Lecture 10

More probability calculations:

Lotto 649:

- $P(\text{jackpot})$
- $P(\text{five matching numbers})$
- $P(\text{four matching numbers})$
- $P(\text{two matching numbers})$

Keno calculations: similar to Lotto 649

Problem: There are N people who attend the theatre and check their coats. At the end of the performance, the coats are randomly returned. What is the probability that nobody receives their own coat?

Problem: Out of 300 woodpeckers, 30 have damage to the beak but not the crest, 50 have damage to the crest but not the beak and 10 have damage to both the beak and crest.

(a) How many woodpeckers have no damage?

(b) For a randomly chosen woodpecker, are crest and beak damage independent?

(c) For a randomly chosen woodpecker, are crest and beak damage mutually exclusive?

Problem: Consider 12 balls (3 orange, 3 green, 3 blue and 3 red). We randomly choose 9 balls from the 12. How many different looking selections can be made?

Problem: How many bridge hands are there?

Problem: If we scramble the letters R, O, T, T, N, O, and O, what is the probability that we spell TORONTO?

Problem: A batch of 100 stereos contains n defective speakers. A sample of 5 stereos is inspected. What is the probability that y stereos are defective?

Problem: Consider a bag with 4 red marbles and 6 black marbles. What is the probability of obtaining 3 red marbles if we draw three marbles from the bag (i) with replacement and (ii) without replacement? Repeat the calculations if the bag contains 40 red and 60 black marbles.