

MATH 217
Exam I
Maymester 2008

To receive full credit you *must* show all work and circle all answers.

1. (21 points)

11	11	29	18	19	22	23	65
42	38	16	45	33	31	58	15
21	13	30	18	42	23	14	15

- (a) Make a stemplot for the data in the table above.
 - (b) Describe any prominent features that you notice from the stemplot.
 - (c) Which numerical summary would be more appropriate: 5-Number Summary or Mean and Standard Deviation? Why?
2. (12 points) Use data given in the above table.
- (a) Calculate the mean and median for this data set.
 - (b) Would you say that the mean and median are approximately equal? Give a possible explanation for this.
3. (13 points) Given a distribution that is skewed to the left, do you expect the mean and median to be equal? Why or why not? If you do not expect them to be equal, which do you expect to be larger? Why?
4. (13 points) The 5-Number summary for a data set is 4, 10, 15, 18, 32. Create a box-plot for this data. Are there any outliers? Why or why not?
5. (18 points) Pot-bellied pigs have a mean weight of 90 pounds with a standard deviation of 6 pounds.
- (a) Your pig, LuLu-Bell, weighs 93 pounds. What percentage of pot-bellied pigs weigh more than LuLu-Bell?
 - (b) What percentage of pot-bellied pigs weigh between 84 and 90 pounds?

6. (10 points) Which of the following two data sets do you believe will have a higher standard deviation? Why? **You do NOT need to calculate the standard deviations.**

(a)

51	32	10	18	19	12	45	65
42	31	56	25	53	41	38	15

(b)

21	12	29	13	15	15	23	25
12	18	19	22	20	13	22	30

7. (15 points) After purchasing LuLu-Bell you become obsessed with pot-bellied pig weights. You weigh around 50 pigs and discover that their weight and the length of their ears are correlated! The equation between pig ear-lengths and weight is $W = 86 + 2L$, where L is the length of the pig's ears in inches and W is the weight of the pig in pounds.
- What is the slope of this line? Give an interpretation for the slope in terms of ear-lengths and weight.
 - Using your equation, how much should a pot-bellied pig weigh if its ears are 5 inches long?
 - The correlation coefficient for the best-fit line is $r = .15$. What does this say about the relationship between the data points and the best-fit line?

BONUS

Each bonus problem is worth 6 pts. All work must be shown with a clearly marked answer.

- For this problem, refer to the mean and standard deviation for pot-bellied pig weights given in the earlier problem. Your sister also owns a pot-bellied pig and she doesn't know how much it weighs, but she was told by her vet that her pig weighed more than 88% of the pot-bellied pigs. Approximately how much does this pig weigh? (Justify your answer with calculations or explanations.)
- You take an exam on which you earn a 78. The mean and standard deviation for the class was, respectively, 64 and 7. A friend of yours is in a different section and scored an 80 on their exam. The mean and standard deviation for your friend's class was 71 and 7.3. You and your friend had a bet that the

person who did better on their exam would be treated to dinner. Make an argument for why you did better than your friend, even though your friend scored 2 points higher than you.