

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-5

11.2.2

The accompanying table shows fictitious data for three samples.

	Sample		
	1	2	3
	23	18	20
	29	12	16
	25	15	17
	23		23
			19
Mean	25.00	15.00	19.00
SD	2.83	3.00	2.74

- (a) Compute $SS(\text{between})$ and $SS(\text{within})$.
- (b) Compute $SS(\text{total})$, and verify the relationship between $SS(\text{between})$, $SS(\text{within})$, and $SS(\text{total})$.
- (c) Compute $MS(\text{between})$, $MS(\text{within})$, and s_{pooled} .

11.4.2

It is thought that stress may increase susceptibility to illness through suppression of the immune system. In an experiment to investigate this theory, 48 rats were randomly allocated to four treatment groups: no stress, mild stress, moderate stress, and high stress. The stress conditions involved various amounts of restraint and electric shock. The concentration of lymphocytes (cells/ml * 10⁻⁶) in the peripheral blood was measured for each rat, with the results given in the accompanying table. Calculations based on the raw data yielded SS(between) = 89.036 and SS(within) = 340.24.

	No stress	Mild stress	Moderate stress	High stress
\bar{y}	6.64	4.84	3.98	2.92
s	2.77	2.42	3.91	1.45
n	12	12	12	12

(a) Construct the ANOVA table and test the global null hypothesis at $\alpha = 0.05$.

(b) Calculate the pooled standard deviation, s_{pooled} .

12.2.3

In a study of natural variation in blood chemistry, blood specimens were obtained from 284 healthy people. The concentrations of urea and of uric acid were measured for each specimen, and the correlation between these two concentrations was found to be $r = 0.2291$. Test the hypothesis that the population correlation coefficient is zero against the alternative that it is positive. Let $\alpha = 0.05$.

13.2.5-6

A geneticist self-pollinated pink-flowered snapdragon plants and produced 97 progeny with the following colors: 22 red plants, 52 pink plants, and 23 white plants.¹⁶ The purpose of this experiment was to investigate a genetic model that states that the probabilities of red, pink, and white are 0.25, 0.50, and 0.25.

- (a) Identify the type of statistical method that is appropriate for these data.
- (b) Conduct an appropriate complete analysis of the data that also includes a graphical display and discussion of how the data do or do not meet the necessary conditions for validity.