

The University of Utah, Fall 2003
Mathematics 1040–1
Study Guide for the Final Exam

This is a detailed study-guide for the final exam for math 1040–1, Fall 2003. The final exam will be on Dec. 8th in class; see the online syllabus for details.

You may consult other sources to solve these problems. However, solutions will not be provided to you; this is not just a mock exam.

1. Be sure that you know **all** of the terminology from your reading assignments.
2. A 1999 article in the *Journal of Organizational Behavior* magazine presented the following heart-rate data for the heart-rate (in beats per minute) of a group of bus drivers.

74, 52, 67, 63, 77, 57, 80, 77, 53, 76, 54, 73, 54, 60, 77, 63, 60, 68, 64, 66, 71, 66, 55, 71, 84, 63, 73, 59, 68, 64, 82.

- (a) [7 things to do] Be sure that you know how to compute the mean, standard deviation, five-number summary. (You need to also know what these mean, and know how to use them.)
- (b) [2 things to do] Be sure that you can make (and/or accurately read) a histogram, as well as a stemleaf plot. (You need to also know what these mean, and how to use them.)
3. Gestation periods of humans are normally distributed with a mean of 266 days and a standard deviation of 16 days. What proportion of this population gestates for 242 days or less?
4. The *Kelley Blue Book* provides information on wholesale and retail prices of cars. Here is the age and price for 10 randomly-selected Corvettes that are somewhere from one to six years old (in thousands of dollars):

Age	6	6	6	2	2	5	4	5	1	4
Price	2.1	1.95	2.1	3.4	2.99	2.3	2.7	2.4	3.4	2.4

[6 things to do] Use regression to predict the price of a three-year old Corvette. You will need to understand the use and limitations of regressions. For example, how would you use regression to predict the age of a Corvette if its price was 20,030 dollars? You will need to understand the correlation vs. causation issue.

5. Here is some Census data for the number of people in American households:

Household Size	1	2	3	4	5	6	7
Proportion	0.26	0.32	0.17	0.15	0.07	0.02	0.01

Suppose we selected at random a US household. Compute the expected value of the population of this household. Be sure that you know what this number means, and that you know how to use it.

6. The heights of 200 randomly-selected British couples were measured. In 10 of them, the wife was taller than her husband. Find a 95% confidence interval for the proportion of all British couples where the wife is the taller spouse. What does this mean?