

Basic Properties of Probability.

- List sample spaces for the following experiments
 - A coin is tossed once;
 - A coin is tossed twice;
 - A number of power outages at a house during a summer is recorded;
 - A lifetime of a light bulb is observed;
 - A random STAT400 student is chosen and his final grade is recorded.
- Bob owns 3 bottles of wine: a Merlot, a Cabernet Sauvignon and a Pinot Noir. He has to serve one bottle during the dinner. List the sample space.
 - Alice owns 4 bottles of wine: a Riesling, a Chardonnay, a Sauvignon Blanc and a Pinot Grigio. She has to serve one bottle during the dinner. List the sample space.
 - Alice and Bob contribute one bottle each for the dinner. List the sample space.
- A coin is tossed three times. Let $A = \{\text{first head}\}$, $B = \{\text{even number of heads}\}$, $C = \{\text{second tail}\}$.
 - List outcomes in A, B and C .
 - Compute $A \cup B$, $A \cap B$, $A \cap C$, A^c .
- A coin is called fair if $P(H) = P(T)$.
 - Compute $P(H)$ for a fair coin.
 - A fair coin is tossed repeatedly until a head comes. Find the probability that more than 1 toss is needed.
- At Books, etc. store 60 % of the customers buy books, 40 % buy CDs and 20 % buy both books and CDs. What percentage of people buy at least one of those products? exactly one?
- 50 % of students at Lazy College take at least 5 courses per semester 70 % have evening jobs, and 90 % either take at least 5 courses or work in the evening. How many students do both?
- In a certain town 40 % of men are watching football, 35 % are watching baseball, 40 % are watching basketball, 15 % watch both football and baseball, 15 % watch both football and basketball, 20 % watch both baseball and basketball and 10 % watch all three sports. What per cent of the population watch exactly 2 sports?
- 59 % cars of certain car model come with cruise control, 49 % have sunroof, 15 % have built-in phone, 84 % have either cruise control or sunroof, 65 % have either cruise control or phone, 55 % have either sunroof or phone and 85 % have at least one gadget these gadgets. How many cars have exactly one of these options?
- A die is rolled 2 times. What is a more likely outcome for the sum of the rolls 9 or 10?