

STAT 50 FINAL EXAM STUDY GUIDE

Final is on **Tuesday June 11 from 1-3pm**

I will try to arrange things so that you can start at 12:30.

- There will be some **true/false** questions to test your conceptual understanding.
- There will be some **fill-in** the blank questions to test your understanding of terminology and important facts.
- There will be some **multiple-choice** for quick(er) response questions – some MC you don't need to show work, but on some of them you DO need to show work to get credit (read instructions carefully!)
- There will be **longer problems with multiple parts that are free-response** (just like the worksheets). You need to show all your work to receive credit.
- The final exam will focus more on Chapters 9 and 10 (study Exam 4 and see the tests that were asked--I'll put problems on final from those that we covered in class but didn't test on in Exam 4)

The total number of points is 100.

The length will be **about 7 pages**. (Note: our 80 minute in-class exams were ~5 pages)

It is worth 25% of your grade.

Final exam can replace your lowest test grade.

You're allowed a one-page cheat sheet—but—**WARNING**—It must be a GCS and you must follow the rules I mentioned in class. See also the Exam 4 study guide which details these requirements.

TOPICS TO REVIEW

DESCRIPTIVE STATS (Chs: 1, 2, 3)

- be able to find all measures of center (mean, median, mode, midrange) and variation (standard deviation, variance)
- be able to identify **outliers** using the mean and standard deviation
- Quartiles
- **z scores**
- Be able to create a box plot – box-whisker plot
- **Study Exam 1 study guide and the Exam 1 solutions I posted**

PROBABILITY and DISTRIBUTIONS (Ch 4, 5, 6)

Be able to **calculate Probability** in various situations: one selection, many selections:

- **Set notation**: sample space, event, etc
- Venn Diagrams and probability notation (like $P(A)$)
- **OR** problems
- **AND** problems
- **conditional** probability
- checking for **independence**
- checking to see if two events are **mutually exclusive**
- **Study Exam 2 study guide and the Exam 2 solutions I posted**

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Be able to calculate and solve problems involving DISTRIBUTIONS:

- uniform distribution
- **binomial** distribution: requirements and notation and applications
- **normal** distribution: when to use, how to compute, draw curve and shade regions
- **Sampling** distributions: when to use $\mu_{\bar{x}}$ and $\sigma_{\bar{x}}$ (when making many selections and not one)
- **Central Limit Theorem**: important! Study the theory of this from worksheets
- Student's **t-distribution**: know when to use (remember: Mr. T is mean!)
- **Study Exam 2 and 3 study guide and the Exam 2 and 3 solutions I posted**

INFERENCEAL STATS (Ch 7, 8, 9)

There are **CONFIDENCE INTERVALS** from chapters 7, 8 questions regarding:

- Proportion -- p
- mean (sigma known) -- μ
- mean (sigma unknown) -- μ
- **Study Exam 3 study guide and the Exam 3 solutions I posted**

There will be **HYPOTHESIS TESTS** from chapters 8, 9. These may include:

- (single) Proportion -- p
- (single) Mean (sigma unknown) -- μ
- Two proportions -- p_1, p_2
- Two means (independent samples, sigmas unknown) -- μ_1, μ_2
- **Matched pairs** (dependent samples) -- X_1, X_2
- **Study Exam 4 solutions I posted**

CORRELATION and **REGRESSION** (Ch 10, 11)

- Know terminology: explanatory variable (independent variable) vs response variable (dependent variable)
- you need to be able to determine if there is **linear correlation** (or non-linear)
- know what the meaning of r is, the range of acceptable values r can take
- find the equation of the **line of best fit/regression line** (round the coefficients to three sig figs) using your calculator
- know the interpretation of **y-intercept** (b_0) and **slope** (b_1)
- know whether you should use the regression line to predict y given x using \hat{y} **OR** the average \bar{y}