Appendix B

Knowledge Survey Spring 06 – Due _____

Directions: **This is a knowledge survey, not a test**. The purpose of this survey is to serve as a study guide and to help you and the instructor evaluate the change produced in your knowledge by this course. In this knowledge survey, you won't actually try to answer any of the questions provided. Instead you will rate (on a three-point scale) your confidence to answer the items based on your present knowledge. **On this survey, Circle a "3" response if you feel confident that you can now answer the question completely and correctly (as on a graded test). Circle a "2" response if you can now complete at least 50% of the solution, or if you know precisely what information you need and where to get it (in less than 30 minutes) to provide a complete and correct solution. Circle a "1" response if you are not confident that you could provide a complete and correct solution**.

What constitutes a successful response to this survey is an accurate self-assessment, one that neither overestimates, nor underestimates the knowledge that you currently have. Do your best to provide a very honest assessment of your present knowledge. If you circle a "3" or "2" that states you have significant background to answer a question, you should be confident that if your professor asks you to demonstrate that ability by actually answering the so-designated questions, that you could actually respond for graded test purposes (responding 3 would mean ready to answer on a closed book test, 2 would mean ready to answer on an open book/notes test).

Question	Rating		
1. Determine the number of square inches in 12 square yards.	1	2	3
2. The speed limit posted as you leave Tecate, Mexico is 50 km/hr. Find the corresponding limit in miles per hour.	1	2	3
3. Describe the recommended four steps in the problem solving process.	1	2	3
4. A department store advertised an 80% off sale on fall apparel. The ad also contained a coupon for an extra 15% off to be applied to the reduced price of any sale or clearance purchase. Find the final price of a $150 suit (ignore tax).	1	2	3
5. Is it possible to go on a diet and decrease your calorie intake by 125%? Explain why or why not.	1	2	3
6. Describe any likely sources of random or systematic errors in measuring the numbers of popped kernels in "large" boxes of popcorn at a movie theater.	1	2	3
7. Show that you understand the difference between absolute error and relative error by giving two examples: one where the absolute error is large but the relative error small, and the other where the absolute error is small but the relative error is large.	1	2	3
8. Use the appropriate rounding rules to answer the following with the correct precision or number of significant digits: Find the total weight of a 50 kg bag of sand and a 1.25 kg box of nails.	1	2	3
9. On what basis, if any, would you question the following statistic: The population of the United States in 1860 was 31,443,321.	1	2	3
10. Describe Simpson's Paradox and give an example where it might occur in your future.	1	2	3
11. Approximately 0.2 percent of college students in the US are HIV-positive. If 20,000 Michigan State students are tested for HIV with a test that is 90% accurate (meaning it will return a positive result 90% of the time when given to a person who is infected with HIV and return a negative result 90% of the time when given to a person who is not infected), answer the following: Of those who test positive, what percent will actually be HIV-positive?	1	2	3
12. Suppose you win a $100,000 raffle. You wisely invest half of it in a savings account that pays interest with an APR of 5% that will be compounded quarterly. Find how	1	2	3

	much you will have in the account in 10 years.			
13.	What does the Annual Percentage Yield (APY) of an investment measure?	1	2	3
14.	Suppose you want to start a savings program for a down payment on a house. In 10 years you would like to have $125,000. Your financial advisor can find an account with an APR of 7% that will be compounded monthly. Find how much you will have to deposit into the account per month in order to have the $125,000 in 10 years.	1	2	3
15.	You wish to buy a new car and can afford to pay at most $400 per month in car payments. If you can obtain a 4-year loan with an APR of 3.2% compounded monthly, what is the largest loan principle you can afford to take out? Round your answer to the nearest dollar.	1	2	3
16.	You just received a $1000 credit card bill, and you card has an annual interest rate of 18%. Your credit card company uses the unpaid balance method (i.e. charges interest on the unpaid balance) in order to calculate the interest you owe. Suppose you make a $200 payment now, and make no new charges to your credit card in the next month. Find the balance on your next credit card bill a month from now.	1	2	3
17.	The United States has a progressive income tax. Explain what that means.	1	2	3
18.	Which is more valuable to a taxpayer, a tax deduction or a tax credit? Explain why.	1	2	3
19.	Describe at least three misleading perceptual distortions that arise in graphics.	1	2	3
20.	A company has 10 employees, making the following annual salaries: 3 make $20,000, 2 make $30,000, 4 make $50,000 and 1 makes $1,200,000 per year. Explain whether the median or the mean would be a better representation of the "average" salary at the company.	1	2	3
21.	Two grocery stores have the same mean time waiting in line, but different standard deviations. In which store would you expect the customer to complain more about the waiting time? Explain.	1	2	3
22.	What are quartiles of a distribution and how do we find them?	1	2	3
23.	Give a five-number summary and depict it with a boxplot for the following set of data: {2, 5, 3, 4, 4, 6, 7, 5, 2, 10, 8, 4, 15}.	1	2	3
24.	The body weights for 6-month old baby boys are normally distributed with a mean of 17.25 pounds and standard deviation of 2 pounds. Your 6-month old son Jeremiah weighs 21.25 pounds. Jeremiah weighs more than what percentage of other 6-month old baby boys?	1	2	3
25.	In order to determine how many students at LMU have ever used a fake ID to buy liquor, we survey the students in this class and find 40% of them have done so. We conclude 40% of LMU students have used a fake ID to buy liquor. Discuss possible sources of bias in the sample and comment if the conclusion is justified.	1	2	3
26.	A survey of 1,001 randomly selected Americans, age 18 and older, was conducted April 27-30, 2000, by Jobs for the Future, a Boston-based Research firm. They found that 94% of Americans agree that "people who work full-time should be able to earn enough to keep their families out of poverty." Explain what is meant by saying the margin of error for this poll at the 95% confidence interval is 3%	1	2	3
27.	Formulate the null and alternative hypotheses for a hypothesis test of the following case: A consumer group claims that the amount of preservative added to Krunch-Chip brand of potato chips exceeds the 0.015 mg amount listed on the packages.	1	2	3
28.	Describe the two possible outcomes for the hypothesis test in #27.	1	2	3
29.	A random sample of Krunch-Chip potato chip bags is found to have a mean of 0.017 mg of preservative per bag. Suppose 0.03 is the probability of obtaining this sample	1	2	3

mean when the actual mean is 0.015 mg preservative per bag as the company claims in #27. Does this sample provide evidence for rejecting the null hypothesis? Explain.	