

Answers to Problems

2-1 (a) (i), (ii) (b) (iii),(iv) (c) (v) (d) (ii), (iii) (e) (vi) (f) (i) - (vi)

2-2 1 ounce=>g 28.35 (a) 4.233E+03 (b) ppm_m

2-3 1 lb=>g 453.6 (a) 4.07E-01 (b) 2.1E-01
1gallon=>L 3.785

2-4 10mg-NO3/L (a) ppm 10 (b) mol/L 1.61E-04 (C)mgNO3- 2.26E+00 (d) ppb 10000
N=14.00674 O=15.9994 H=1.008 C=12.01 Cl=35.45

2-5 2.8 ppm_m

2-6 YES 0.9

2-7 mg-NH3/L 1.09E+01 mg-NO2/L 1.64E+00

2-8 (a) mg-N/L 1.191E+01 (b) ppm-N 1.191E+01 (C) %-N 1.19E-03

2-9 mg-N(NO3)/L mg-NO3/L 2-10 (a) ug/L 0.002 (b) ug/g 0.002
0.01 4.4E-02 ppb 0.002 ppm 0.002
1.3 5.76E+00 ppt 2 ppb 2
20 8.86E+01 umol/L 3.7E-06

2-11 mg/m³ mg/L ug/L ppm ppb
5 0.005 5 0.005 5

2-12 substance MW mg/L-LC₅₀ M-LC₅₀
caffeine 194.2 151 7.78E-04
TCE 131.378 44.1 3.36E-04

2-14 Substance AW ug/L nmol/L
Pb 207 9.5 4.59E+01
Cu 63.5 2 3.15E+01
Mn 55 8.6 1.56E+02

2-13 CH2ClCOOH MW nmol/L ug/L
92.478 7.8 7.21E-01

2-15 mg/L ppm mol/L
0.5 0.5 1.6E-05
8 8 2.5E-04

2-16 MW= 409.748 p=(n/V)RT
0.6 Pressure= 3.3E-12 Pa

2-17 103 mgCO 8.847E-05 8.85E+01 ppm
 $V=(n/P)RT$ 8.85E-03 %

2-18 35mgCO/m³ 3.006E-05 3.01E+01 ppm
 CO concs are higher than standard.

2-19 0.7 ppm 6.9E-01 g

2-20 (a) ug/m³ 2.412E+02 (b) mol 0.125

2-21 (a) O₂-vol% 1.49E+01 (b) L 1.03E+01

2-22 15 ppm

2-23 2 ppm	5.2E+03 ug/m ³
0.01 ppm	2.6E+01

2-24 65 mgCO/ 5.68E+01 ppm YES

2-25 60 ug/kg 60 ppb
 100ug/kg 100 ppb YES

2-26 5 ug/kg 0.005 ppm

2-27 5 mg/kg 5 ppm

2-28	cations	mg/L	MW	mM	Anions	mg/L	mM	MW	
	Ca	35.8	40.08	8.93E-01	HCO ₃	131	2.15E+00	61	
	Mg	9.9	24.31	4.07E-01	SO ₄	26.4	2.75E-01	96.07	
	Na	4.6	22.99	2.00E-01	Cl	7.1	2.00E-01	35.45	
	K	3.9	39.1	9.97E-02	NO ₃			62	
	Total			2.90E+00	Total		2.90E+00		Correct
	Hardness	1.30E+02							

2-29 (a) total hardn 1.65E+02
 (b) cation [mM 3.35E+00 anion[mM] 3.48E+00 YES

2-30 (a)TSS=TS-TD 170 mg/L (b)VSS=TSS 140 mg/L

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