Homework 10-Jan-07 due 17-Jan-07 Chapter 2 & 3

Chapter 2, p45++

In-Class Discussion: 3, 13	**2 questions**	**4 points each**
Q&P: 9, 20, 23, 43, 47, 64, 79, 80, 93, 109, 133, 156	**12 questions**	**4 points each**

Chapter 3, p75++

Q&P: 12, 18, 28, 44, 50, 54, 80, 92	**8 questions**	**2 points each**

Note: This assignment will count as ONE CPS Test and ONE Homework Assignment!

Lab Notebook, Experiment 1, p 11-12

Common Mistakes:

1. Did not do the problems In-Class Discussion: 3 & 13
2. Did not show ALL MATH and ALL UNITS in determining an answer
3. Did not show the correct number of significant digits
4. As a comment – numbers in the thousands and millions, put in the comma: 1,234 1,23
5. As a comment – for readability with a decmil with a lot of zero's, put in a space every 3 zer

******* You MUST SHOW all Math with Units to get credit on a test!***

Chap 2 p 45++

b. The mass of the marble is greater than that of the water
c. The marble weighs more than an equivalent volume of the water

3 65 miles / Hour x 5280 ft / mile x 1 hr / 60 min x 1 min / 60 sec = 95.33 ft = 95 ft

Problems

a.	6.442 x 10^3	6,442.	g.	9.721 x 10^-4	0.0009721
b.	5.991 x 10^-5	0.00005991	h.	2.015 x 10^6	2,015,000
c.	2.001 x 10^4	20,010	i.	5.583 x 10^-2	0.05583
d.	1.997 x 10^-3	0.001997	j.	4.227 x 10^-6	0.000 004227
e.	7.871 x 10^-1	0.7871	k.	9.734 x 10^3	9734.
f.	1.001 x 10^1	10.01	l	1.000 x 10^1	10.00

0 0.5 kilogram x 1000 g / 1 kilogram x 1 pound / 454 g = 1.101 = 1 pound

3 50 miles x 5280 ft / 1 mile x 12 inches / 1 ft x 2.54 cm / 1 inch x 1 Meter / 100 cm x 1 Kilometer / 1000 Meters = 80.46 KM = 80

100 kilometres x 1,000 Meters / 1 Km x 100 CM / 1 Meter x 1 inch / 2.54 CM x 1 ft / 12 inches x 1 mile / 5280 ft = 62.1 mil

3 102.4005 to five digits 102.40
15.9995 to three digits 16.0
1.6385 to four digits 1.639
7.355 to three digits 7.36

7 0.005215 * 0.08212 * 273.2 / 4.1 - report to 2 digits – 4.1 has only 2 significant digits

4 a. 2.23 m to yards

2.23 m X 100 cm / 1 m X 1 in / 2.54 cm X 1 yard / 36 in = 2.4381 yards = 2.44 yards

b. 46.2 yd to meters

46.2 yd X 36 in / 1 yd X 2.54 cm / 1 in X 1 m / 100 cm = 42.245 m = 42.2 m

c. 292 cm to inches

292 cm X 1 in / 2.54 cm = 114.96 in = 115 in

d. 881.2 in to centimeters

881.2 in X 2.540 cm / 1 in = 2238.248 cm = 2238 cm [Note I put in an extra zero on the 2.54 cm/in to kee

e. 1043 km to miles

1043 km X 1000 m / 1 km X 100 cm / 1 m X 1 in / 2.54 cm X 1 ft / 12 in X 1 mi / 5280 ft = 648.090 mi = 648.1 mi

f. 445.5 mi to kilometers

445.5 mi X 5280 ft / 1 mi X 12 in / 1 ft X 2.54 cm / 1 in X 1 m / 100 cm X 1 km / 1000 m = 716.962 = 717.0

g. 36.2 m to kilometers

36.2 m X 1 km / 1000 m = 0.0362 km

h. 0.501 km to centimeters

0.501 km X 1000 m / 1 km x 100 cm / 1 m = 50,100 = 5.01 x 10^4 cm

9 (45 F – 32) x 5/9 = 7.222 C = 7.2 C or Tc = [F – 32] / 1.80

(115 F – 32) x 5/9 = 46.111 C = 46.1 C

(-10 F – 32) x 5/9 = =23.3333 C = -23 C

(10,000 F – 32) x 5/9 = 5537.777 = 5,537.7 C [assumed all zero's are significant]

0 (78.1 C * 9/5) + 32 = 172.58 F = 173 F

(40. C * 9/5) + 32 = 104 C = 100 C

(-273 C * 9/5) + 32 = -459.4 F = -459 F

(32 C * 9/5) + 32 = 89.6 F = 90 F

3 CH3CH2OH [Ethanol] den of 0.785 g/ml 82.5 g X 1 ml / 0.785 g = 105.095 ml = 105 ml

09 45 mi / gal X 5280 ft / Mi X 12 in / ft X 2.54 cm / in X 1 m / 100 cm X 1 km / 1000 m X 1 gal / 4 qts 1.057 qts / 1 l = 19.1

38 mi / gal X 5280 ft / Mi X 12 in / ft X 2.54 cm / in X 1 m / 100 cm X 1 km / 1000 m X 1 gal / 4 qts 1.057 qts / 1 l = 16.1

33 Is 100 km/h > 65 mph 100 km / Hr X 1000 m / 1 km X 100 cm / 1 m X 1 in / 2.54 cm X 1 ft / 12 in X 1 mi / 5280 ft = 62.1

56 4.2 Ft^3, 155 lb Den = mass / vol 155 lb / 4.2 ft^3 X 453.6 g / 1 lb x 1 ft^3 / 12 in x 12 in x 12 in X 1 in^3 / 2.54 cm X 2.54 cm X 2.54 cm =

Chapter 3, p75++

2 Chemical Change Cu(s) + 4HNO3(aq) ——> Cu(NO3)2(aq) + 2NO2(g) + 2H2O(l)
http://www.angelo.edu/faculty/kboudrea/demos/copper_HNO3/Cu_HNO3.htm

8	A	Shirt scorches	Chemical	
	B	Tires flat in cold	Physical	
	C	Silver gets black	Chemical	
	D	Wine to vinegar	Chemical	
	E	Cleaner grease to soap	Chemical	
	F	Battery leaks	Chemical	
	G	Acids produce bacteria	Chemical	
	H	sugar will char	Chemical	
	I	Hydrogen Peroxide fizzes	Chemical	H2O2 -> H2O + O2
	J	Dry ice evaporates	Physical	
	K	Bleach changes color	Chemical	

8 3 examples of heterogeneous mixtues
Solutions vs Mixtures

4 526 J to warm 7.40 g water by 17 deg C How much heat to warm 7.40 g by 55 deg C

17 deg C = 55 deg C

526 J X X = 1701 J

0 76.52 cal -> Kjoules 76.52 cal x 1 kcal / 1000 cal x 4.184 kJ / 1 kcal = 0.3202 kJ

7.824 Kj -> Kcal 7.824 Kj x 1 kcal / 4.184 kJ = 1.870 kcal

489.4 j -> cal 489.4 j x 1 cal / 4.184 J = 117.0 cal

1.598 x 10^4 j -> kcal 1.598 x 10^4 x 1 kJ / 1000 J X 1 kcal / 4.184 kJ = 3.819 kcal

4 Iron 562 J for temp 25.0 C -> 50.0 C. What is it's mass?
0.45 j/g C 562 J = (x mass of iron) x 0.45 J/g C X 25.0 C x Mass of iron = 50. g

0 Chemical Cu"++ + 2 NaOH -> Cu(OH)2 ppt + 2 Na+

2 75 g of water from 25 C to 39 C. Water 4.184 J / g deg C
Temp increase = 39 C – 25 C = 14 C 75 g X 4.184 J/g C X 14 C = 4400 J [2 sig