

Math 109, Practice Quiz 2: Conditional Probability

Name: _____

Instructions. You have 15 minutes to complete the following problems, without notes. You may use a scientific calculator (but not a cell phone calculator). If your answer is a percent, please round to the nearest percent. For example, 65.456% should be rounded to 45% and 46.666% should be rounded to 47%.

1. We can divide the students who applied to a certain graduate program (UC Berkeley, 1973) into two groups according to gender or admission status (admitted/rejected). The contingency table below summarizes all possible combinations.

	Admitted	Rejected	Total
Male	120	205	325
Female	202	391	593
Total	322	596	918

- (a) How many women applied?
- (b) What percent of applicants were admitted?
- (c) If we put all the applicants' names into a hat and choose one randomly, what is the probability that ...
- i. the chosen applicant is female?
 - ii. the chosen applicant was admitted?
 - iii. the chosen applicant is female, given that she was admitted?
 - iv. the chosen applicant was admitted, given that she is female?

(More on the back.)

2. A school district says that 80% of high school drop-outs failed a standardized reading test in third grade. Some have proposed that the school district re-allocate resources in an effort to improve third grade literacy, since this will likely reduce the high school drop-out rate.

Which of the following positions is reasonable, given the data provided?

- (a) Since a student who fails the reading test in third grade is highly likely (80% chance) to drop out of high school, the school district should focus on improving third grade literacy, with the expectation that this will decrease the high school drop-out rate.
- (b) There is not enough information to determine whether students who fail the reading test in third grade are more likely to drop out of high school than those who pass the reading test. Because of this, the school district should be cautious about re-allocating resources without obtaining more information.
- (c) We can be certain that there is no connection between the high school drop-out rate and third grade literacy, so the school district should not re-allocate resources to third grade literacy unless there is another reason to do so, besides concerns about the high school drop-out rate.