

1. A marksman hits 85% of his shots. What is the expected value for the number of shots necessary to get 20 hits?
2. An urn contains 10 balls each of the following colors: Red, Blue, Green, White, Yellow, Orange.
  - a) Draw 5 times without replacement from the urn. Find the
    - (i) expected value
    - (ii) variancefor the number of red balls drawn.
  - b) Draw 5 times without replacement from the urn. Find the
    - (i) expected value
    - (ii) variancefor the number of colors drawn.
  - c) Draw 5 times with replacement from the urn. Find the
    - (i) expected value
    - (ii) variancefor the number of colors drawn.
3. Flip 3 coins. Then draw letters from a word with replacement as follows: If you got no heads, draw from ZERO. If you got one head, draw from ONE. If you got two heads, draw from TWO. If you got three heads, draw from THREE. In whichever case, draw from the word until you get a vowel.

What is the expected number of draws?
4. A 500 page book contains 300 misprints. Use the Poisson distribution to answer the following:
  - a) What is the probability there is one misprint on page 29?
  - b) What is the probability there are at least two misprints on page 29?