MATH181 Homework Sheet 1

Due 10th October 2011

See Stroud, Chapter 27, Chapter 28.

1. A set of students obtains the marks: 70, 75,50, 25, and 81. Compute the mean and standard deviation of the students' marks.

2. A tennis club has 10 members of which 7 are men and 3 are women. Determine the number of ways in which a committee of 3 can be chosen. Also find the number of ways that the committee can be chosen if it includes at least one man. How many possible committees are there with at least one woman?

3. A pencil manufacturer finds that 4% of the pencils produced are defective. These defects occur randomly in the manufacturing process.

Determine the probability that in a sample of 6 pencils

(i)   all the pencils are defective;

(ii)   all the pencils are good;

(iii) exactly 2 pencils are defective;

(iv)   fewer than 3 pencils are defective.

4. The letters $FIIINNTY$ are written on 8 otherwise identical cards. The cards are chosen randomly one at a time and placed in order. What is the probability that they spell $INFINITY$?

5. Five seeds are weighed, the results (in grams) are

$$20.97, \ 19.17, \ 19.47, \ 21.60, \ 19.92$$

What is the mean and standard deviation of these weights? What error should you give on the mean weight of a seed from this sort of plant? How many seeds must I weigh to determine the mean to 1%? How many to know the mean to 1 part in a thousand?