Math 12 Elementary Statistics     Marcella Laddon, Instructor

Review for Exam 1: Ch. 1 – 4

For exam 1, you’ll want to bring your homework and labs, calculator, pencil and eraser, 3”x5” index card of notes (both sides), and I’ll provide the exam and the “Formulas and Tables”. You do not need the TRIOLAXE App for the exams.

There will be a mixture of multiple choice and demonstration/short answer problems (about 25 questions). The exam is worth 100 points.

Chapter 1 Introduction to Statistics

1–2, 1 –3 There’s lots of vocabulary there. Be able to use it correctly. Any questions from this section will be mostly multiple choice.

1–4 Be familiar with the problems that can arise in conducting a survey: randomness (or lack thereof), small samples, loaded questions and self interest studies are a few that jump out at me.

1–5 Be able to distinguish between an observational study and an experiment. I will not ask about cross-sectional, retrospective and prospective studies. Do understand the basic ideas of random sampling. Out of all the other types of sampling (systematic, convenience, stratified and cluster), you only need to be familiar with convenience sampling (and its pitfalls). I will not ask about sampling errors.

1–6 Be comfortable with your calculator! I’ll provide the Formulas & Tables sheet that appears at the beginning of the online textbook, though you may not need it. You do not need the TRIOLAXE APP for the exam.

At the end of Chapter 1, you’ll find a section “Chapter Review”. I suggest reading this material, and considering problems # 1, 3, 4, 5, 7.

Chapter 2 Summarizing and Graphing Data

2–2 Be able to create or interpret a frequency distribution (regular, relative and cumulative). I will not require you to enter large sets of data into your calculator (only small ones). Be sure to know the vocabulary for classes (limits, boundaries, midpoints, class width).

2–3 Be able to interpret a histogram.

2–4, 2 – 5 Understand the difference between a histogram, a relative frequency histogram, a frequency polygon, an ogive and a scatterplot. There may be some but not a lot of graphing on the exam. You may find it easier to do any graphs by hand! Be able to construct and also to interpret a Stem-and-Leaf plot. I will not ask about Pareto charts, pie charts, or the other types of graphs mentioned.

Check out the “Chapter Review” at the end of Chapter 2. You might try the following problems: Statistical Literacy and Critical Thinking: #2, 3, 4
Chapter 3 Statistics for Describing, Exploring, and Comparing Data

3–2 Be able to find the mean, median and mode from raw data. Also be able to find the mean of a frequency distribution. I will not ask about the midrange. Understand left and right skewing of data sets. [STAT → CALC → 1-VarStats]

3–3 Know the connection between standard deviation and variance, but I will ask more about standard deviation. Be able to calculate the standard deviation from data and from a frequency distribution. What does the standard deviation measure? Be familiar with the Range Rule of Thumb, the Empirical Rule and Chebyshev’s Theorem (see how they are similar and how they are different, and what the respective requirements are). Notice that the percentages for these are not on the “Formulas and Tables” sheet.

3–4 Why do we need z-scores – what are they used for? Be able to find quartiles.

3–4 Understand and identify outliers. Be able to construct (using the 5-number summary), interpret, and compare boxplots.

Check out the “Chapter Review” at the end of Chapter 3. You might try the following exercises: #1 – 9.

Chapter 4 Probability

4–1 Study the Rare Event Rule – we’ll use it often later in the course.

4–2 Remember the basic rule for a probability:. Lots of vocabulary here. Good material for multiple choice! I will not ask about odds.

4–3 Know when/how to use the addition rule, especially when looking at tables of data.

4–4 Understand conditional probability and independence of events. Be able to use the multiplication rule correctly. Again be able to calculate probabilities from a table.

4–5 As above – more details about the multiplication rule. Also be able to use complements.

4–7 Our basic counting tool is the factorial. This gives the number of ways to arrange n items. We then use this tool when finding certain probabilities: permutations when order matters, and combinations when order does not matter. Use MATH → PRB on the calculator.

Again, see the “Chapter Review”. Try the following Review Exercises: # 1 –10, 12, 14, 17