First Exam I Review Sheet

The purpose of introducing statistics in Experimental Psychology is to begin the process of developing a new and fundamentally different way of interpreting observations. The exam attempts to further this goal.

Exam Procedure. Exam will be two parts--a conceptual component and an application component. For the first part of the exam (conceptual) all you need is a pencil. When finished, turn in the first part and receive the second. The second part is open book, open notes, calculator use. You will have 50 minutes for the exam. No one will have extra time.

The Basics of Research Designs
      Correlational versus Experimental Studies
      Research Question
      Hypotheses
      independent and dependent variable(s)
      Random sampling and random assignment
      operational definitions

Why Study Statistics?
      What does one do with statistics?
      What is a statistic

Descriptive versus Inferential Statistics

Scales of Measurement
      Nominal
      Ordinal
      Interval
      Ratio

Populations versus Samples

Distributions and Shapes
      Normal
      rectangular
      skewed + and -
      bi-modal

Measures of Central Tendency
        Mean, Median, Mode and Summation notation

Measures of Variability
        Range, sums of squares, variance, st. deviation

Statistics versus Parameters

Z-scores
        use of z scores
        the normal curve
        areas under the curve
        percentiles and probabilities
        using the z table
        going from x to z
        going from z to x

Correlation and Regression
        r and range of r
        Positive versus negative r
        slope and intercept
        predicted values of y
        interpretation of r^2
        use of calculator

Inferential Statistics
        Purpose of statistical inference
        Sampling distributions
        standard error of the mean
        relationship of standard error of the mean to n
        Hypothesis testing
            null hypothesis
            alternative hypothesis
            one versus two-tailed tests
            alpha and its role in inference
            decision rule
            rejecting and failing to reject Ho:
            Type I and Type II errors

One sample Z test (mean and proportion test)
        assumptions of test
        test statistic calculation
        sampling distribution of test statistic

One sample t-test
        assumptions of test
        test statistic
        degrees of freedom
        sampling distribution of statistic
        using the t table