Math 3680 Practice Exam

Due to large enrollment, the exams in Math 3680 will be either partially or entirely in a multiple-choice format. To get used to this format, I have provided this practice exam. The questions on this exam are nearly identical to questions that have appeared on the homework.

This is not intended to be a comprehensive review of all topics that could appear on the first exam. Rather, this is meant to give you practice with the format of the multiple-choice exam, so that you're familiar with the format on the day of the test.

After the actual test, there will be three grounds for making a grade appeal for the multiplechoice portion of the exam:

- You can convince me that what I think is the right answer is actually wrong.
- You can convince me that your incorrect answer is consistent with a previous incorrect answer. For example, suppose that you got the wrong answer to Problems 6 and 7, but your answer to Problem 7 would have been correct had Problem 6 been correct. In this circumstance, you can ask to receive full credit for Problem 7.
- You can convince me that your numerical answer was exactly correct but that you entered the wrong digit in the box. Correcting this kind of mistake will result in half credit.

Please visit the class website (http://www.math.unt.edu/~johnq/Courses/2013fall/3680) for a more comprehensive review of the first exam as well as links to YouTube videos giving the solutions for that review.

Problem 1 Calculate 1/7. In the box below, write the <u>third</u> digit after the decimal point.

Problem 2 Calculate 11/25. In the box below, write the <u>third</u> digit after the decimal point.

Problem 3 Temperature transducers of a certain type are shipped in batches of 50. A sample of 60 batches was selected, and the number of transducers in each batch not conforming to design specifications was determined, resulting in the following data:

1, 1, 2, 3, 0, 1, 3, 2, 0, 5, 3, 3, 1, 3, 2, 4, 7, 0, 2, 3, 0, 4, 2, 1, 3, 1, 1, 3, 4, 1, 2, 3, 2, 2, 8, 4, 4, 1, 3, 1, 5, 0, 2, 3, 2, 1, 0, 6, 4, 2, 1, 6, 0, 3, 3, 3, 6, 1, 2, 3

Let x be the proportion of batches in the sample that have at most six nonconforming transducers. In the box below, write the first digit after the decimal point. **Problem 4** A woman sued a computer keyboard manufacturer, charging that her repetitive stress injuries were caused by the keyboard. The injury awarded about \$3.5 million for pain and suffering, but the court then set aside that award as being unreasonable compensation. In making this determination, the court identified a "normative" group of 27 similar cases and specified a reasonable award as one within two standard deviations of the mean of the awards in the 27 cases. The 27 awards were (in \$1000s) 37, 60, 71, 112, 135, 145, 149, 152, 238, 290, 340, 410, 600, 750, 750, 1050, 1100, 1137, 1150, 1200, 1200, 1250, 1577, 1700, 1825, and 2000, from which $\sum x_i = 20, 178, \sum x_i^2 = 24, 656, 876.$

What is the maximum possible amount (in \$1000s) that could be awarded under the twostandard-deviation rule? In the box below, give the first digit after the decimal point.

Consider these observations on shear strength (MPa) of a joint bonded in a particular manner.

 $4.4 \quad 16.4 \quad 21.8 \quad 30.0 \quad 33.1 \quad 36.6 \quad 40.4 \quad 66.7 \quad 72.0 \quad 81.5 \quad 108.4$

Problem 5 Find the lower fourth. In the box below, write the first digit after the decimal point.

Problem 6 Find the upper fourth. In the box below, write the first digit after the decimal point.

Problem 7 Find f_s . In the box below, write the first digit after the decimal point.

Problem 8 Find the amount that the largest observation could be decreased without affecting f_s . In the box below, write the first digit after the decimal point.

The minimum injection pressure (psi) for injection molding specimens of high amylose corn was determined for eight different specimens (higher pressure corresponds to greater processing difficulty), resulting in the following observations.

14.7, 12.5, 17.6, 14.1, 12.0, 11.0, 9.5, 8.2

Problem 9 Find the median. In the box below, give the first digit after the decimal point.

Problem 10 Find the mean. In the box below, give the first digit after the decimal point.

Problem 11 Find the 12.5% trimmed mean. In the box below, give the first digit after the decimal point.

Consider randomly selecting a student at a certain university, and let A denote the event that the selected individual has a Visa credit card and B be the analogous event for a MasterCard. Suppose that P(A) = 0.612, P(B) = 0.534, and $P(A \cap B) = 0.359$.

Problem 12 Find the probability that the selected individual has at least one of the two types of cards. In the box below, give the <u>third</u> digit after the decimal point.

Problem 13 Find the probability that the selected individual has neither type of card. In the box below, give the <u>third</u> digit after the decimal point.

1. 2 (note: do <u>not</u> round 1/7 to three decimal places, for 0.143, before answering!)

2. 0

3. 9 (answer: 0.9666...)

4. 1 (answer: approximately \$1961.176 thousand)

- 5. 9 (answer: 25.90)
- 6. 3 (answer: 69.35)
- 7. 4 (answer: 43.45)
- 8. 4 (answer: 36.4)
- 9. 2 (answer: 12.25)
- 10. 4 (answer: 12.45)
- 11. 3 (answer: 12.3)
- 12. 7 (answer: 0.787)
- 13. 3 (answer: 0.213)