SADET-Module-B2: Basic Statistical Concepts
Homework 1

Problem 1.
Given the following statistics, what is the probability that a woman under the age of 50 that test positive in a mammogram will have cancer:

(i) One percent of women under 50 have breast cancer.

(ii) Ninety percent of women under 50 who have breast cancer test positive on mammograms.

(iii) Eight percent of women under 50 will have false positives.

Problem 2.
The number of fouls given by an officiating crew in the NBA follows an IID with mean 35 and standard deviation 6. A random sample of 50 games is selected by the commissioner for review. What is the probability that the sample mean of these games is at least 38?

Problem 3.
The PA Department of Education is suspecting that a specific school has cheated in the SATs. The average SAT score of the 105 students that took the exam in the school under examination is 710. The population average for SAT scores has a mean of 550 and a standard deviation of 70. Can you make any statistical claims on whether the school indeed could have cheated during the exams?