

Midterm 1 Review Material
Math1070-70 Summer 2007

1. Vocabulary: You should know and be able to provide definitions for the following terms

Population	Outlier	Response Bias
Subjects	Regression Outlier	Experimental Unit
Sample	Quartile	Statistically Significant
Descriptive Statistics	Interquartile Range	Cluster Sampling
Inferential Statistics	5 number summary	Stratified Sampling
Random Sampling	z-score	Cross-sectional Study
Statistic	Explanatory Variable	Prospective Study
Sample Statistic	Response Variable	Retrospective Study
Parameter	Positive Association	Cumulative Proportion
Variable	Negative Association	Sample Space
Categorical Variable	Correlation	Event
Quantitative Variable (QV)	Regression Line	Complement
Discrete QV	Extrapolation	Intersection
Continuous QV	Lurking Variable	Union
Skew	Confounding Variable	Independent
Mode	Observational Study	Conditional Proportion
Median	Sampling Frame	
Mean	Margin of Error	
Standard Deviation	Sampling Bias	
Resistant	Nonresponse Bias	

2. You should know, and be able to apply, formulas for computing the:

Chapter 2: mean, standard deviation and z-score

Chapter 3: correlation, slope and y-intercept of the regression line

Chapter 4: margin of error

Chapter 5: probability rules (page 212) and conditional probability

3. You should recognize, and be able interpret (or create your own) graphical data summaries. We have seen a number of ways to summarize data graphically, the most important of which are the:

Chapter 2: bar graph, dot plot, stem and leaf diagram, histogram, and box plot

Chapter 3: contingency table, scatter plot

Chapter 5: Venn diagram

4. In addition to the material above, you should be able to do the following:

Chapter 2: identify potential outliers using either the $1.5 \cdot \text{IQR}$ or the Empirical Rule

Chapter 3: identify association (or lack thereof) between categorical variables

Chapter 4: describe why and how randomization is used in observation and experimental studies

Chapter 5: compute probabilities of events in a sample space where all events are equally likely outcomes of a trial

5. Emphasis: While the first few chapters are largely devoted to establishing a shared statistical vocabulary, this IS a math class. So, I will include a short-answer section on the test in which you will be asked to define some of the important concepts we've defined in class. This will not, however, be the main thrust of the test. You should focus your efforts on learning how to compute things like the mean, median, etc., and what these quantities really MEAN. You also need to be comfortable reading tabulated data (frequency tables and contingency tables) as is used in most of the examples in the text.

I will base the test questions on the homework problems that have been assigned. A word to the wise: the easiest way for me to ensure that the exam problems are similar to the assigned homework is to take (and modify slightly) problems for the exam from the book. I will not choose problems that have been assigned as homework, but there are many others for me to choose from at the end of each chapter. If you want to try a few extra problems to help you prepare for the test ...

You will be allowed to use a calculator for this test, but no notes. I will not include anything on the test that will require more than a four-function scientific calculator (as long as it can take a square root it will be sufficient). You should be sure that you know how to use whatever calculator you intend to use for the test BEFORE class on Wednesday (I know it sounds obvious, but you'd be surprised by how often people fail to follow this advise if I don't make it explicit).

6. Disclaimer: This topics list is intended to help you study for the midterm exam. It is NOT necessarily comprehensive. Material covered in class, but not mentioned in this list is fair game for the test. I've tried to include everything that I'll include, but I may have missed something. If you feel that I've left something off that is important please don't hesitate to ask about it.