Stat 185 - Review problems for Exam 1

Our first exam is next Wednesday, February 2. Here are a few problems to get you thinking. There's a good chance that *most* or even all of these problems will be represented on the exam. There might be one or two more, as well.

1. The data table below lists NBA players.

   (a) What are the cases in the data table?

   (b) Name one numerical variable.

   (c) Name one nominal, categorical variable.

   (d) Name one ordinal, categorical variable.

FirstName	**LastName**	**Team**	**Position**	**Number**	**Height**
Alex	Abrines	Thunder	Guard	8	78
Jaylen	Adams	Hawks	Guard	10	74
Steven	Adams	Thunder	Center	12	84
Bam	Adebayo	Heat	Center-Forward	13	82
DeVaughn	Akoon-Purcell	Nuggets	Guard-Forward	23	78

2. A random sample of registered voters from Tampa, FL were asked if they support the DREAM Act, a proposed law which would provide a path to citizenship for people brought illegally to the US as children. The survey also collected information on the political ideology of the respondents. The results of the survey by political ideology are shown below. They are also illustrated as a Mosaic plot shown in figure 1.

	Political ideology			
	Conservative	Moderate	Liberal	Total
Support	186	174	114	474
Don't support	151	161	52	364
Not sure	35	28	9	72
Total	372	363	175	910

   (a) What percent of these Tampa, FL voters support the DREAM Act?

   (b) What percent of these Tampa, FL voters who identify themselves as conservatives are also in support the DREAM Act?

   (c) Do political ideology and views on immigration appear to be independent? Explain your reasoning.

3. A box plot for the ages of 2000 people is shown in figure 2.

   (a) Write down the corresponding five point summary

   (b) Find the inter-quartile range

4. A small, public, liberal arts college in North Carolina taught Calc III to 1547 students over the last decade. A bar plot illustrating the grade distribution is shown in figure 3.

   (a) What was the most common grade earned by the Calc III students?

   (b) Approximately how many students earned an A in the class over this time period?

5. Compute the mean and standard deviation of the set $\{8, 2, 1, 8, 3\}$.

6. According to `https://goo.gl/DanB3A`, Utah has the lowest percentage of adults who smoke at 9.1%. Turns out this is based on a CDC survey named BRFSS. Let's suppose that there are 120 individuals in that survey.

   (a) Identify the population.

   (b) Identify the sample.

   (c) I don't actually believe the 9.1% so I went down to Woody's Tavern and surveyed 11 customers. As it turned out, 5 of them smoked! Identify any problems that you see with my "study".

7. Suppose we are doing a study on the mercury concentration in adults' hair. We announce the study in Asheville's local newspaper and get 205 people willing to participate in our study. We take a snip of their hair and analyze it for mercury content and ask them to fill out a questionnaire about how many servings of fish they consume on average in a week in order to find out how much eating fish contributes to the amount of mercury in the body.

   (a) What is the population?

   (b) What problems do you see with the sampling method?

   (c) What is the predictor variable and what is the response variable?

   (d) Outline how you might set up a controlled experiment to determine how fish consumption affects mercury concentration in hair.

8. Suppose I draw a card from a well shuffled deck. What's the probability that

   (a) It's the 7 of clubs?

   (b) It's a 7 or a club?

   (c) It's the 7 of clubs or the Jack of diamonds?

   (d) It's the 7 of clubs and the Jack of diamonds?

9. Suppose I roll a standard 6 sided die twice. What's the probability that

   (a) The first roll is a 6 and the second roll is a four?

   (b) The first is less than 3 and the second roll is even?

   (c) The sum of the two die equals 3?

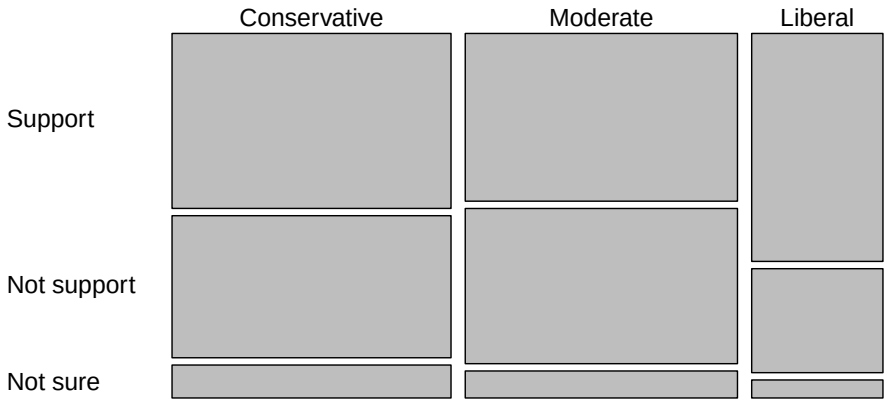

Figure 1: The Mosaic plot for problem 1

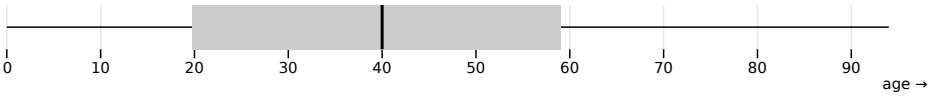

Figure 2: A box plot for the ages of 2000 people

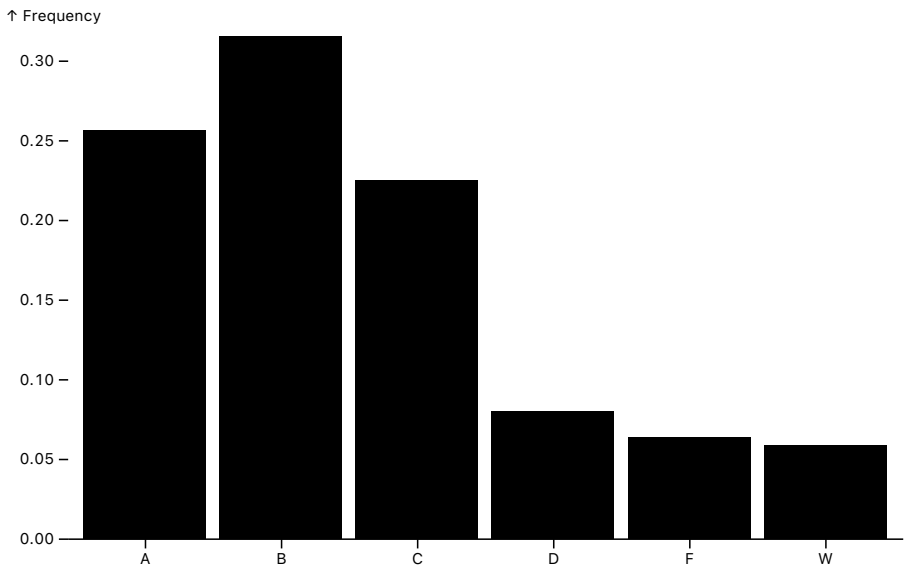

Figure 3: Grade distribution in Calc III