Worksheet #3 – CHEM 121 Fall 2015

Directions: Bring blank to class – the first 40 minutes you and your partner will work in this without your notes. The next 10 minutes, you may use your notes. The remaining 25 minutes students will be randomly chosen to put their work on the board.

1. What is sin α (use the triangle at right)?



2. What is the $\cos \alpha$ (use the triangle above right)?

3. What is the sin β (use the triangle above right)?

4. What is the $\cos \beta$ (use the triangle above right)?

5. If the length of side B is 3", and α = 40°, what is the length of side A (use the triangle above right)?

- 6. What is the anti-log of 120.303?
- 7. What is the anti-log of 101.456?
- 8. What is the anti-log of 199.852?

9. Briefly explain how you solved questions 6-8 with a non-programmable calculator.

10. What is the anti-In of the values in questions 6-8?

11. To the alchemists, Au was the material representation of purity. It is a very soft metal that can be hammered into extremely thin sheets. If a 2 gram piece of gold ($\rho = 19.32 \text{ g/cc}$) is hammered into a sheet whose area is 20 sq ft, what is the average thickness of the sheet **in mm**?

12. Label the following angle types:



13. What is the length of side C of the triangle for questions 1-5, using the Pythagorean Theorem?

14. Which rules of logarithms, below right, are incorrect and why?

$$\log (x y) = \log x - \log y$$
$$\log \frac{x}{y} = \log x + \log y$$
$$\log x^{y} = y \log x$$
$$\log \sqrt[y]{x} = \frac{\log x}{y}$$

15. What is the surface area of the cone in the image?





17. The surface area of the sphere in the image is?



18. Using the	Height	Body surface area	Weight
nomogram	cm 200 - 79 in	E-2.80 m²	kg 150-€-330 lb
	195-77	-2.70	145-1-320
at right,	-76	-3.60	140
what is	190-75		130
What is	185-73	-2.50	125
your BSA?	-72	-2.40	120
Vour	18071	E-1 M	115-250
Tour	175-69		110-1-200
partner's?	-68	-2.20	105 200
	170-67	2.10	in Fin
	-66	E	100-1-20
	-64	2.00	95-2-210
	160-63	E-1.95	90 ⁻²⁰⁰
	-62	E1.80	85-190
	155	E-1.80	180
	-60	-1.75	80 <u>+</u>
	150-59	E-1.70	75-170
	-58	E-1.65	E-160
	14557	-1.60	70-1
	-56	E-1.55	±-150
	140	E-1.50	65-1-140
	-54	E-1.45	ł
	135 -53	E140	60-130
	-52		\$
	13051	E-1.35	55-1-120
	<u>}-so</u>	-1.30	1
	125-49	-1.25	50-110
	48	E-1.20	105
	120-47	E	
	ł.,	-1.15	T.
		-1.10	Ŧ"
	-45	È	40-1-90
	44	-1.05	-85
	110	-1.00	₹
	1.0	Ę	-60
	105	-0.95	75
	41		1
	-40	-0.90	3=70
	cm 100-	L _{0.86 m'}	kg 30-1-66 1b
	- 39 in		

Nomogram for determination of body surface area from height and weight. (From Diem, K., and Lentner, C. [eds.]: Scientific Tables, 7th ed. Basle, Switzerland, CIBA-GEIGY, 1970, p. 537, with permission.)

19. One US quart is how many mL?

20. One US mile is how many nanometers?