli
3) xxiv
4) 21
5) 400
6) 48
7) ten-thousands place
8) hundredths place
9) tenths place
10) 2,015,600
11) 0.4004

12) 9,876.5432
13) 32,349
14) 82.25
15) 23.7
16) 40.842
17) 111.95
18) 134.79
19) 7,385
20) 81.89
21) 22.3
22) 92.9
23) 102.65
24) 29.01
25) 240
26) 74.4
27) .1107
28) 10.4016
29) 0.1176
30) 20.99579
31) 61.5
32) 104.33
33) 1.36
34) 41.18
35) 0.2
36) 0.12
37) 454 grams
38) 2.3 kilograms
39) $29.88
40) 14 days

Chapter 2 - Fractions

Worksheet 2-1

1) 0.2
2) 0.5
3) 0.5
4) 0.1
5) 0.083
6) 0.01
7) 0.001
8) 0.667
9) 0.75
10) 0.8
11) 0.375
12) 0.417
13) 0.389
14) 0.364
15) 0.091
16) 0.143
17) 0.164
18) 0.206
19) 0.211
20) 0.277
21) $\frac{5}{1}$
22) $\frac{2}{1}$
23) $\frac{4}{2}$
24) $\frac{10}{1}$
25) $\frac{12}{1}$
26) $\frac{100}{1}$
27) $\frac{1000}{1}$
28) $\frac{3}{2}$
29) $\frac{4}{3}$
30) $\frac{5}{4}$
31) $\frac{8}{3}$
32) $\frac{12}{5}$
33) $\frac{18}{7}$
34) $\frac{11}{4}$
35) $\frac{22}{2}$
36) $\frac{35}{5}$
37) $\frac{55}{9}$
38) $\frac{63}{13}$
39) $\frac{71}{15}$
40) $\frac{83}{23}$

Worksheet 2-2

1) $\frac{1}{2}$
2) $\frac{1}{3}$
3) $\frac{1}{8}$
4) $\frac{1}{3}$
5) $\frac{1}{12}$
6) $\frac{1}{5}$
7) $\frac{11}{15}$
8) $\frac{4}{5}$
9) $\frac{7}{10}$
10) $\frac{1}{5}$
11) $\frac{7}{18}$
12) $\frac{7}{11}$
13) 0
14) $\frac{2}{3}$
15) $\frac{2}{9}$
16) $\frac{12}{35}$

17) $\frac{1}{4}$

18) $\frac{1}{10}$

19) $\frac{1}{9}$

20) $\frac{1}{2}$

21) $\frac{1}{3}$

22) $\frac{1}{6}$

23) $\frac{1}{15}$

24) $\frac{2}{9}$

25) $\frac{1}{5}$

26) $\frac{7}{15}$

27) $\frac{7}{12}$

28) $\frac{3}{7}$

29) $\frac{3}{5}$

30) $\frac{10}{33}$

Worksheet 2-3

1) $\frac{2}{3}$

2) $\frac{1}{4}$

3) $\frac{1}{2}$

4) $\frac{9}{25}$

5) $\frac{5}{16}$

6) $\frac{5}{8}$

7) $\frac{6}{7}$

8) $1\frac{1}{4}$

9) $\frac{6}{19}$

10) $\frac{1}{4}$

11) $\frac{5}{24}$

12) $\frac{13}{100}$

13) $5\frac{703}{1000}$

14) $\frac{343}{432}$

15) $1\frac{73}{100}$

16) $\frac{23}{36}$

17) $\frac{11}{18}$

18) $\frac{8}{9}$

19) $1\frac{1}{4}$

20) $1\frac{3}{38}$

21) $1\frac{1}{4}$

22) $1\frac{41}{60}$

23) $1\frac{1}{4}$

24) $\frac{34}{81}$

Worksheet 2-4

1) $\frac{1}{9}$

2) $\frac{3}{64}$

3) $\frac{2}{9}$

4) $\frac{15}{64}$

5) $\frac{3}{25}$

6) $\frac{21}{64}$

7) 0

8) $\frac{3}{10}$

9) $\frac{1}{18}$

10) $\frac{2}{35}$

11) $\frac{27}{40}$

12) $\frac{9}{44}$

13) $\frac{3}{40}$

14) $\frac{91}{120}$

15) $\frac{42}{125}$

16) $\frac{49}{200}$

17) 18

18) $\frac{15}{2}$ or $7\frac{1}{2}$

19) $\frac{4}{9}$

20) $\frac{1}{21}$

21) $\frac{28}{5}$ or $5\frac{3}{5}$

22) 20

23) $\frac{7}{3}$

24) 18

Worksheet 2-5

1) 1
2) $\frac{1}{3}$
3) $\frac{2}{3}$
4) $\frac{4}{5}$
5) $1\frac{1}{3}$
6) $\frac{2}{3}$
7) $\frac{1}{15}$
8) 1
9) $1\frac{24}{25}$
10) 32
11) $2\frac{14}{15}$
12) $\frac{1}{4}$
13) $3\frac{1}{16}$
14) $12\frac{1}{2}$
15) 80 capsules
16) 25 syringes

Worksheet 2-6

1) 0.467
2) 0.325
3) 0.625
4) 0.867
5) 0.567
6) 0.875
7) 0.333
8) 0.68
9) 0.351
10) $\frac{4}{3}$
11) $\frac{5}{1}$
12) $\frac{24}{15}$ or $\frac{8}{5}$
13) $\frac{8}{2}$ or $\frac{4}{1}$
14) $\frac{585}{65}$ or $\frac{9}{1}$
15) $\frac{1}{1}$
16) $\frac{3}{4}$
17) $\frac{1}{4}$
18) $\frac{5}{8}$
19) $\frac{1}{4}$
20) $\frac{1}{3}$
21) $\frac{3}{4}$
22) $\frac{3}{5}$
23) $\frac{17}{31}$
24) $\frac{13}{37}$
25) $\frac{2}{3}$
26) $\frac{11}{8}$ or $1\frac{3}{8}$
27) $\frac{7}{24}$
28) $\frac{1}{6}$
29) $\frac{19}{24}$
30) $\frac{3}{16}$
31) $\frac{31}{42}$
32) $\frac{23}{55}$
33) $\frac{2}{21}$
34) $3\frac{1}{2}$
35) $4\frac{1}{2}$
36) $\frac{1}{16}$
37) 20
38) $3\frac{1}{16}$
39) $\frac{1}{4}$
40) $1\frac{1}{4}$
41) $2\frac{3}{8}$ mL
42) $\frac{7}{8}$ L
43) 5 mg
44) 40 doses
45) $\frac{7}{12}$ ounces

Chapter 3 - Percentages

Worksheet 3-1

1) 24.44%
2) 30%
3) 50%
4) 12.5%
5) 75%
6) 2%
7) 9%
8) 10%
9) 80%
10) 36%
11) 52%
12) 40%
13) 65%
14) 2.5%

15) 3.5%
16) 5.5%
17) 0.4%
18) 110%
19) 175%
20) 200%
21) 0.33
22) 0.24
23) 0.333
24) 0.505
25) 0.2
26) 0.47
27) 0.93
28) 0.325
29) 0.75
30) 0.8332
31) 0.6666667
32) 0.185
33) 0.013
34) 0.0025
35) 0.00125
36) 80%
37) 20%
38) 87.5%
39) 75%
40) 85.7% (rounded)
41) 85%
42) 62.5%
43) 42.9% (rounded)
44) 30%
45) 60%
46) 87.5%
47) 80%
48) 55%
49) 88.9% (rounded)
50) 50%

Worksheet 3-2

1) $\frac{1}{2}$
2) $\frac{3}{4}$
3) $\frac{3}{5}$
4) $\frac{7}{20}$
5) $\frac{3}{10}$
6) 1
7) $\frac{17}{25}$
8) $\frac{41}{100}$
9) $\frac{93}{100}$
10) $\frac{3}{250}$
11) $\frac{1}{8}$
12) $\frac{67}{100}$
13) $\frac{333}{500}$
14) $\frac{9}{25}$
15) $\frac{11}{10}$ or $1\frac{1}{10}$
16) 150
17) 6
18) 3
19) 37.5
20) 3
21) 32
22) 90
23) 1.7
24) 5.5
25) 29.7
26) 2.5
27) 36
28) 20
29) 90
30) 280
31) 10
32) 8.4
33) 4.8
34) 7.5
35) 12
36) 12
37) 50
38) 12.5
39) 27
40) 50

Worksheet 3-3

Percent	***Decimal***	***Reduced Fraction***
20%	0.2	1/5
6%	0.06	3/50
87.5%	0.875	7/8
15%	0.15	3/20
11%	0.11	11/100
80%	0.8	4/5
96%	0.96	24/25

Percent	*Decimal*	*Reduced Fraction*
55%	0.55	11/20
12%	0.12	3/25
53%	0.53	53/100
100%	1	1
7.5%	0.075	3/40

1) 2
2) 16%
3) 175
4) 198
5) 28%
6) 2500
7) 325
8) 25%
9) 15
10) 100.8
11) 20%
12) 20
13) 18
14) 90%
15) 32
16) 62
17) 92%
18) 500
19) 42
20) 81.25%
21) 92% correct
22) 23 students
23) 3,077 people
24) 64% of his savings
25) 2,800 hairs
26) 68% of patients

Worksheet 3-4

1) $\frac{4}{25}$
2) $\frac{9}{20}$
3) $\frac{3}{50}$
4) 0.33
5) 0.045
6) 0.0294
7) 25%
8) 40%
9) 70%
10) 70%
11) 46.7%
12) 0.6%
13) 48
14) 6
15) 10%
16) 66.7%
17) 250
18) 27.3
19) 210
20) 5%
21) 7 instructors
22) 27 milligrams
23) 6.5 pounds
24) 24 patients
25) 2 holidays

Chapter 4 - 24 Hour Time, Exponents & Scientific Notation

Worksheet 4-1

1140 eleven forty hours 11:40 A.M.
1400 fourteen hundred hours 2:00 P.M.
2230 twenty-two thirty hours 10:30 P.M.
0030 zero zero thirty hours 12:30 A.M.
1050 ten fifty hours 10:50 A.M.
0615 zero six fifteen hours 6:15 A.M.
1050 ten fifty hours 10:50 A.M.
2145 twenty-one forty-five hours 9:45 P.M.
1315 thirteen fifteen hours 1:15 P.M.
0015 zero zero fifteen hours 12:15 A.M.
0005 zero zero zero five hours 12:05 A.M.
0930 zero nine thirty hours 9:30 A.M.
2230 twenty-two thirty hours 10:30 P.M.
0020 zero zero twenty hours 12:20 A.M.
1425 fourteen twenty-five hours 2:25 P.M.
0007 zero zero zero seven hours 12:07 A.M.
0100 zero one hundred hours 1:00 A.M.

Worksheet 4-2

1) 1
2) 2
3) 1
4) 4
5) 8
6) 9
7) 27
8) 81
9) 100
10) 216
11) 1

12) 25
13) 1
14) 81
15) 1
16) 20,736
17) 1,728
18) 10,000
19) 1
20) 343
21) 1×10^{3}
22) 1×10^{0}
23) 6.7×10^{7}
24) 1×10^{-1}
25) 3.06×10^{-3}
26) 1×10^{6}
27) 9.09×10^{5}
28) $1\times10-3$
29) 2.8×10^{-4}
30) 6.14×10^{-7}
31) 0.000000614
32) 0.00306
33) 0.00028
34) 0.1
35) 0.001
36) 67,000,000
37) 909,000
38) 1
39) 1,000,000
40) 1,000

Worksheet 4-3

1040 ten forty hours 10:40 A.M.
2100 twenty-one hundred hours 9:00 P.M.
1230 twelve thirty hours 12:30 P.M.
0715 zero seven fifteen hours 7:15 A.M.
2245 twenty-two forty-five 10:45 P.M.
0830 zero eight thirty hours 8:30 A.M.
2215 twenty-two fifteen hours 10:15 P.M.
1020 ten twenty hours 10:20 A.M.
2200 twenty-two hundred hours 10:00 P.M.
1130 eleven thirty hours 11:30 A.M.
1915 nineteen fifteen hours 7:15 P.M.
1045 ten forty-five hours 10:45 A.M.
1230 twelve thirty hours 12:30 P.M.
2210 twenty-two ten hours 10:10 P.M.

1) 216
2) 25
3) 16,384
4) 81
5) 100
6) 36
7) 125
8) 1024
9) 27
10) 10,000
11) 1×10^{7}
12) 3.51×10^{2}
13) 7.1×10^{3}
14) 3.7×10^{-2}
15) 3.75×10^{-1}
16) $6.4^{10}-3$
17) 1×10^{6}
18) 3.5×10^{1}
19) 6.1×10^{3}
20) 3.7×10^{-1}
21) 3.75×10^{-1}
22) 5.6×10^{-3}

Worksheet 4-4

1) The medication should be scheduled for 1300, 1700, 2100, 0100, 0500, and 0900
2) 602,000,000,000,000,000,000,000
3) 81
4) 6×10^{12}
5) 5×10^{7}

Chapter 5 - Problem Solving Methods

Worksheet 5-1

1) 1:5
2) 2:11
3) 2:9
4) 15:23
5) 1:9
6) 5:1
7) 6:1
8) 8:3
9) 1:3
10) 1:10
11) 900 oz of sol; 3:900 or 1:300
12) 30:90 or 1:3
13) 60 oz of sol; 20:60 or 1:3
14) 50 g of sol; 10:50 or 1:5
15) 3:90 or 1:30
16) 2:40 or 1:20
17) 100 oz of sol; 5:100 or 1:20

Worksheet 5-2

1) 1:4
2) 3:17
3) 1:5
4) 2:7
5) 5:19
6) 23:25
7) 1:6
8) 5:1
9) 100:1
10) 1:4
11) 400 oz of sol; 5:400 or

1:80
12) 10 oz of sol; 2:10 or 1:5
13) 68:110 or 34:55
14) 744 oz of sol; 3:744 or 1:248
15) 1:10:20

Worksheet 5-3

1)
   a) The extremes are 5 and 40.
   b) The means are 8 and 25.
2) 6
3) 21
4) 2
5) 14
6) 12
7) 2
8) 1
9) 10
10) 3
11) 2
12) 5
13) 1
14) 6
15) 2
16) 60
17) 1
18) 1,000
19) 8

Worksheet 5-4

1) $\frac{3}{x}=\frac{6}{7}$
2) $\frac{5}{8}=\frac{N}{10}$
3) $\frac{K}{8}=\frac{4}{16}$
4) $\frac{7}{9}=\frac{14}{N}$
5) $\frac{2}{3}=\frac{x}{9}$
6) $\frac{7}{N}=\frac{14}{28}$
7) 3
8) 5
9) 9
10) 15
11) 3
12) 16
13) 1.25
14) 200
15) 100
16) 3.22 g
17) 0.175 oz of boric acid
18) 6 oz of magnesium sulfate
19) 45 g of salt
20) 0.16 oz of boric acid

Worksheet 5-5

1) $\frac{4}{X}=\frac{7}{9}$
2) $\frac{3}{5}=\frac{N}{8}$
3) $\frac{N}{72}=\frac{4.8}{12.0}$
4) $\frac{15.0}{N}=\frac{31.0}{1}$
5) $\frac{5}{17.1}=\frac{N}{2}$
6) $\frac{315}{32}=\frac{N}{35}$
7) 10
8) 10
9) 8.5
10) $5.\overline{5}$
11) 50
12) 0.6
13) 3.74
14) 60 mL
15) 3.15 L
16) 1.65
17) \$49.84
18) 33.11 mL of colloids

Worksheet 5-6

1) $\frac{3\,\text{days}}{1}\times\frac{2\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=6\,\text{tablets}$
2) $\frac{7\,\text{days}}{1}\times\frac{4\,\text{doses}}{\text{day}}\times\frac{1\,\text{cap}}{\text{dose}}=28\,\text{capsules}$
3) $\frac{4\,\text{days}}{1}\times\frac{4\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=16\,\text{tablets}$
4) $\frac{10\,\text{days}}{1}\times\frac{1\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=10\,\text{tablets}$
5) $\frac{30\,\text{days}}{1}\times\frac{2\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=60\,\text{tablets}$
6) $\frac{2\,\text{days}}{1}\times\frac{3\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=6\,\text{tablets}$
7) $\frac{34\,\text{days}}{1}\times\frac{2\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=68\,\text{tablets}$
8) $\frac{4\,\text{weeks}}{1}\times\frac{1\,\text{capsule}}{\text{week}}=4\,\text{capsules}$
9) $\frac{21\,\text{days}}{1}\times\frac{3\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=63\,\text{tablets}$
10) $\frac{72\,\text{hr}}{1}\times\frac{1\,\text{day}}{24\,\text{hr}}\times\frac{4\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=12\,\text{tablets}$

Worksheet 5-7

1) $\frac{7\,\text{days}}{1}\times\frac{2\,\text{doses}}{\text{day}}\times\frac{1\,\text{tab}}{\text{dose}}=14\,\text{tablets}$

2) $\frac{7\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=21\text{ tablets}$

3) $\frac{90\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=360\text{ tablets}$

4) $\frac{28\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=112\text{ capsules}$

5) $\frac{4\text{ days}}{1}\times\frac{1\text{ dose}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=4\text{ tablets}$

6) $\frac{30\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=90\text{ tablets}$

7) $\frac{90\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{3\text{ caps}}{\text{dose}}=540\text{ capsules}$

8) $\frac{3\text{ days}}{1}\times\frac{1\text{ dose}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=3\text{ capsules}$

$\frac{5\text{ days}}{1}\times\frac{1\text{ dose}}{\text{day}}\times\frac{2\text{ cap}}{\text{dose}}=10\text{ capsules}$

$\frac{22\text{ days}}{1}\times\frac{1\text{ dose}}{\text{day}}\times\frac{4\text{ cap}}{\text{dose}}=88\text{ capsules}$

$3\text{ caps}+10\text{ caps}+88\text{ caps}=101\text{ capsules}$

Worksheet 5-8

1) $\frac{3\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{50\text{ mg}}{\text{dose}}\times\frac{\text{cap}}{25\text{ mg}}=18\text{ tablets}$

2) $\frac{30\text{ days}}{1}\times\frac{1\text{ dose}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=30\text{ capsules}$

3) $\frac{3\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=12\text{ tablets}$

4) $\frac{7\text{ days}}{1}\times\frac{1\text{ dose}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=7\text{ tablets}$

5) $\frac{90\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{3\text{ caps}}{\text{dose}}=540\text{ capsules}$

6) $\frac{14\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=56\text{ capsules}$

7) $\frac{30\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{2\text{ caps}}{\text{dose}}=180\text{ capsules}$

8) $\frac{10\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=30\text{ tablets}$

9) $\frac{5\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{10\text{ mg}}{\text{dose}}\times\frac{1\text{ tab}}{10\text{ mg}}=10\text{ tablets}$

$\frac{4\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{5\text{ mg}}{\text{dose}}\times\frac{1\text{ tab}}{10\text{ mg}}=4\text{ tablets}$

$\frac{2\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{2.5\text{ mg}}{\text{dose}}\times\frac{1\text{ tab}}{10\text{ mg}}=1\text{ tablet}$

$10\text{ tabs}+4\text{ tabs}+1\text{ tab}=15\text{ tablets}$

Worksheet 5-9

1) 1:9
2) 1:6
3) 1:6
4) 20:100 or 1:5
5) 125 mL of a drug
6) 2.4 g of hydrocortisone
7) $\frac{5}{x}=\frac{10}{15}$
8) $\frac{6}{11}=\frac{Y}{12}$
9) $\frac{1}{3}=\frac{N}{18}$
10) 6
11) 8
12) 6
13) 40.5 g
14) 28.4 g
15) 18.3 g
16) 1 mL
17) $3.\overline{3}$ in.
18) 2 g

19) $\frac{7\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=14\text{ tablets}$

20) $\frac{7\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=21\text{ tablets}$

21) $\frac{30\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=120\text{ tablets}$

22) $\frac{14\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=56\text{ capsules}$

23) $\frac{14\text{ days}}{1}\times\frac{4\text{ doses}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=56\text{ capsules}$

24) $\frac{90\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{1\text{ cap}}{\text{dose}}=270\text{ capsules}$

25) $\frac{3\text{ days}}{1}\times\frac{2\text{ doses}}{\text{day}}\times\frac{3\text{ caps}}{\text{dose}}=18\text{ capsules}$

26) $\frac{2\text{ days}}{1}\times\frac{3\text{ doses}}{\text{day}}\times\frac{1\text{ tab}}{\text{dose}}=6\text{ tablets}$

27) $\frac{7\text{ days}}{1}\times\frac{2\text{ tablets}}{\text{day}}\times\frac{30\text{ mg}}{\text{tab}}=420\text{ mg codeine}$

$\frac{7\text{ days}}{1}\times\frac{2\text{ tablets}}{\text{day}}\times\frac{300\text{ mg}}{\text{tab}}=4{,}200\text{ mg APAP}$

28) $\frac{0.5\text{ mL}}{1}\times\frac{480\text{ mcg}}{0.8\text{ mL}}=300\text{ mcg}$

Chapter 6 - Temperature Scale Conversions

Worksheet 6-1

1) 122º F
2) 116.6º F
3) 113º F
4) 104º F
5) 98.6º F
6) 89.6º F
7) 86º F
8) 77º F
9) 71.6º F
10) 68º F
11) 64.4º F
12) 59º F
13) 53.6º F
14) 50º F
15) 44.6º F
16) 41º F
17) 35.6º F
18) 32º F
19) 23º F
20) 14º F
21) -40º F
22) 37.8º C
23) 32.2º C
24) 31.7º C
25) 27.8º C
26) 26.7º C
27) 26.1º C
28) 23.9º C
29) 21.1º C
30) 17.2º C
31) 15.6º C
32) 14.4º C
33) 12.8º C
34) 7.2º C
35) 2.8º C
36) 0º C
37) -3.9º C
38) -5.6º C
39) -9.4º C
40) -11.1º C
41) -15º C
42) -17.8º C
43) -20.6º C
44) -25.6º C
45) -28.9º C

Worksheet 6-2

part I

- Cold: any temperature not exceeding 46º F
- Freezer: -13º to 14º F
- Refrigerator: 36º to 46º F
- Cool: 46º to 59º F
- Room temperature: the temperature prevailing in a working area
- Controlled room temperature: 59º to 86º F
- Warm: 86º to 104º F
- Excessive heat: any temperature above 104º F

part II

- Cold: any temperature not exceeding 8º C
- Freezer: -25º to -10º C
- Refrigerator: 2º to 8º C
- Cool: 8º to 15º C
- Room temperature: the temperature prevailing in a working area
- Controlled room temperature: 15º to 30º C
- Warm: 30º to 40º C
- Excessive heat: any temperature above 40º C

Worksheet 6-3

1) 266º F
2) No, it is too warm.
3)
   a) -13º to 14º F
   b) You will need to calculate this from when it is assigned.
4) 148.9º C
5) 121.1º C
6)
   a) 2.3º C
   b) 3.2º C
   c) 3.9º C
   d) 1.4º C*
   e) 2.7º C
   f) 2.6º C
   g) 3.8º C
   h) 6.6º C
   i) 9.3º C*

   1/28 & 2/2 fell outside the safe range
7)
   a) 4.8º F

b) 8.8º F
c) 8.2º F
d) 15.1º F*
e) 13.1º F
f) 7.7º F
g) 3.7º F
h) -2.0º F
i) -5.8º F

1/28 fell outside the safe range

Chapter 7 - Units Of Measurement

Worksheet 7-1

1) 1,000 mL
2) 10 mL
3) 0.697 L
4) 2,600 mL
5) 250 cc
6) 2,500 g
7) 0.415 kg
8) 2.16 g
9) 8,900 mg
10) 0.44 lb
11) 4.2 qt
12) 80.5 km
13) 197 in
14) 7.62 cm
15) 1.8 kg
16) 1.76 oz
17) 150 cc
18) 1,920 mL or 1,892 mL
19) 70.4 oz or 70.5 oz
20) 83 oz
21) 0.568 kg
22) 1.6 m
23) 1,986 to 1,989 g
24) 100 kg
25) 0.137 mg

Worksheet 7-2

1) 93 kg
2) 20 lb
3) 70 in = 178 cm = 1.78 m
4) 72 oz = 2,045 g = 2 kg
5) 32 fl oz = 2 pt
6) 2 qt
7) 15 mL = 1 Tbl = 0.5 *f* ℨ
8) 4 cups = 32 fl oz = 960 mL
9) 3 qt = 6 pt = 2,880 mL = 2.88 L
10) 3.35 kg
11) 1.88 m
12) 360 cc
13) 1.3 gal
14) 78.2 kg
15) 1.7 mL
16) 9.15 g
17)
    a) 1.5 tsp
    b) yes
18)
    a) 1 tsp
    b) 75 mL

Worksheet 7-3

1) 1 ℨ = 8ʒ
2) 1ʒ = 60 gr
3) 1 *f* ℨ = 8 *f*ʒ
4) 1 fʒ = 60 gtt
5) 1 gtt = 1 ♏
6) 1 m = 100 cm
7) 1 m = 1000 mm
8) 1 kg = 1000 g
9) 1 g = 1000 mg
10) 1 mg = 1000 mcg
11) 1 mcg = 1000 ng
12) 1 L = 1000 mL
13) 1 L = 1000 cc
14) 1 cc = 1 mL
15) 1 ft = 12 in
16) 1 lb = 16 oz
17) 1 gal = 4 qt
18) 1 qt = 2 pt
19) 1 pt = 2 cups
20) 1 pt = 16 fl oz
21) 1 cup = 8 fl oz
22) 1 oz = 2 Tbsp
23) 1 Tbsp = 3 tsp
24) 1 gr = 60, 64.8, or 65 mg
25) 1 fl oz = 30 mL
26) 1 gtt = 0.06 mL
27) 1 in = 2.54 cm
28) 1 kg = 2.2 lb
29) 1 lb = 454 g
30) 1 oz = 28.4 g
31) 1 pt = 480 mL
32) 1 Tbsp = 3 tsp
33) 1 tsp = 5 mL
34) 3 tsp = 0.5 fl oz
35) 960 mL = 2 pt
36) 20 gtt = 1.2 mL
37) 6'1" = 185 cm
38) 165 lb = 75 kg
39) 8 lb 13 oz = 4 kg
40) 7.5 mL = 1.5 tsp
41) 4*f*ʒ = 14.4 mL to 20 mL

Worksheet 7-4

1) ʒ 0.27
2) ℨ 0.3125
3) 180, 194.4, or 195 mg
4) *f* ℨ i
5) *f*ʒ iv
6) *f* ℨ iii
7) 0.5 pt
8) 30 gtt

9) 10.8 to 15 mL
10) gr ii
11) 56.8 or 62.2 g
12) ƒ3 viii or ƒ3 vi
13) 120 mL
14) 170.4 g
15) gr iss
16) ƒ3 xvi or ƒ3 xii
17) ƒ℥ iss
18) ℥ ss
19) gr iii
20) ƒ℥ iv
21) 3 or 4 tsp
22) 25 tsp
23) 24 tsp
24) ƒ℥ viii
25) gr 0.23 or 0.25
26) 900 to 975 mg
27) gr .15 to .17
28) gr 38 to 42
29) 92.4 lb
30) 20 kg
31) 180 mL
32) 1.5 pt
33) 10 mL
34) 143 lb
35) 85 kg
36) 1.9 to 2.7 Tbsp
37) 960 mL
38) 180, 194.4, or 195 mg
39) 90, 97.2, or 95 mg
40) 22.5 mL

Worksheet 7-5

1) 100 cm
2) 10 mm
3) 1000 L
4) 1000 mm
5) 1 mL
6) 1000 g
7) ƒ3 viii
8) ♏ i
9) 3 tsp
10) 12 in
11) 3600 mm
12) 0.47 m
13) 94 mm
14) 0.482 L
15) 3900 mL
16) 3600 mg
17) 56.8 g
18) 227 g
19) 60 cc
20) 2 in
21) ʒ iss
22) 1 g
23) 6 Tbs
24) 25 mL
25) 1 Tbs
26) 54.5 kg
27) 42.3 kg
28) 1489 to 1491 g
29) 602 g
30) 1.8 m
31) 91.44 cm
32) gtt iii
33) 1.02 mL
34) a) Nitrostat 0.3 mg (nitroglycerin)
35) d) ferrous gluconate 325 mg tablets
36) 10 cups
37) 90 kg

Worksheet 7-6

1) Rx
Ipecacuanha	3.89 g
Codeine sulfate	0.648 mg
Powdered digitalis	3.89 g
Honey	qs 15.55 g (*This will require 5 mL of honey.*)

2) Rx
Camphor	2.59 g
Eualyptol	0.648 g
Menthol	1.94 g
Petrolatum	qs 62.2 g

3) Rx
ASA	648 mg
Caffeine	32.4 mg
Salicylamide	194.4 mg

4) Rx
Magnesium Hydroxide Powder	38.88 g
Sodium Hypochlorite Powder	3.89 g
Purified Water	qs 480 mL

There are 2,430 mg of magnesium hydroxide powder are in 2 Tbs of this mixture.

5) Rx
Morphine Powder	60 mg
Cocaine HCl	60 mg
Simple Syrup	15 mL

90% Ethanol qs 60 mL

There are 5 mg of morphine and 5 mg of cocaine HCl are in a teaspoonful of this mixture.

Worksheet 7-7

1) 1000 mg
2) 100 cm
3) 1000 ml
4) 580 cm
5) 0.92 m
6) 3700 mL
7) 0.247 L
8) 4600 mL
9) 1.4 g
10) 4200 g
11) 55 in
12) 142 g
13) 272.4 g
14) 4.8 L
15) 90 cc
16) 3 in
17) 5.2 qt
18) 3 kg
19) 15.8 oz
20) 4500 mL
21) 18 cc
22) gr
23) oz, ℥
24) fl oz, *f* ℥
25) pt
26) T, Tbs, Tbsp
27) teaspoon
28) drop
29) quart
30) dram
31) ounce
32) minim
33) fluid ounce
34) 30 mL
35) 0.06 mL
36) 28.4 or 31.1 g
37) 0.06 mL
38) 60, 64.8, or 65 mg
39) ♏ i
40) 5 mL
41) 3 tsp
42) ʒ iss
43) 30, 32.4, or 32.5 mg
44) ℥ ii
45) ʒ xxiv
46) *f*ʒ iiss
47) *f* ℥ viii
48) 10 mL
49) 180, 194.4, 195 mg
50) 2.4 mL
51) gr 154 or 167
52) 3888 mg

Chapter 8 - Working With Prescriptions

Worksheet 8-1

As the students are actually making up the prescription statements a good way to check this and create discussion is to have the students translate each others prescriptions.

Worksheet 8-2

1) This script for Okla Beaty is for one Flonase (fluticasone propionate) Nasal Spray. The instructions read, “Spray once in each nostril every morning.” The refills are written for as needed.
2) This script for Okla Beaty is for Nitrostat (nitroglycerin) 1/150 of a grain (0.4 mg) in a vial of 25 sublingual tablets with three refills The instructions read, “Place 1 tablet under the tongue every 5 minutes as needed for chest pain. May repeat 3 times.”
3) This script for Okla Beaty is for 30 Nitro-Dur (nitroglycerin) 0.4 mg patches with 3 refills. The instructions read, “Apply 1 patch at 8 A.M. and remove at 10 P.M. daily.” It is noteworthy that the patch is removed at night to provide a nitrate free interval.
4) This script for Okla Beaty is for a one month supply of Coumadin (warfarin) 5 mg tablets with no refills. The directions read, “Take ½ tablet on Sunday, Tuesday, Thursday, and Saturday, and take 1 tablet on Monday, Wednesday, and Friday.”
5) This prescription for Okla Beaty is for Spiriva (tiotropium) 30 capsules for inhalation with 3 refills. The instructions read, “Inhale 1 capsule by mouth daily.” It is noteworthy that this drug comes with a special inhaler that crushes the capsule so the patient can inhale it. The pharmacy may need to explain to the patient how to use the inhaler upon the initial fill.
6) This prescription for Patricia Pearson is for 90 Lipitor (atorvastatin) 10 mg tablets with no refills. The instructions read, “Take 1 tablet by mouth daily.”

7) This prescription for Patricia Pearson is for a 10 mL vial of Humulin R (regular insulin) with 2 refills. The directions read, “Inject 8 units subcutaneously before breakfast, 8 units before lunch, and 11 units before supper.
8) This prescription for Patricia Pearson is for a 10 mL vial of Novolin N (isophane – NPH – insulin) with 5 refills. The instructions read, “Inject 24 units subcutaneously every morning and 22 units subcutaneously every evening.”
9) This prescription for Patricia Pearson is for 90 capsules of Cardizem CD (extended release diltiazem) 240 mg with no refills. The instructions read, “Take 1 capsule by mouth daily.”
10) This prescription for Patrick Pearson is for a 1 month supply of Hytrin (terazosin) 1 mg capsules with 2 refills. The instructions read, “Take 1 capsule by mouth at bedtime for 3 days, then take 2 at bedtime for 5 days, then take 4 at bedtime thereafter.”
11) This prescription for Richard Stallman is for 30 tablets of Ambien (zolpidem tartrate) 5 mg tablets with 1 refill. The instructions read, “Take 1 tablet by mouth at bedtime as needed for sleep.” It is noteworthy that this is a prescription for a schedule 4 controlled substance and therefore Dr. Smith included his DEA number. If you check his DEA number you will find it does validate.
12) This prescription for Richard Stallman is for 30 capsules of Adderall XR (amphetamine and dextroamphetamine) 25 mg with no refills. The directions read, “Take 1 capsule by mouth daily.” It is noteworthy that this is a schedule 2 controlled substance and therefore no refills are allowed. Dr. Smiths DEA number does validate.
13) This prescription for Richard Stallman is for 100 mL of Augmentin (amoxicillin and clavulanic acid) 400 mg amoxicillin and 57 mg clavulanic acid per 5 mL with no refills. The directions read, “Take 1 teaspoonful by mouth every 12 hours for 10 days.”
14) This prescription for Richard Stallman is for Tobrex (tobramycin) ophthalmic drops with no refills. The instructions read, “ Place 2 drops into the left eye every 2 hours on day 1 and and place 2 drops every 4 hours on days 2 and 3. Call physician if eye infection persists.”
15) This prescription for Richard Stallman is for 180 tablets of Sinemet (carbidopa and levodopa) 25/100 with 5 refills. The instructions read, “Take 2 tablets by mouth three times a day.”
16) This prescription for Barbara Ericson is for 9 tablets of Imitrex (sumatriptan) 25 mg with 6 refills. “The instructions read, “Take 1 tablet every 6 hours as needed for migraine.”
17) This prescription for Kurt Thomas is for Trusopt (dorzolamide) 2% ophthalmic solution with 6 refills. The instructions are, “Place 1 drop in each eye three times a day.”
18) This Prescription for Tania Beltran is for 4 Fosamax (alendronate) 70 mg tablets with refills as needed. The directions read, “Take 1 tablet weekly.”

Worksheet 8-3

1) P
2) J
3) C
4) E
5) F
6) G
7) H
8) I
9) L
10) N
11) M
12) Q
13) K
14) D
15) B
16) A
17) O
18) U
19) R
20) S
21) T
22) A
23) L
24) B
25) C
26) D
27) E
28) H
29) I
30) G
31) J
32) K
33) F
34) T
35) S

36) X
37) C
38) D
39) E
40) F
41) H
42) I
43) K
44) J
45) G
46) N
47) O
48) P
49) Q
50) R
51) A
52) B
53) U
54) V
55) W
56) Y
57) L
58) M
59) E
60) N
61) B
62) Q
63) R
64) L
65) D
66) A
67) G
68) C
69) K
70) F
71) I
72) H
73) J
74) M
75) O
76) P
77) K
78) B
79) S
80) E
81) D
82) F
83) G
84) L
85) M
86) H
87) I
88) A
89) J
90) B
91) C
92) C
93) D
94) The abbreviation “U” can be misread as the number “0” or “4” or the cursive letters for “cc”.
95) Apothecary symbols should be avoided because they can easily be misread as number or othr symbols (i.e., the dram symbol looks like a 3 and the abbreviation for grain can be misread as gram).
96) A trailing zero should be avoided because if the decimal is missed it may result in a patient being overdosed.
97) Yes, you should place a leading zero before a number that is less than 1 ast it will help to emphasize the decimal.

Chapter 9 - Basic Medication Calculations

Worksheet 9-1
1) 4 capsules/dose
2) 8 tablets/dose
3) 6 tablets/dose
4) 4 capsules/dose
5) 0.5 tablets/dose
6) 4 capsules/dose
7) 4 tablets/dose
8) 5 tablets/dose
9) 2 tablets/dose
10) 2 tablets/dose
11) 6 tablets/day
12) 24 tablets/day
13) 12 tablets/day
14) 8 capsules/day
15) 16 capsules/day
16) 48 tablets/day
17) 12 tablets/day
18) 1 tablet/day
19) 2 tablets/day
20) 6 tablets/day
21) 14 tablets
22) 14 tablets
23) 21 tablets
24) 30 tablets
25) 14 tablets
26) 12 capsules
27) 63 tablets
28) 84 tablets
29) 540 capsules

Worksheet 9-2
1) 0.75 cc
2) 0.4 cc
3) 0.5 cc
4) 0.4 cc
5) 1.5 cc
6) 1.875 cc
7) 1.6 cc
8) 0.8 cc
9) 1.5 mL
10) 21 mL
11) 6.5 mL
12) 1.2 cc
13) 2.5 cc
14) 1.5 cc

15) 0.5 cc
16) 0.15 mL
17) 0.28 mL
18) 2.4 mL
19) 2 cc
20) 1.5 cc
21) 0.5 cc
22) 3.75 cc
23) 0.75 cc
24) 8 mL
25) 22.4 mL

Worksheet 9-3

1) 1.5 g
2) 10%
3) 50 cc
4) 1.5 g
5) 10%
6) 150 cc
7) 1.6 g
8) 0.5 g
9) 20%
10) 10%
11) 200 cc
12) 300 mL
13) 50 cc
14) 4.5 g
15) 62.5%

Worksheet 9-4

1) 192.3 mL
2) 10 mL
3) 8 mL
4) 5 mL
5) 10 mL
6) 2.25 g
7) 1 g
8) 4 mL
9) 250 mL
10) 2 tablespoons

Worksheet 9-5

1) 2 tablets/dose
2) 3 tablets/dose
3) 2 tablets/dose
4) 1.5 tablets/dose
5) 1 capsule/dose
6) 8 tablets/day
7) 1 tablet/day
8) 8 capsules/day
9) 15 tablets/day
10) 2 capsules/day
11) 0.6 cc
12) 0.4 cc
13) 1.5 cc
14) 0.8 cc
15) 2.5 cc
16) 0.8 g
17) 3%
18) 90 mL
19) 0.5 g
20) 10%

Chapter 10 - Basic Infusion Calculations

Worksheet 10-1

1) 8 cc of 50% stock solution; 32 cc of diluent
2) 400 cc of 25% stock solution; 600 cc of diluent
3) 200 mL of 50% stock solution; 300 ml of diluent
4) 25 mL of 40% stock solution; 475 mL of diluent
5) 80 cc of 20% stock solution; 120 cc of diluent
6) 5 cc of 40% stock solution; 15 cc of diluent
7) 102.7 mL of 14.6% sodium chloride; 397.3 mL sterile water for injection
8) 100 mL of 50% mannitol; 150 mL of diluent
9) 24 mL of 10% povidone-iodine; 216 mL of diluent
10) 42 mL of 5.95% sodium hypochlorite solution; 958 mL of diluent
11) 0.61%
12) 167 mL of 70% dextrose solution; 833 mL of 40% dextrose solution

Worksheet 10-2

1) 31 gtt/min
2) 42 gtt/min
3) 21 gtt/min
4) 26 gtt/min
5) 150 mL/hr
6) 64.75 mL/hr
7) 25 minutes
8) 0300 on Wednesday
9) 10 hours
10) approximately midnight (0000)
11) While technically either tubing set could be used, it would probably be easier to time 50 drops/minute with the microdrip tubing than 8 drops/minute with the other tubing.

Worksheet 10-3

1) 37.5 mL
2) 0.18 mL

3) 5.8 mL
4) 12.5 mL
5) 1.6 mL
6)
   a) 2850 mg
   b) 11,799 mg
7)
   a) 1400 mg
   b) 700 mg
8) 117,273 units

Worksheet 10-4

1) 470 mcg
2)
   a) 50 mg
   b) 12.5 mL
   c) 1 vial
3) 768 mL
4) 1 mL
5) 6.56 g

Worksheet 10-5

1)
   a) 12.7 mg
   b) 14.6 mg
   c) 2.3 mg
   d) 36.4 mg
2)
   a) 25 mg
   b) 20.8 mg
   c) 21.3 mg
   d) 36.4 mg
3)
   a) 125 mg
   b) 127.5 mg
   c) 146.7 mg
   d) 100 mg

Worksheet 10-6

1) 51.4 mL of 14.6% sodium chloride; 198.6 mL sterile water for injection
2) 12.5 mL of 2% stock solution
3) 1316 mL of 95% ethyl alcohol; 1184 mL of NS
4) 6 mL of 10% cyclosporine solution
5) 18 mL of 5% potassium permanganate stock solution; 162 mL of diluent
6) 56 gtt/min
7) 125 mL/hr
8) 31 gtt/min
9) 15 minutes
10) 21 gtt/min
11) 0.3 mg
12) 19.9 mg
13) 5.727 g
14) 45 mL
15) 9.4 mL
16) 117 mg
17) 2 mg
18) 1485 mg
19) 29.7 mL
20) 3 vials
21) 864 mL
22) 670 mg
23) Young's rule
24) 113.6 mg
25) 133.5 mg
26) 133.3 mg
27) 171.4 mg
28) 166.7 mg

Chapter 11 - Day's Supply

Worksheet 11-1

1) 30 days
2) 6 days
3) 10 days
4) 30 days
5) 50 days
6) 12 days
7) 90 days
8) 13 days
9) 30 days
10) 14 days
11) Many pharmacies would enter it as 5 days even though it works to $4.\overline{6}$ days.
12) 28 days
13) 30 days
14) 27 days
15) 15 days
16) 30 days
17) 5 days
18) 18 days
19) 25 days
20) 100 days
21) 60 days
22) 30 days
23) 6 days
24) 90 days
25) Even though there is enough gel for 7 days, the script is for 5 days.
26) 11 days
27) 14 days
28) 30 days
29) 30 days
30) 10 days
31) 30 days
32) 60 days
33) 16 days (many places automatically enter prn inhalers for 30 days)
34) 100 days
35) 84 days
36) 7 days
37) 90 days

38) 100 days
39) 30 days
40) 30 days
41) Even though there is enough cream for 9 days, the script is for 7 days.
42) 6 days
43) 12 days
44) 90 days
45) 12 days
46) 30 days
47) 10 days
48) 28 days
49) 5 days
50) 30 days

Worksheet 11-2

1) Dispense 1 inhaler at a time with 3 refills and no partials.
2) Dispense 5 boxes at a time with 5 refills and no partials.
3) Dispense 60 capsules at a time with 5 refills and no partials.
4) Dispense 30 tablets at a time with 11 refills and no partials.
5) Dispense 1 bottle at a time with 2 refills and no partials.
6) Dispense 4 tablets at a time with 2 refills and no partials.
7) Dispense 120 tablets at a time with 5 refills and no partials.
8) Dispense 1 vial at a time with 2 refills and no partials.
9) Dispense 30 tablets at a time with 9 refills and no partials.
10) Dispense 2 vials at a time with 2 refills and no partials.
11) Dispense 30 tablets at a time with 5 refills and a partial of 20 tablets.
12) Dispense 30 capsules at a time with 1 refill and no partials.
13) Dispense 30 tablets at a time with 5 refills and no partials.
14) Dispense 30 tablets at a time with 9 refills and no partials.
15) Dispense 60 capsules at a time with 2 refills and partial of 44 capsules.
16) Dispense 30 patches at a time with 2 refills and no partials.
17) Dispense 1 bottle at a time with 11 refills and no partials.
18) Dispense 1 bottle at a time with 2 refills and no partials.
19) Dispense 30 tablets at a time with 9 refills and no partials.
20) Dispense 90 tablets at a time with 5 refills and no partials.
21) Dispense 30 tablets at a time with 9 refills and no partials.
22) Dispense 30 tablets at a time with 11 refills and no partials.
23) Dispense 5 bottles at a time with 2 refills and a partial of 3 bottles.
24) Dispense 90 tablets at a time with 5 refills and no partials.
25) Dispense 60 tablets at a time with no refills and a partial of 40 tablets.

Chapter 12 - Compounding Math

Worksheet 12-1

1) Add 34 mL of water each time.
2) 4 mL clindamycin phosphate; 56 mL of Cetaphil Lotion
3) 40.8 mL diphenhydramine elixir; 12 mL lidocaine viscous; 48 mL nystatin suspension; 12.48 mL erythromycin ethyl succinate suspension; 6.72 mL cherry syrup
4) 8 capsules
5) 250 mL of each ingredient
6) 4.5 g ibuprofen powder
7) 5 capsules
8) 2.4 g testosterone; 5.2 g menthol; 112.4 g hydrophilic petrolatum
9) 3.4 g cholesterol; 3.4 g stearyl alcohol; 9.1 g white wax; 97.7 g white petrolatum *or* 3.6 g cholesterol; 3.6 g stearyl alcohol; 9.6 g white wax; 103.2 g white petrolatum

10) 20 metfromin tablets; 100 mL Ora-Plus; 100 mL Ora-Sweet

Worksheet 12-2

1) 4% diclofenac sodium
2) 2.4 g glycopyrrolate; 2.3 mL benzyl alcohol; qs 240 mL purified water
3) 120 tablets
4) 25 g potassium bromide
5) 1% hydrocortisone
6) 9.6 mL promethazine; 125 mL codeine; 105.4 mL cherry syrup
7) 60 tablets
8) 4 tablets
9) 6 capsules
10) 160 mL nystatin; 16 mL gentamicin; 8 mL colistimethate
11) 12 acetazolamide tablets; 60 mL Ora-Plus; 60 mL Ora-Sweet
12) 24 amlodipine tablets; 60 mL Ora-Plus; 60 mL Ora-Sweet
13) 12 tablets
14) 120 tablets
15) 15 tablets

Worksheet 12-3

1) Add 30 mL of water initially to wet powder, then add another 60 mL
2) 20 mL Donnatal elixir; 20 mL lidocaine viscous; 80 mL Mylanta
3) 5.68 g ichthammol; 5.68 g lanolin; 45.44 g white petrolatum *or* 6 g ichthammol; 6 g lanolin; 48 g white petrolatum
4) 38.4 g zinc oxide; 1.2 g menthol; 2.4 g phenol; 220.8 mL calcium hydroxide solution; qs ad 480 mL olive oil
5) 4.8 g diclofenac sodium; 55.2 g Pentravan cream
6) 30 tetracycline capsules; 150 mL Ora-Plus; 150 mL Ora-Sweet
7) 120 mg benzocaine; 840 mg acacia; 6 drops food coloring; 6 drops flavoring
8) 0.91 mL
9) 12.5 g erythromycin concentrate; 37.5 g ophthalmic base; 0.5% erythromycin
10) 12 clonazepam tablets; 60 mL Ora-Plus; 60 mL Ora-Sweet
11) 12 tablets
12) 30 bethanechol tablets; 30 mL Ora-Plus; 30 mL Ora-Sweet
13)
    a) 15 mL
    b) 240 mL
    c) 240 tablets
14) 40 diltiazem tablets; 150 mL Ora-Plus; 150 mL Ora-Sweet
15) 1.8 g gabapentin; 0.72 g xanthum gum; 1.35 g stevia; 1.35 g acesulfame; 0.18 g sodium saccharin; 0.36 mL magnasweet solution; 0.18 mL citric acid; 0.9 g sodium chloride; 1.8 mL bitter stopping agent flavor; 3.6 mL glycerin; 5.4 mL chicken flavor; qs 180 mL bacteriostatic water

Worksheet 12-4

1) 5.7%
2) crush and triturate 12 tablets then weigh out 3.71 grams

3) 2.4 g procaine; 25.24 g cocoa butter
4) size 3 capsule shell
5)
    a) 58.5%
    b) 5 mg morphine
    c) 5 mg cocaine
6) 30 levothyroxine tablets; 48 mL glycerin; qs 120 mL distilled water
7) 25 g bentonite; 475 mL purified water
8) crush and triturate 13 tablets then weigh out 7.94 grams
9)
    a) 2.4 g procaine
    b) 1.2 g hydrocortisone acetate
    c) 0.72 g witch hazel; 0.73 mL witch hazel
    d) 44.55 g cocoa butter
10) size 1 capsule shell

Worksheet 12-5

1) Add 30.5 mL of water each time.
2) Add 26 mL of water each time.
3) 30 mL lidocaine HCl; 90 mL Cetaphil Lotion
4) 6 g precipitated sulfur; 1.2 g salicylic acid; 52.8 g hydrophilic ointment
5) 45.4 g precipitated sulfur; 9.08 g salicylic acid; 399.52 g hydrophilic ointment
6) 160 mL of each ingredient
7)
    a) 368 mL of Mudd Mixture
    b) 320 mL nystatin; 32 mL gentamicin; 16 mL colistimethate
    c) 1 bottle of nystatin; 2 vials of gentamicin; 3 vials of colistimethate
8) 12 capsules
9)
    a) 0.568 g metronidazole; 0.568 g silver sulfadiazine; 2.84 g glycerin; qs 56.8 g hydrophylic ointment *or* 0.6 g metronidazole; 0.6 g silver sulfadiazine; 3 g glycerin; qs 60 g hydrophylic ointment
    b) 2.27 mL *or* 2.4 mL glycerin
10)
    a) 120 mg lidocaine HCl; 840 mg acacia; 6 drops food coloring; 6 drops flavoring
    b) 3 mL lidocaine HCl
11) 5 tablets
12) crush and triturate 4 tablets then weigh out 0.3 grams
13) 0.6 g aminophylline; 12.47 g cocoa butter
14) size 0 capsule shell
15)
    a) 24 mL prednisone elixir
    b) 156 mL cherry syrup

Chapter 13 - Calculations for Billing Compounds

Worksheet 13-1 1) $19.84 2) $33.59

3) $33.80
4) $78.92
5) $38.53
6) $43.04
7) $30.91
8) $46.45
9) $20.52
10) $34.18

Worksheet 13-2
1) $83.21
2) $38.69
3) $29.95
4) $21.19
5) $25.03
6) $56.51
7) $19.92
8) $38.12
9) $27.41
10) $13.98

Worksheet 13-3
1) $34.49
2) $32.76
3) $14.55
4) $17.50
5) $96.92
6) $71.95
7) $39.71
8) $34.35
9) $21.76
10) $194.50

Worksheet 13-4
1) $36.23
2) $17.18 or $17.29
3) $110.15
4) $23.79
5) $14.03
6) $23.27
7) $20.83
8) $21.83
9) $11.23
10) $20.93

Chapter 14 - Pharmacy Business Math

Worksheet 14-1

Across
4) inventory
6) schedule II medications
7) inventory value
10) prime vendor purchasing
14) Material Safety Data Sheet
16) perpetual inventory
17) closed formulary
18) capitation fee
20) third party reimbursement
21) reorder point
22) depreciation

Down
1) Occupational Safety and Health Administration
2) net profit
3) direct purchasing
5) usual and customary price
8) open formulary
9) dispensing fee
11) wholesaler purchasing
12) average wholesale price
13) capital expenditures
15) gross profit
16) purchasing
19) formulary

Worksheet 14-2
1) 5 boxes
2) 0 bottles
3) 1 bottle
4) 41 bottles
5) 0 bottles
6) 5 bottles
7) 0 bottle
8) 3 bottles
9) 6 bottles
10) 7 bottles
11) 4 bottles
12) 6 bottles
13) 0 bottles
14) 6 bottles
15) 0 bottles
16) 11.5 turnovers annually
17) 12 turnovers annually
18) 12.5 turnovers annually
19) 31.65 days' supply inventory; $11,945.15 below budget
20) 30.33 days' supply inventory; $2,061.74 over budget
21) 29.12 days' supply inventory; $13,838.86 over budget
22) Most pharmacies use wholesalers to simplify their ordering process.
23) Schedule III – V medications may be ordered with the rest of the pharmacy's drug ordered.
24) Schedule II medications are ordered via a DEA 222 order form using either a triplicate paper form, or through CSOS enabled software.
25) The pharmacist and the vendor should be notified immediately.
26) Pharmacists are required

to check in controlled substances, although a technician may do so under the direct supervision of a pharmacist.

Worksheet 14-3

1) Environmental considerations include proper temperature, ventilation, humidity, light and sanitation.
2) Freezer: -25° to -10° C (-13° to 14° F); Refrigerator: 2° to 8° C (36° to 46° F); Controlled room temperature: 15° to 30° C (59° to 86° F)
3) More than 200 medications are considered light sensitive.
4) It breaks down into cyanide.
5) The state board of pharmacy sets sanitation standards.
6) A legend drug is a medication that requires a prescription and only "authorized personnel" should have access to it.
7) Schedule III – V medications must either be stored in a secured vault or be distributed throughout the pharmacy stock.
8) Schedule II medications must also either be stored in a secured vault or be distributed throughout the pharmacy stock; although, some states specifically require Schedule II medications to be stored in a secured vault.
9) The safety requirements include everything from the proper inventory rotation to avoid dispensing expired products, to material safety data sheets to provide the necessary information for safe clean up after accidental spills, to appropriate handling of oncology materials, and proper storage of chemicals and flammable items.
10) 10/31/2020

Worksheet 14-4

1) $14.97
2) $37.41
3) $105.60
4) $269.70
5) $361.41
6) $82.50
7) $205.50
8) $460.50
9) $201.36
10) $381.90
11) $44.63
12) $207.73
13) $341.60
14) $284.38
15) $330.66
16) $236.60
17) $348.97
18) $362.83
19) $370.39
20) $826.88
21) $18.50
22) $25.25
23) $18.50
24) $153.50
25) $9.50
26) $14.22
27) $35.54
28) $100.32
29) $256.22
30) $343.34
31) $78.38
32) $195.23
33) $437.48
34) $191.29
35) $362.81
36) $40.17
37) $186.96
38) $307.44
39) $255.94
40) $297.59
41) $212.94
42) $314.07
43) $326.55
44) $333.35
45) $744.19
46) 20%
47) $16.99
48) $3\frac{1}{3}\%$
49) $5,225
50) $7.64
51) $16,200

Worksheet 14-5

1) $18.95 gross profit; $13.95net profit
2) $23.63 gross profit; $18.63 net profit
3) $6.45 gross profit; $1.45 net profit
4) $41.03 gross profit; $36.03 net profit
5) $8.83 gross profit; $3.83 net profit
6) $7.53 gross profit; $2.53 net profit
7) $24.01 gross profit; $19.01 net profit

8) $5.44 gross profit; $0.44 net profit
9) $80.33 gross profit; $75.33 net profit
10) $102.22 gross profit; $97.22 net profit
11) $103.43 gross profit; $98.43 net profit
12) $44.12 gross profit; $39.12 net profit
13) $29.15 gross profit; $24.15 net profit
14) $11.77 gross profit; $6.77 net profit
15) $106.06 gross profit; $101.06 net profit
16) $4.92 gross profit; $0.08 net loss
17) $9.43 gross profit; $4.43 net profit
18) $27.17 gross profit; $22.17 net profit
19) $4.26 gross profit; $0.74 net loss
20) $3.97 gross profit; $1.03 net loss
21) $18.95 gross profit; $13.95 net profit
22) $23.63 gross profit; $18.63 net profit
23) $6.45 gross profit; $2.95 net profit
24) $41.03 gross profit; $33.53 net profit
25) $8.83 gross profit; $5.33 net profit
26) $7.53 gross profit; $4.03 net profit
27) $24.01 gross profit; $19.01 net profit
28) $5.44 gross profit; $1.94 net profit
29) $80.33 gross profit; $72.83 net profit
30) $102.22 gross profit; $94.72 net profit
31) $103.43 gross profit; $95.93 net profit
32) $44.12 gross profit; $36.62 net profit
33) $29.15 gross profit; $24.15 net profit
34) $11.77 gross profit; $8.27 net profit
35) $106.06 gross profit; $98.56 net profit
36) $4.92 gross profit; $1.42 net profit
37) $9.43 gross profit; $5.93 net profit
38) $27.17 gross profit; $22.17 net profit
39) $4.26 gross profit; $0.76 net profit
40) $3.97 gross profit; $0.47 net profit

Worksheet 14-6

1) $30.47
2) $39.52
3) $7.50
4) $68.33
5) $7.50
6) $11.29
7) $26.24
8) $7.26
9) $144.30
10) $186.63
11) $188.80
12) $74.29
13) $11.91
14) $19.51
15) $194.05
16) $6.26
17) $14.95
18) $46.36
19) $5.06
20) $4.41
21) Fred's Pharmacy lost $121 last month on Senile Sally.
22)
    a) $2,750.00
    b) $847.37
    c) $1,902.63 profit

Worksheet 14-7

1)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	513.12	---	300.44	*813.56*
+ Bank Charges	120.00	90.00	---	*210.00*
+ House Charges	---	---	52.02	*52.02*
+ Paid Outs	---	5.12	---	*5.12*
Total	*633.12*	*95.12*	*352.46*	*1,080.70*
+ Closing Reading	760.02	145.12	402.50	*1,307.64*
- Opening Reading	50.00	50.00	50.00	*150.00*
= Difference	*710.02*	*95.12*	*352.50*	*1,157.64*
- Coupons	---	---	---	*0.00*
- Discounts	8.90	---	---	*8.90*
- Voids	10.00	---	---	*10.00*
- Refunds	---	---	---	*0.00*
- Over-Rings	56.65	---	---	*56.65*
Total	*634.47*	*95.12*	*352.50*	*1,082.09*
Over + or Short -	*-1.35*	*0.00*	*-0.04*	*-1.39*

2)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	3,897.65	12.00	1,533.12	*5,442.77*
+ Bank Charges	2,111.05	96.67	140.00	*2,347.72*
+ House Charges	25.00	---	---	*25.00*
+ Paid Outs	---	---	---	*0.00*
Total	*6,033.70*	*108.67*	*1,673.12*	*7,815.49*
+ Closing Reading	6,121.47	158.70	1,800.02	*8,080.19*
- Opening Reading	50.00	50.00	50.00	*150.00*
= Difference	*6,071.47*	*108.70*	*1,750.02*	*7,930.19*
- Coupons	14.25	---	1.10	*15.35*
- Discounts	23.47	---	8.90	*32.37*
- Voids	---	---	10.00	*10.00*
- Refunds	---	---	---	*0.00*
- Over-Rings	---	---	56.65	*56.65*
Total	*6,033.75*	*108.70*	*1,673.37*	*7,815.82*
Over + or Short -	*-0.05*	*-0.03*	*-0.25*	*-0.33*

3)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1,713.12	45.12	2,002.18	*3,760.42*
+ Bank Charges	240.00	20.00	350.44	*610.44*
+ House Charges	---	---	---	*0.00*
+ Paid Outs	---	---	10.00	*10.00*
Total	*1,953.12*	*65.12*	*2,362.62*	*4,380.86*
+ Closing Reading	2,172.67	115.12	2,429.66	*4,717.45*
- Opening Reading	50.00	50.00	50.00	*150.00*
= Difference	*2,122.67*	*65.12*	*2,379.66*	*4,567.45*
- Coupons	---	---	7.00	*7.00*
- Discounts	130.00	---	---	*130.00*
- Voids	27.50	---	---	*27.50*
- Refunds	12.00	---	---	*12.00*
- Over-Rings	---	---	10.00	*10.00*
Total	*1,953.17*	*65.12*	*2,362.66*	*4,380.95*
Over + or Short -	*-0.05*	*0.00*	*-0.04*	*-0.09*

4)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1234.56	789.01	234.56	*2,258.13*
+ Bank Charges	789.01	234.56	78.90	*1,102.47*
+ House Charges	---	---	25.00	*25.00*
+ Paid Outs	20.00	10.00	---	*30.00*
Total	*2,043.57*	*1,033.57*	*338.46*	*3,415.60*
+ Closing Reading	2,116.45	1,091.03	390.43	*3597.91*
- Opening Reading	50.00	50.00	50.00	*150.00*
= Difference	*2,066.45*	*1,041.03*	*340.43*	*3,447.91*
- Coupons	2.50	1.75	---	*4.25*
- Discounts	12.34	5.67	---	*18.01*
- Voids	---	---	---	*0.00*
- Refunds	8.00	---	---	*8.00*
- Over-Rings	---	---	---	*0.00*
Total	*2,043.61*	*1,033.61*	*340.43*	*3,417.65*
Over + or Short -	*-0.04*	*-0.04*	*-1.97*	*-2.05*

Worksheet 14-8

1) $4.13
2) $3.53
3) $1,026.00
4) $634.00

Worksheet 14-9

1) g
2) o
3) u
4) l
5) i
6) p
7) q
8) r
9) w
10) m
11) n
12) k
13) v
14) e
15) t
16) a
17) b
18) d
19) h
20) f
21) j
22) s
23) c
24) 1
25) 2
26) 0
27) 3
28) 0
29) 11.5 annual turnover rate
30) 12 annual turnover rate
31) 31.65 days; $10,750.65 under budget
32) 30.33 days; $1,855.55 over budget
33) DEA 222 form or CSOS
34) On the regular warehouse order form
35) Controlled substances are to be checked in by the pharmacist; a pharmacy technician may assist under the direct supervision of a pharmacist.
36) Under federal guidelines CIIs may be either locked in a secure vault or distributed throughout the inventory. CIII-V medications may also either be locked in a secure vault or distributed throughout the inventory.
37) Temperature, ventilation, humidity, light, safety, and sanitation.
38) Freezer -25º to -10º C (-13º to 14º F); refrigerated 2º to 8º C (36º to 46º F); controlled room temperature 15º to 30º C (59º to 86º F)
39) 02/28/2020 will expire first because 2020 is a leap year and therefore 02/2020 would not expire till the 29th of February that year.
40) 40% markup
41) $18.48
42) 3%
43) $6,175.00
44) $4.50
45) $17,820.00
46) $20.95 gross profit; $15.95 net profit
47) $25.63 gross profit; $20.63 net profit
48) $7.01 gross profit; $2.01 net profit
49) $44.03 gross profit; $39.03 net profit
50) $9.73 gross profit; $4.73 net profit
51) $8.13 gross profit; $3.13 net profit
52) $132.50
53) $39.52
54) $11.66
55) $68.12
56) $10.89
57) $21.25 profit
58) $1,138.25 annual depreciation

59)

	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1264.56	790.01	233.56	*2,288.13*
+ Bank Charges	789.03	235.56	78.90	*1,103.49*
+ House Charges	---	---	25.00	*25.00*
+ Paid Outs	20.00	10.00	---	*30.00*
Total	*2,073.59*	*1,035.57*	*337.46*	*3,446.62*
+ Closing Reading	2,151.47	1,095.03	389.47	*3,635.97*
- Opening Reading	50.00	50.00	50.00	*150.00*
= Difference	*2,101.47*	*1,045.03*	*339.47*	*3,485.97*
- Coupons	7.50	1.75	---	*9.25*
- Discounts	12.34	7.67	---	*20.01*
- Voids	---	---	---	*0.00*
- Refunds	8.00	---	---	*8.00*
- Over-Rings	---	---	---	*0.00*
Total	*2,073.63*	*1,035.61*	*339.47*	*3,448.71*
Over + or Short -	*-0.04*	*-0.04*	*-2.01*	*-2.09*

60) $3.67

Chapter 15 - Parenteral Dosage Calculations

Worksheet 15-1

1) 24.75 mL
2) 1 mL
3) 50 mg
4) 0.12 mL
5) 0.8 mL
6) 2.5 mL
7) 12.5 mL
8) 14 mL
9) 1.6 mL
10) 4.7 mL
11) 31 mL
12) 70 mg
13) 0.5 mL
14) 4 mL
15) 7.5 mL
16) 12 mL
17) 6 mL

Worksheet 15-2

1) Parenteral means a route of administration other than the GI tract. Technically this includes everything from topical medications and inhalation therapies to ear drops and injections, but today the term parenteral is intended to mean various kinds of injections and infusions and generally excludes all other routes of administration.
2) d c p e i l k b a o n j h g m f
3) inhalation and ophthalmic
4) sterile, free of visible particulate material, pyrogen-free, stable for intended use, a pH similar to that of human blood, isotonic
5) 2.5 mL
6) 0.15 mL
7)
   a) 12.5 mL
   b) 1.5 mL
   c) 21 mL
   d) 31.25 mL
   e) 0.3 mL
   f) 0.5 mL
   g) 4 mL
8) The syringe should be marked at 2 mL
9) 5 mL
10) 3 mL
11) 100 mg

12) 250,000 u/mL = 26 mL; 500,000 u/mL = 13 mL; 1,000,000 u/m/L = 6.5 mL 13) Both syringes should be marked at 16 mL.

Chapter 16 - Insulin

Worksheet 16-1

1) A; Mark the syringe at 12 units.
2) B; Mark the syringe at 15 units.
3) D; Mark the syringe at 35 units.
4) E; Mark the syringe at 72 units.
5) I; Mark the syringe at 55 units.
6) C; Mark the syringe at 22 units.
7) F; Mark the syringe at 80 units.
8) H; Mark the syringe at 45 units.
9) B; Mark the syringe at 25 units.
10) G; Mark the syringe at 0.34 cc.
11) D; Mark the syringe at 40 units.
12) F; Mark the syringe at 77 units.
13) E; Mark the syringe at 21 units.
14) A; Mark the syringe at 0.5 cc.
15) The clear rapid or short-acting insulin is actually drawn into the syringe prior to adding the cloudy isophane (NPH) insulin.
16) A & I; First, calculate the total dose. (15 units + 30 units = 45 units) Then draw up 30 units of air and inject it into the Humulin N vial, but do not draw up any solution yet. Withdraw the needle from the vial. Next, draw up 15 units of air, inject it into the Humulin R, and draw 15 units of regular insulin. Next, insert the needle into the Humulin N vial and carefully invert the vial without injecting any solution into the isophane (NPH) insulin. Lastly, slowly withdraw insulin from the Humulin N vial until the vial contains a total of 45 units of insulin.
17) B & I; First, calculate the total dose. (20 units + 45 units = 65 units) Then draw up 45 units of air and inject it into the Humulin N vial, but do not draw up any solution yet. Withdraw the needle from the vial. Next, draw up 20 units of air, inject it into the Humalog, and draw 20 units of lispro insulin. Next, insert the needle into the Humulin N vial and carefully invert the vial without injecting any solution into the isophane (NPH) insulin. Lastly, slowly withdraw insulin from the Humulin N vial until the vial contains a total of 65 units of insulin.

Chapter 17 - Mmol, mEq, mCi, & IU

Worksheet 17-1

1)
   a) 12 carbon, 22 hydrogen, 1 calcium, 14 oxygen
   b) 1 sodium, 2 hydrogen, 1 phosphorous, 4 oxygen
   c) 2 carbon, 3 hydrogen, 2 oxygen, 1 potassium
   d) 2 carbon, 6 hydrogen, 1 oxygen
2)
   a) 680 mg monobasic potassium phosphate (KH_2PO_4)
   b) 870 mg dibasic potassium phosphate (K_2HPO_4)
3)
   a) 2.326 mMol calcium gluconate
   b) 4.65 mEq calcium
4) 1490 mg potassium chloride
5)
   a) 32.99 mCi
   b) 0.55 mL
6) 194.2 Gy
7) 10 mcg cholecalciferol
8) 10,000 IU ascorbic acid

Chapter 18 - Powder Volume Calculations

Worksheet 18-1

1) 8 mL
2) 92 mL
3)
   a) 0.8 mL
   b) ampicillin 250 mg/mL;

sulbactam 125 mg/mL
4) 27.7 mL
5) 0.4 mL
6) 500,000 units/mL
7)
   a) 0.1 mL
   b) 2080 mg
8)
   a) 500,000 units/mL
   b) 400,000 units/mL
   c) 250,000 units/mL
   d) 200,000 units/mL
9)
   a) 0.7 mL
   b) 200 mg/mL
   c) 1.25 mL
10) 5 mg/mL

Worksheet 18-2

1) 5 mL
2) 45 mL
3)
   a) 28 mL
   b) piperacillin 200 mg/mL; tazobactam 25 mg/mL
   c) 20 mL
4) 0.8 mL
5) 95.2 mg/mL
6)
   a) 10 mL
   b) 8 g
   c) 1.14
7)
   a) 1.17 mL
   b) 1.79
8)
   a) 0.4 mL
   b) 30 mL
9)
   a) 500,000 units/mL
   b) 400,000 units/mL
   c) 250,000 units/mL
   d) 200,000 units/mL
10)
   a) 4 mL
   b) 200 mg/mL
   c) 10 mL
11)
   a) 160 mg/mL
   b) 10 mL
12)
   a) $\frac{5\,g}{100\,mL}$
   b) 3.5 mL of powder volume in the 2.5 g vial; 7 mL of powder volume in the 5 g vial; 14.5 mL of powder volume in the 10 g vial
   c) 2 of the 10 g vials, 1 of the 5 g vials, and 1 of the 2.5 g vials
   d) reconstitute the 2.5 g vial with 21.5 mL of diluent; reconstitute the 5 g vial with 43 mL of diluent; reconstitute the 10 g vial with 86 mL of diluent
   e) 275 mL

Worksheet 18-3

1)
   a) 5 mL
   b) 105 mL
   c) 95.24 mg/mL
   d) 15.75 mL
   e) This bag needs to be infused via a central line due to its 6 mg/mL concentration.
2) 0.26 mL
3) 1.3 mL
4) 91.4 mL
5)
   a) 7 mL
   b) 10 mL
6)
   a) 43 mL
   b) 5 mL
7)
   a) 0.2 mL
   b) 1800 mg
8)
   a) 250,000 units/mL
   b) 14 mL
9)
   a) 1.4 mL
   b) 200 mg/mL
   c) 7.5 mL
10)
   a) 28 mL
   b) piperacillin 400 mg/mL; tazobactam 50 mg/mL
   c) 7.5 mL

Chapter 19 - Percentage Strength

Worksheet 19-1

1) 2.4 g
2) 25 L
3) 2 mL
4) 5 mL
5)
   a) 58.5 g
   b) 234 mg/mL
6) 12.5 mL
7) 5 mL
8) 908 mg
9) 17.5 mL
10) 26 g
11) 3000 mg
12) 4 capsules
13) 2.25 mg
14) No, there is not enough drug in stock to fill this

order.
15) 30%
16)
a) 2.5 mL
b) 0.075 mL
17) 2.5%
18) 4% sulfamethoxazole; 0.8% trimethoprim
19) 0.025 mL
20) 15 mg

Worksheet 19-2
1) 130 mg%
2) 150 mg%
3) 60 tablets
4) 2 mL
5) 6 capsules
6) 336 mL
7) 950 mcg
8) 18%
9) 16 mL
10) 48 mg
11) 1.8 g testosterone; 3.9 g menthol; 84.3 g hydrophylic petrolatum
12) 21.24 mL
13) Yes, there is enough drug in stock to fill this order.
14) The child has not reached a toxic level.
15) 25 mL
16) 25 mL
17) 8% sulfamethoxazole; 1.6% trimethoprim
18) 25% ampicillin; 12.5% sulbactam
19) 7 units
20) 7.5%

Chapter 20 - Ratio Strength

Worksheet 20-1
1) 1 g
2) 20 mg
3) 2.5%
4)
a) 1:2000
b) 500 mcg/mL
5) Yes, the pharmacy will be able to prepare this order.
6) No, the technician will not be able to fill this order.
7) 50 mcg
8) 450 mcg
9) 0.5 mL
10)
a) 16 mL
b) 4 ampules
11) 1 mL
12) 0.975 mL
13) 2%
14) $1.\overline{6}\%$
15) 0.1%
16)
a) 0.01%
b) 1:10,000
17)
a) 5 g
b) 1:12.5
18) 1:10
19) 25 L
20) 1:200,000

Worksheet 20-2
1) 1:20,000
2) 2.5 mg
3) 0.4%
4)
a) 1:4000
b) 250 mcg/mL
5) Yes, the pharmacy will be able to prepare this order.
6) No, the pharmacy does not have enough drug in stock to prepare both bags.
7) 75 mcg
8) 300 mcg
9) 1 mL
10)
a) 16 mL
b) 1 vial
c) 1:15,625
11) 0.75 mL
12) 1.875 mL
13) 2.5%
14) 1.25%
15) 1:500
16)
a) 0.001
b) 1:100,000
17)
a) 5 g
b) 1:20
18) 1:10
19) 12.5 L
20) 1:500,000
21)
a) 2 vials
b) 248 mL
c) 80 mcg/mL

Chapter - 21 PPM, and Reducing & Enlarging Formulas

Worksheet 21-1
1) 6 g precipitated sulfur; 1.2 g salicylic acid; 52.8 g hydrophilic ointment
2) 45.4 g precipitated sulfur; 9.08 g salicylic acid;

399.52 g hydrophilic ointment
3) 15 g zinc oxide; 15 g starch; 30 g white petrolatum
4) 47.37 g talc; 3.16 g benzoic acid; 9.47 g bentonite
5) 0.001%
6) 750 g aspirin; 375 g phenacetin; 125 g caffeine
7) 13.2 kg yellow ointment
8) 52.5 g parachlorophenol; 97.5 g camphor
9) 5000 g lactose; 7500 g sucrose; 12,500 g starch, direct compressing formula; 25 g magnesium sulfate; yield 50,000 tablets
10) 38.4 g calamine; 38.4 g zinc oxide; 9.6 g glycerin; 120 mL bentonite magma; qs 480 mL calcium hydroxide
11) 3.028 mL trihalomethanes
12) 10 mcg proinsulin

Chapter 22 - Dosage Calculations Based on Body Weight

Worksheet 22-1

1) 750 mg
2) 12.5 mL
3) 18.75 mL
4) 9 tablets/day
5) 20 mg
6) 425 mg/day *or* 426 mg/day
7) The syringe should be marked for 1.95 mL
8)
   a) 250 mg/dose
   b) 1000 mg/day
   c) 1 mL/dose
9)
   a) 209 mg
   b) 157 mg
   c) 5.2 mL for the loading dose; 3.9 mL for each maintenance dose
10) 125 mL
11) 4.3 mL
12)
   a) Yes
   b) 1 mL
   c) The syringe should be marked for 1 mL.
13)
   a) Yes, this is within the dosage range for this patient.
   b) 0.94 mL
14) 11 mL
15)
   a) 7.5 mL/dose
   b) 225 mL
16)
   a) 2850 mg
   b) 22.8 mL
   c) 11,799 mg
   d) 94.4 mL methylprednisolone; 905.6 mL NS

Worksheet 22-2

1) 80 mg
2)
   a) 10,000 units
   b) 12,545 units
   c) 15,000 units
   d) 17,545 units
   e) 18,000 units
3) 15 hours 26 minutes
4) 3 hours 58 minutes
5)
   a) 1718 mg/day
   b) 286 mg/dose
   c) 2.86 mL
6)
   a) 6000 mg/day
   b) 1500 mg/dose
   c) 4 mL
7)
   a) 800 mg
   b) 800 mg
   c) 800 mg
   d) 800 mg
   e) 0 mg
   f) 409 mg
   g) 0 mg
   h) 409 mg
   i) 0 mg
   j) 409 mg
   k) 0 mg
   l) 409 mg
8)
   a) 16 mL
   b) 16 mL
   c) 16 mL
   d) 16 mL
   e) 0 mL
   f) 8.2 mL
   g) 0 mL
   h) 8.2 mL
   i) 0 mL
   j) 8.2 mL
   k) 0 mL
   l) 8.2 mL
9) 568 mg
10) 150 mg
11)
   a) 3 mg
   b) Dispense three of the 1 mg capsules every 12 hours.
12)
   a) 350 mg
   b) 70 mL
   c) 280 mL
13) 98,182 units
14) The bag needs 6.75 mL so