MATH1001 Tutorial

Aims

1. Consolidate and expand your knowledge and understanding of course material.
2. Learn how to teamwork more efficiently.
3. Improve scientific presentation skills and critique skills.

Before the class

1. Review the lecture PPT of this week.
2. Bring a copy of attached worksheet to the tutorial class. It is better to print out a hard copy of worksheet. It will be easier for you to write solution in the worksheet.
3. Remember to sign in before the session starts. You will receive an individual mark for attendance.

In the class

1. The class will be split into 6 small groups (6-7 students in each group). The small groups will be randomly formed in the first tutorial, and will be fixed in the rest of tutorial sessions. The group should discuss the solution of attached worksheet.
2. Instructor will select one small group to present their worksheet solution. Each small groups will present twice. You will receive a group mark for this presentation.
3. Other students are encouraged to ask questions or make critical assessments on these solutions.

Agenda

1. Group discussion. 20min
2. Prestation. 30min

MATH1001 Worksheet III-1

1.3.2 (d)

"To study the size distribution of rock cod (Epinephelus puscus) off the coast of southeastern Australia, the lengths and weights were recorded for all cod captured by a commercial fishing vessel on one day (using standard hook-and-line fishing methods)."

Identify the source(s) of sampling bias and describe

(i) how it might affect the study conclusions and

(ii) how you might alter the sampling method to avoid the bias.

2.4.1

Here are the data from Exercise 2.3.10 on the number of virus-resistant bacteria in each of 10 aliquots:
14 15 13 21 15 14 26 16 20 13

(a) Determine the quartiles.

(b) Determine the interquartile range.

(c) How large would an observation in this data set have to be in order to be an outlier?

3.2.8

Suppose that a medical test has a 92% chance of detecting a disease if the person has it (i.e., 92% sensitivity) and a 94% chance of correctly indicating that the disease is absent if the person really does not have the disease (i.e., 94% specificity). Suppose 10% of the population has the disease.

(a) What is the probability that a randomly chosen person will test positive?

(b) Suppose that a randomly chosen person does test positive. What is the probability that this person really has the disease?

3.5.9-10

A group of college students were surveyed to learn how many times they had visited a dentist in the previous year. The probability distribution for Y, the number of visits, is given by the following table:

Y (No. Visits)	Probability
0	0.15
1	0.50
2	0.35
Total	1.00

Calculate the mean and the standard deviation of the number of visits Y.

3.6.3

In the United States, 44% of the population has type A blood. Consider taking a sample of size 4. Let Y denote the number of persons in the sample with type A blood. Find

(a) $\Pr\{Y = 0\}$.

(d) $\Pr\{0 \leq Y \leq 2\}$.