You will be allowed the following during the exam:

1. OPEN NOTES! (no book)
2. a scientific calculator (or lower)
3. as much blank scratch paper as you like

Exam 2 will cover Chapters 14-17. Many questions will be similar to those in the assigned homework.

**STUDY TIPS:**

The *best* way to study for a math exam is to do practice problems ... lots of them!
Sure, reading the text and notes is not a bad idea, but nowhere as helpful as doing problems.

- Start by re-doing the homework problems
  - If you have no idea how to do the problem, refer back to the section in the text and/or notes that it came from and try to redo one of the examples done there.
  - If you know exactly what to do *without looking at your notes*...move on!
- Try this for each type of problem in the homework starring (*) or highlighting ones that you had trouble with.
- If you get through all the problems, go back to the ones you starred and either do them again or do a similar one (usually similar ones will occur right before or after that problem).
- Repeat this process until you can do each type of problem without looking at the text or notes.

Note that selected answers appear in the back of your text so you can check your work. If you are unsure of your answer and the solution is not in the back, e-mail me and I will happily let you know if you are correct or help you through it.

In the following list you should be able to (1) know what the name refers to and (2) be able to compute its value given an example (if it is the type of thing that can be computed).

**Chapter 14: Censuses, Surveys, Polls and Studies**

**14.1 Enumeration**

**BASIC ELEMENTS:** population, $N$-value

survey
sample
sampling
statistic
parameter
one-sample estimation

**14.2 Measurement**

sampling proportion
selection bias
target population
sampling frame
convenience sampling
What is the problem with quota sampling?
random sampling
simple random sampling

14.3 Cause and Effect
A typical cause-and-effect statement takes the form:

- correlation:
- causation:

Observed correlation between two events $X$ and $Y$ can occur for many reasons including:

Clinical Studies
controlled study
placebo effect
controlled placebo study
blind study
double-blind study

Chapter 15: Graphs, Charts, and Numbers

15.1 Graphs and Charts
Basic Elements: data set, data point, discrete variable, continuous variable, frequency table, bar graph

15.2 Means, Medians, and Percentiles
average (mean)
percentile
five-number summary
box plot (a.k.a a box-and-whisker plot)

15.3 Ranges and Standard Deviations
range
interquartile range (IQR)
variance
standard deviation

Chapter 16: Probabilities, Odds, and Expectations

16.1 Sample Spaces and Events
Basic Elements: random experiment, sample space, event

16.2 The Multiplication Rule, Permutations, and Combinations
multiplication rule

- permutation:
- combination:
16.3 Probabilities and Odds

probability assignment
Basic Elements: sample space, probability assignment, events, equiprobable space, probability of an event

- complementary events:
- independent events:
- multiplication principle for independent events:

odds

16.4 Expectations

weighted average
expectation

Chapter 17: The Mathematics of Normality

17.1 Approximately Normal Data Sets

Basic Elements: approximately normal distribution, normal distribution

17.2 Normal Curves and Normal Distributions

normal curve
Properties of a normal curve:
1. Symmetry
2. Median and Mean
3. Standard Deviation
4. Quartiles
5. The 68-95-99.7 Rule

z-value
Standardizing Rule:

17.4 Normality in Random Events

Honest-Coin Principle:

Dishonest-Coin Principle: