1. Average (mean) is the most widely used measure of central tendency, but is not always the most appropriate.
2. Please provide unique examples of where you would use median, mode, mean, and WHY.

b. Please provide an unique example of where mean, median, and mode are appropriate measures in your professional lives

1. In this course, what is the chance that in our roster there are at least 2 people with the same birthday (same day, not same year)? Let's find out. Please respond with your birthday and a detailed analytical estimate of the likelihood that this will happen.

Use day 5.

b. A street performer approaches you to make a bet. He shows you three cards: one that is blue on both sides, one that is orange on both sides, and one that is blue on one side and orange on the other. He puts the cards in the bag, pulls out one, and puts it on the table. Both of you can see that the card is blue on top, but haven't seen the other side. The street performer bets you $50 that the other side of the card is also blue. Should you take the bet and WHY?

c. Now that the previous two questions have gotten you thinking about probability, how does probability apply to your profession?

1. A delivery truck manager takes a sample of 25 delivery trucks and calculates the sample mean and sample standard deviation for the cost of operation. A 95% confidence interval for the population mean cost is constructed and found to be $253 to $320. He reasons that this interval contains the mean operating cost for the entire fleet of delivery trucks since the sample mean is contained in this interval.
2. Do you agree with his reasoning?
3. How would you interpret this confidence interval?
4. Is this an appropriate use of a confidence interval?
5. Concerning your answers to parts a through c, what assumptions did you make (if any)? Does the Central Limit Theorem apply? Why or why not?
6. How does this apply or could apply to your profession?
7. In your environment (business or personal), please describe a hypothesis test related to a decision. What would be your data? What would be your null hypothesis? What would be your alternate hypothesis? What would be your Type 1 and Type 2 errors relative to your decision? Suppose you have a p-value of 0.01, what does this mean relative to your problem and decision? Suppose the p-value is 0.20, what does this mean relative to your problem and decision?
8. An auto manufacturer advertises that “90% of the cars we have ever made are still on the road.”
9. Assuming this is literally true, how can it be explained?
10. What facts / statistics would you need to know to expose this misleading claim?
11. How does this apply or could apply to your workplace or home?
12. How does this apply or could apply to your daily use, business use, or personal use?
13. Reformulate your hypothesis test from your question 4 to incorporate a 2-sample hypothesis test, What would be your data? What is your null hypothesis? What is your alternate hypothesis? What would be your Type 1 and Type 2 errors relative to your decision? Suppose you have a p-value of 0.01, what does this mean relative to your problem and decision? Suppose the p-value is 0.20, what does this mean relative to your problem and decision?

b. If you reformulated your design for 3 or more samples, what would be the implications of interaction? When would you use Tukey-Kramer test?

1. Suppose your instructor randomly surveyed his or her performance (i.e., students "graded" the teacher) this semester). The frequency of ratings are as follows:

•A: 10

•B: 6

•C: 6

•D: 3

•F: 2

Please answer the following:

a. Did your instructor, over many years of teaching, perform outstandingly? Why or why not? Provide analysis.

b. Can you describe a chi-squared application in your profession?

1. Regression and Correlation are two of the most often used and abused tools in research. People are quick to jump to conclusions that if a relationship exists between two variables, then one must cause (causation) the other. There are many reasons why two variables can be related without causality. Please respond to the following:

a. Comparing the amount of money people spend and the amount people save, your analysis revealed an R-squared=0.97. Should you use this for predictive purposes and why?

b. Comparing the number of cops on our streets and the number of reported crimes, your analysis revealed an R-squared=0.40. Should you use this for predictive purposes and why?

c. How could this apply in your profession?

1. Suppose you went to the Bureau of Labor Statistics web site and found several predictors of your salary. State three possible predictors and a simulated multilinear regression equation along with their p-values. What does your p-values tell you about your predictors?

b. How does multilinear regression analysis apply to your profession? Specify the dependent value and the set of predictors. Where would you get the data?

1. In your environment (business or personal), please give an application of exponential smoothing and why you would use this technique.
2. In your environment (business or personal), please give an application of trend projection and why you would use this technique.
3. In your environment (business or personal), please give an application of moving average and why you would use this technique.