

JQE Study Guide
Elementary Statistics

- Understand the characteristics of the different levels of measurement (nominal, ordinal, interval, ratio)
- Be able to convert a value x to a standard z-score using the formula

$$z = \frac{x - \text{mean}}{\text{standard deviation}}$$

- Understand that a standard z-score is the number of standard deviations that a given value is above or below the mean
- Be able to calculate measures of center: mean, median, mode
- Understand how measures of variation are calculated: range, standard deviation, variance, and inter-quartile range
- Understand how extreme values affect the different measures of center and measures of variation
- Be able to determine the percentile ranking for a given value
- Understand the meaning of percentiles
- Understand the process of constructing a box-plot
- Be able to calculate the probability of simple events using the relative frequency approach or the formula for equally likely outcomes
- Know that all probabilities are between 0 and 1, inclusive
- Be able to use the permutation and combination rules
- Understand the correspondence between probabilities and areas under a probability density curve
- Know that values more than 2 standard deviations from the mean are considered unusual
- Understand the p-value approach to hypothesis testing
 - Know that if the p-value is less than or equal to the significance level then H_0 should be rejected