

Exam 1
Chapters 1, 2, and 3

Below are lists of some of the vocabulary we learned that you may find useful. Do not abbreviate this vocabulary and spell them correctly in your responses.

<p>Experimental Designs: Completely Randomized Matched Pairs Repeated Measures Randomized Block</p>	<p>Sampling Designs: SRS Convenience Stratified Systematic Cluster Multi-stage</p>	<p>Observational Studies: Cross-Sectional Case Controlled Cohort</p>
<p>Data Types: Quantitative Quantitative Categorical / Qualitative Categorical / Qualitative</p>	<p>Levels of Measurement Discrete, Continuous Ratio-scale, Interval-scale Nominal, Ordinal</p>	<p>Types of Bias: Response Sampling Non-Response</p>
<p>Types of Graphs: Bar Chart Box Plot Dot Plot Histogram Pie Chart Stem Plot</p>		

Directions: This is a closed-book, closed-note, closed-neighbor test. You must have a TI-84 calculator. Provide all TI-84 functions and parameters used as part of your answer. Calculators cannot be shared. Read each problem carefully, and only do what is asked. When I want a verbal explanation I ask for it explicitly. If no explanation is asked for you need not use a full sentence. **Show work or provide supportive reasoning for your answer to receive full credit.** Any answer without work or supportive reasoning will receive partial credit, at best. You may leave when finished with the exam.

TI 84/84 Plus Calculator Basics

What you want to do >>>	Put Data in Lists	Get Summary Statistics	Find normal probabilities	Random Number Generator
How to start	STAT > EDIT > 1:EDIT ENTER	(after putting data in a list) STAT > CALC 1: 1-Var Stats ENTER	2nd VARΣ	MATH Arrow over to PROB menu
What to do next	To clear numbers already in a list: Arrow up to L1, then hit CLEAR ENTER Then just type numbers into list.	The screen shows: 1-Var Stats You type: 2nd L1 or any list 2nd L2 ENTER	For normal probability scroll to: Finding areas under the normal curve: 2: normalcdf(lower, upper, mean, sd) Find Values corresponding to an Area: 3: invnorm(area to left of value, mean, sd)	To generate n numbers in [lower, upper] 5: randInt(lower, upper, n) 8: randIntNoRep(lower, upper, n^*) ENTER *some calculators do not use the sample size, n

Other points: (1) To clear the screen, hit

(2) To enter a negative number, use the negative sign at the bottom right, NOT the minus sign above the plus sign.

(3) To convert a decimal to a fraction: (a) type the decimal; (b) **MATH** > Frac **ENTER**

Tables and Formulas for Sullivan, *Statistics: Infd*

Chapter 2 Organizing and Summarizing Data

- Relative frequency = $\frac{\text{frequency}}{\text{sum of all frequencies}}$

Chapter 3 Numerically Summarizing Data

- Population Mean: $\mu = \frac{\sum x_i}{N}$
- Sample Mean: $\bar{x} = \frac{\sum x_i}{n}$
- Range = Largest Data Value – Smallest Data Value
- Population Standard Deviation:

$$\sigma = \sqrt{\frac{\sum (x_i - \mu)^2}{N}} = \sqrt{\frac{\sum x_i^2 - \frac{(\sum x_i)^2}{N}}{N}}$$

- Sample Standard Deviation

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n - 1}} = \sqrt{\frac{\sum x_i^2 - \frac{(\sum x_i)^2}{n}}{n - 1}}$$

- Population z-score: $z = \frac{x - \mu}{\sigma}$
- Sample z-score: $z = \frac{x - \bar{x}}{s}$
- Interquartile Range: $IQR = Q_3 - Q_1$
- Lower and Upper Fences: Lower fence = $Q_1 - 1.5(IQR)$
Upper fence = $Q_3 + 1.5(IQR)$