Conditional Probability: Intermediate: Takeaways

Concepts

- Given events and :
  - means finding the probability of
  - means finding the conditional probability of (given that occurs)
  - means finding the probability that both and occur
  - means finding the probability that either occurs or occurs
- For any events and , it's true that:

- Knowing what the condition and the event are is important, since P(A|B) is different P(B|A).
- If event occurs and the probability of B remains unchanged (and vice versa), then events and are said to be **independent**. Mathematically, independence between A and B implies that:

- If events events and are dependent, it means that the occurrence of event changes the probability of event and vice versa. In mathematical terms, this means that one of the three equations given above for independence will not hold.

- If three events A, B, C are **mutually independent**, then two conditions must hold: they should be pairwise independent, but also independent together. If any of these two conditions doesn't hold, then the events are not mutually independent.
- The multiplication rule for dependent events:

- The mutliplication rule for independent events:

Resources

- An intuitive approach to understanding independent events
- An easy intro to some basic conditional probability concepts
- A brief reminder on set complements