AML5103 | Applied Probability and Statistics | In-class Problem Set-3

We have a box with 10 balls (4 white and 6 black). We randomly pick 5 balls. What is the probability that we get exactly 3 white balls if the sampling is

1. *with replacement*?
2. *without replacement*?

Start with the sampling space $s = \{w_1, w_2, w_3, w_4, b_1, b_2, b_3, b_4, b_5, b_6\}$,

- build the sample space S;
- check if the outcomes are equally likely;
- assign probability measure to the outcomes;
- build the event set E;
- calculate the probability of event E.

The solution to these problems will lead us to the *binomial* and *hypergeometric* random variables.