

TEST 3

Your Name (please PRINT): _____

=====INSTRUCTIONS=====

- Fill in the above items.
- There is a total of 5 problems, for a maximum possible total value of 60 points. **Make sure you have all 6 test pages (this cover page + 5 test pages).** You are responsible to check that your test booklet has all 6 pages. Alert a proctor if your copy is missing any pages.
- **Show all your work.** Only minimal credit will be given for answers without supporting work.
- **Write your answer in the box** at the bottom of pages 2-6.
- **Use the back of test pages if additional space is needed,** and for scratch paper.
- No calculators are allowed on this exam.

Do not write below this line

Pb. #	Max Points	Your Score
1	12	
2	12	
3	12	
4	12	
5	12	
Total	(60)	

1. (a) Give an example of a survey which relies on stratified sampling and discuss one of this methods flaws.

(b) What is one flaw of quota sampling?

2. Suppose you are highly color vision deficient (can only see shades of grey) and want to determine how many red jelly-beans are in a jar. You sample a large quantity of jelly beans and a trustworthy friend tells you 19 of them are red. You mark those 19 jelly beans and place them back in the jar. After giving the jar a thorough shake, you sample again. Your friend tells you that your new sample contains 17 red jelly beans and 11 are marked. Estimate how many red jelly beans are in the jar.

3. You want to study the number of cheese curds an average Wisconsinite eats per week. After careful observation of your test subjects you get the following data set:

$\{4, 7, 4, 12, 15, 8, 9, 18, 12, 13, 5, 5, 19, 9, 10, 12, 14, 12, 11, 20, 21\}$

(a) Construct a histogram using 6 categories for the number of cheese curds eaten per week. (Remember to label everything!)

(b) Find the 5 number summary and construct a box plot for this data set.

4. A local news station is surveying people on the street to determine how many Bob Dylan concerts they have been to. The following table summarizes the results.

Number of shows	Frequency
0	4
1	7
2	3
3	6
4	3
81	2

(a) Find the mean and median of this data set.

(b) If you were to construct a pie chart depicting the relative frequency of each of these data points, what would the angle of the pie slice be for the section of people who have attended 3 shows?

(b) Between the mean and median of this data set, which is a better reflection of the number of Bob Dylan shows a random person on the streets of Superior, WI has attended?

5. Recall that for a data set $\{d_1, \dots, d_N\}$ with mean μ , the standard deviation is given by

$$\sigma = \sqrt{\frac{(d_1 - \mu)^2 + \dots + (d_N - \mu)^2}{N}}.$$

You measure the weights of some random chubby dogs. The following is the results.

$$\{72, 73, 68, 80, 94, 99\}.$$

(a) Find the standard deviation of this data set accurate to three decimal places.

(b) Suppose this is only a sample of a larger population and you want the standard deviation to reflect that. Compute the standard deviation of the data set above as a sample of the general population, again to three decimal places.