Review for Topic 1: Probabilities of Events

We do 4 things in this class

0) translate words into math
   - identify experimental procedure, observation
   - identify sample space, event of interest

1) Build models
   - Equally likely
   - Theorem of total probability
     $P(A) = \sum_{i=1}^{\infty} P(A|B_i)P(B_i)$ if B_i's form partition
   - Independence $P(A \cap B) = P(A)P(B)$

2) Compute probabilities within an experiment

   Axioms of probability and their corollaries

   $0 \le P(A) \le 1$

   $P(S) = 1 = P(A) + P(A^c)$

   $P(A \cup B) = P(A) + P(B) - P(A \cup B)$ etc....

3) Learn from the experiment's outcome

   Bayes Rule $P(B_i|A) = \dfrac{P(A|B_i)P(B_i)}{P(A)}$

4) Compute summary statistics

   (nothing yet)