

Problem 1: The rules for obtaining the p th percentile are as follows: (15 points)

- (i) The $(k+1)$ th largest sample point if $np/100$ is not an integer where k is the largest integer less than $np/100$.
- (ii) The $(np/100+1)$ th largest observation if $np/100$ is an integer.

The following data were taken from a clinical study:

9.70, 41.40, 10.60, 154.40, 4.90, 5.70, 8.90, 20.80, 3.40, 29.40, 24.10, 3.70, 11.50,
75.80, 3.80, 39.90

- (a) Please calculate the first, second and third quartiles (i.e., 25th, 50th, and 75th percentiles).
- (b) Please draw a box-and-whisker plot.

Problem 2: The following results were taken from a randomized controlled trial. In this study, there were two plans (SSI and JCP) for people with psychosis and the outcome of interest was the total costs per patient. The sample sizes, means and standard deviations (SD) are shown below:

SSI : $n=80$, Mean=8359, SD=12168

JCP : $n=80$, Mean=7264, SD=13045.

The purpose of this study was to compare the economic costs between SSI and JCP. (15 points)

- (a) Please construct a 95% confidence limit for the mean difference.
- (b) Please conduct a two-tailed test.

Note: The upper 2.5 percentile of the student-t distribution with 158 degrees of freedom is approximately equal to 1.96.

Problem 3: Please compute the Pearson product moment correlation between the two variables TPS (U/l) and AFP (ng/ml) in Table 1. The number of observations was 29. The sum of TPS and the sum of squared TPS were 1288.25 and 156955.5, respectively. The sum of AFP and the sum of squared AFP were 105 and 509, respectively. The sum of the product of TPS and AFP was 4680.35. (15 points)

(背面仍有題目,請繼續作答)

本試題是否可以使用計算機： 可使用， 不可使用（請命題老師勾選）

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Table 1

TPS(U/l)	AFP(ng/ml)
45.38	8
59.88	8
57.08	8
13.36	7
25.16	6
10.84	6
35.98	5
84.73	4
23.49	4
48.79	4
23.06	4
25.79	4
42.39	3
15.08	3
63.24	3
89.66	3
15.58	3
328.62	3
8.96	2
17.65	2
22.74	2
3.73	2
6.25	2
16.52	2
7.3	2
58.81	2
50.24	2
20.66	1
67.28	0

Problem 4: In an observational study, the risk of depression was 109/310 (35%) for group A and was 111/457 (24%) for group B. Please conduct a two-tailed test of the risk of depression being the same between these two groups. (15 points)

Problem 5: 請說明質性方法與量性方法的區別並比較其相對優缺點。(20分)

Problem 6: 何謂抽樣調查法 (sampling survey) ? 試比較電話訪查、郵寄問卷及訪員尋訪這三種方式的優缺點。(20分)