Math 10 Final Exam

The exam will cover:
Ch 1
- Key statistics terms
- Sampling methods
- Types of data – Discrete quantitative, continuous qualitative, qualitative
- Relative frequency tables
- Fairness in sampling methods and question design

Ch 2
- Interpreting histograms
- Interpreting boxplots
- Statistical measurements
  - Mean, mode, median, Q1, Q3, standard deviation (sample and population), percentiles
  - Determining if there are outliers
    - IQR method
    - Standard deviation method
  - Comparing groups using standard deviation

Ch 12 – Bivariate data and linear regression
- Finding the equation of a regression line
- Determining if the correlation coefficient is significant
- Making predictions using the regression line
- Finding outliers
  - OUTLIER program

Ch 3 - Probability
- Calculating probabilities from a sample space
- Probability rules
- Contingency tables
- Mutually exclusive
- Test for independence
- Tree diagrams

Ch 4 – Discrete distributions
- Probability distribution functions (PDF tables)
- Expected value
- Binomial distribution
  - Mean, standard deviation, calculating probabilities

Ch 6 – Normal distribution
- Graph, mean, standard deviation
- Probabilities, percentiles
- Calculator commands

Ch 7 – Central Limit Theorem
- $\bar{X}$ has a normal distribution
- The means are the same for X and $\bar{X}$
- $\sigma = \dfrac{s_X}{\sqrt{n}}$

- Graphs
- Probabilities, percentiles, middle percent
- Calculator commands

Chapter 8 – Confidence intervals
- CI for Means
  - σ known, use normal distribution
  - σ unknown, use Student-t distribution
- CI for Proportions, use normal distribution
- How to decrease the error bound

Chapter 9 – Hypothesis Tests: One Population Mean or Proportion
- Writing H_0, H_a
- Finding the distribution (normal or Student-t)
- Left, right, or two tailed test
- Calculations on the calculator
- p-value, decision and conclusion
- Type I and Type II Errors

Chapter 10 – Hypothesis Tests: Two Groups
- Independent Groups
  - Two means and σ unknown, use Student-t distrbution
  - Two proportions, use normal distribution
- Paired Samples, use Student-t distribution

Chapter 11 – Chi-Square distribution

- Goodness of Fit Test
  - Use to test if data fits a given distribution
  - df = n – 1
  - Use GOF Program
- Test of Independence
  - Use to test if two factors in a contingency table are independent
  - df = (#rows – 1)(#columns – 1)

Chapter 13 – ANOVA

- Use to test if several group means are the same
- Uses the F distribution
- df(num) = #groups
- df(den) = (#data) – (#groups)