SP Statistics and Probability

- **7.SP.A Use random sampling to draw inferences about a population.**
  - o **7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; Generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.**
    - ▪ [Identify representative, random, and biased samples (7-CC.8)](#)
  - o **7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.**
    - ▪ [Estimate population size using proportions (7-J.15)](#)
- **7.SP.B Draw informal comparative inferences about two populations.**
  - o **7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.**
  - o **7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.**
    - ▪ [Calculate mean, median, mode, and range (7-CC.1)](#)
    - ▪ [Interpret charts and graphs to find mean, median, mode, and range (7-CC.2)](#)
    - ▪ [Mean, median, mode, and range: find the missing number (7-CC.3)](#)
    - ▪ [Changes in mean, median, mode, and range (7-CC.4)](#)
- **7.SP.C Investigate chance processes and develop, use, and evaluate probability models.**
  - o **7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.**
    - ▪ [Probability of simple events (7-DD.1)](#)
  - o **7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.**
    - ▪ [Make predictions using theoretical probability (7-DD.6)](#)
  - o **7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.**
    - ▪ **7.SP.C.7.a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.**
      - ▪ [Probability of simple events (7-DD.1)](#)
      - ▪ [Probability of simple events and opposite events (7-DD.2)](#)

- **7.SP.C.7.b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.**
  - Experimental probability (7-DD.4)
- **7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.**
  - **7.SP.C.8.a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.**
    - Probability of compound events (7-DD.9)
    - Probability of independent and dependent events (7-DD.11)
  - **7.SP.C.8.b Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.**
    - Compound events: find the number of outcomes (7-DD.7)
    - Compound events: find the number of sums (7-DD.8)
    - Find the number of outcomes: word problems (7-DD.12)
  - **7.SP.C.8.c Design and use a simulation to generate frequencies for compound events.**