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-4

9.2.7

In populations of the snail *Cepaea*, the shells of some individuals have dark bands, while other individuals have unbanded shells. Suppose that a biologist is planning a study to estimate the percentage of banded individuals in a certain natural population, and that she wants to estimate the percentage—which she anticipates will be in the neighborhood of 60%—with a standard error not to exceed 4 percentage points. How many snails should she plan to collect?

9.4.10

Scientists have used Mongolian gerbils when conducting neurological research. A certain breed of these gerbils were crossed and gave progeny of the following colors

Color	Black	Brown	White
Number of progeny	40	59	42

(a) What is the value of the chi-square test statistic for investigating whether these data are consistent with the 1:2:1 ratio predicted by a certain genetic model?

(b) The P-value for the chi-square test is 0.149. If $\alpha = 0.05$, what is your conclusion regarding H_0?

10.2.7

Phenytoin is a standard anticonvulsant drug that unfortunately has many toxic side effects. A study was undertaken to compare phenytoin with valproate, another drug in the treatment of epilepsy. Patients were randomly allocated to receive either phenytoin or valproate for 12 months. Of 20 patients receiving valproate, 6 were free of seizures for the 12 months, while 6 of 17 patients receiving phenytoin were seizure free.

Consider a chi-square test to compare the seizure-free response rates for the two drugs using a nondirectional alternative.

(i) State the null and alternative hypotheses in symbols.

(ii) What is the value of the test statistic?

(iii) The P-value for the test is 0.73. If $\alpha = 0.10$, what is your conclusion regarding the hypotheses in (ii)?

10.7.6

In an experiment to treat patients with "generalized anxiety disorder," the drug hydroxyzine was given to 71 patients, and 30 of them improved. A group of 70 patients were given a placebo, and 20 of them improved. Let p_1 and p_2 represent the probabilities of improvement using hydroxyzine and the placebo, respectively. Construct a 95% confidence interval for $(p_1 - p_2)$.