

Statistics and Data

- Types of Data
- Practical vs. Statistical Significance
- The TI 83/84+

Main Concepts

- **Data:** A collection of observations.
- **Statistics:** The science of planning studies and experiments, obtaining data, and then organizing, summarizing, presenting, analyzing, interpreting, and drawing conclusions based on the data.

Population vs. Sample

- **Population:** The complete collection of all individuals.
- **Sample:** The individuals that participate in the study.
- **Census:** The collection of data from every member of the population
- **Sample:** The subcollection of data from the sample.
- **Parameter:** A measurement of the population (Example: The mean age of all people in the US.)
- **Statistic:** A measurement of the sample (Example: The mean age of the sample of 100 randomly selected Americans)

Types of Data

- **Qualitative:** The response is not a number. (Example: “What is your favorite color?”)
- **Quantitative:** The response is a number. (Example: “How many siblings are in your family?”)

Levels of Variable

- **Nominal:** Same as qualitative
- **Ordinal:** The responses can be ordered. (Example: Strongly Agree, Agree, Disagree, Strongly Disagree)
- **Interval:** The responses can be subtracted but not divided. (Examples: Time of day, Temperature)
- **Ratio:** The responses can be divided. It makes sense to say 10% more or twice as much. (Example: weight, length of time)
- **Boolean:** Yes or No answer. (Example: “Is the woman pregnant?”)

Discrete vs. Continuous Data

- **Discrete Data:** There is only a finite or countable number of possible outcomes. (Example: Number of people in a room)
- **Continuous Data:** The outcome can be any number from an interval on the real number line. (Example: Exact height of a person)

Practical vs. Statistical Significance

- **Practical Significance:** The numbers are visually different. (Example: the average speed of the 100 cars clocked on Hwy. 5 was 85 mph. This is clearly greater than the speed limit of 70 mph.)
- **Statistical Significance:** Based on probability, if the population mean speed is 70 mph and a random sample of 100 cars are clocked, then there is a very small probability that their average speed would be greater than 85 mph.

TI 83/84+

- **Powers:** Use 2^3 for 2^3 .
- **Scientific Notation:** $3.456E5$ means 3.456×10^5 or 345,600.
- **Clearing a List:** STAT -> ClrList -> ENTER -> 2nd 1 (L1) -> ENTER
- **Entering Data:** STAT -> EDIT -> ENTER -> Then type in the data.