

Math 1600, Section 5, Fall 2015 – Statistics
Midterm 1 Review

This is intended to provide a guide to some of the types of problems you should be able to do for Midterm 1. It is not an exclusive list. Other types of problems may be on the test.

1. You are asked to estimate the mean transportation cost per semester for students at CSU Stanislaus. You decide to ask your friends, most of who live in the dorms.
 - a. Identify the statistical population.
 - b. Identify the sample.
 - c. Is your sample representative? (Explain and justify your answer.)
2. Here are the scores for student work on an assignment.

66	75	80	87
67	76	81	89
68	77	82	90
70	79	83	96
75	80	85	98

- a. Compute and interpret the 60th percentile.
 - b. Compute and interpret the 32nd percentile.
3. Compute the mean and standard deviation of the following data set:
6 5 9 3 7
4. What is an **experiment**? What is its associated **sample space**?
5. a. Explain what it means for two events to be **mutually exclusive**.
b. If $P(A) = .4$ and $P(B) = .7$, can A and B be **mutually exclusive**? (Justify your answer.)
6. An electronic scanner is capable of detecting flaws in a material in 75% of the cases. Three specimens that contain flaws will be tested by the scanner. Assuming that the tests are independent, where S = successfully detects flaw, and F = fails to detect flaw, find:
 $P(SFF) =$
7. An advertisement seeking volunteers for clinical research draws 12 respondents. Of these respondents, 5 are age 30 or below. The researcher will randomly select 4 persons to assign to a particular treatment regimen. Find the probability that 3 of the selected persons are age 30 or below.
8. Of 30 fast food restaurants in a city, 7 are in violation of sanitary standards, 11 are in violation of safety standards, and 4 are in violation of both. For full credit use proper notation for the probabilities.
 - a. Draw and fill in a table (use meaningful variable names):
 - b. If a fast food restaurant is chosen at random, what is the probability that it is in compliance with both safety and sanitary standards?
 - c. If a fast food restaurant chosen at random is found to violate sanitary standards, what is the probability that it violates safety standards?
 - d. If a fast food restaurant chosen at random is found to be in compliance with safety standards, what is the probability that it is in compliance with sanitary standards?
 - e. Is violation of sanitary standards independent of violation of safety standards? (Justify your answer.)
9. Correlation problems like the ones we did for homework.