

國立政治大學 114 學年度第 1 學期 小考 (1) 考試命題紙

考試科目：統計學 (一)

開課班別：統計學整合開課

命題教授：吳漢銘

考試日期：10/7(二)14:50-16:00

※准帶項目打「O」，否則打「×」

本試題共2頁，印刷份數：86 份

計算機

課本

筆記

字典

手機平板筆電

備註：注意事項要看!! (ch1.1~4.2)

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1. 需加發計算紙或答案紙請在試題內封袋備註。

2. 為環保節能減碳，試題一律採雙面印

刷，有特殊印製需求，請註記：**A** 卷

注意事項:

- (1) 在答題紙上填寫學號和姓名。請在答題紙右上角標明你使用的試卷編號：**A** (預設) 或 **B**。
- (2) 所有問題可用中文或英文作答 (無需考慮語法和拼寫)。
- (3) 請按題號順序作答。總分為 120 分。
- (4) 建議使用深色原子筆 (允許使用鉛筆)。禁用手機 3C 產品。可使用計算機 (無程式功能)。
- (5) 計算過程 (針對 **IV** 和 **V** 部分) 必須寫出 (計算至小數點後 4 位)。
- (6) 答題紙與試題卷須一併交回。
- (7) 作弊學生當次及日後考試試卷將不予批改，情節嚴重將報校處理。
- (8) (自由參與) 交卷後請上課程教學網頁填寫考後問卷，以供教師下次出題改進參考。

(-) 宣誓詞 (0%): 複寫下列宣誓詞至答案卷的第一頁上。(不寫扣 10 分)

0. "本人姓名 恪遵各項考試規則，若如違反，願受校方最嚴厲處罰，謹誓。"

(I) 選擇題 (30%); select one correct answer.

1. (7%) What kind of relationship (if any) exists between the variables x and y ?

x	8	5	3	2	1
y	5	5	9	12	14

- (A). Positive linear relationship (B). Negative linear relationship (C). No apparent relationship
(D). A weak, curvilinear relationship.

2. (7%) The last semester grades of Nancy, a freshman at a local college, are shown below.

Course	Physics	Calculus	Biology	Music	P.E.
Credit Hours	5	4	5	3	1
Grades	C	A	B	C	A

The local university uses a 4-point grading system, i.e., $A = 4, B = 3, C = 2, D = 1, E = 0$. Compute Nancy's semester grade point average. (A). 2.50 (B). 2.67 (C). 2.83 (D). 3.00.

3. (8%) A researcher has collected the following sample data: (13, 15, 12, 13, 12). The mean of the sample is 5. The interquartile range is (A). 2. (B). 13. (C). 3. (D). 12.
4. (8%) The set of all possible outcomes of an experiment is (A). a sample point. (B). an event. (C). the population. (D). the sample space.

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(II) 填空题 (Correct spelling should be used.) (20%, 10% each)

5. "At least $(1-1/z^2)$ of the data values must be within z standard deviations of the mean, where z is any value greater than 1" is called the _____ . (只可寫英文，需完全拼對字)

6. A numerical value used as a summary measure for a population (e.g., the population mean, the population variance, and the population standard deviation) is called _____ .

(III) 簡答題 (20%, 10% each)(write down the statement (or definition), formula if any, interpretation)

7. Based on a Wikipedia-style definition, what is *Statistics*?

8. What is the definition of the z -score? How do you interpret the value of a z -score?

(IV) 計算題 (30%, 10% each)

9. **Age of Financial Independence.** Suppose that the following table represents a sample of 944 teenagers' responses to the question, "When do you think you will become financially independent?"

Age of Financially Independent	16 to 20	21 to 24	25 to 27	28 or older
Number of Responses	191	467	244	42

Consider the experiment of randomly selecting a teenager from the population of teenagers:

- Compute the probability of being financially independent for each of the four age categories.
- What is the probability of being financially independent before the age of 25?
- Do the probabilities suggest that the teenagers may be somewhat unrealistic in their expectations about when they will become financially independent?

(V) 加分題 (20%)

10. Six observations taken for two variables follow. Compute and interpret the sample correlation coefficient. (NA: not available (遺失值); 請移除第 2 筆紀錄，再做計算)

i	1	2	3	4	5	6	總和	平方和
x_i	4	8	6	11	3	16	$\sum x_i = 48$	$\sum x_i^2 = 502$
y_i	50	NA	48	40	60	32	$\sum y_i = 230$	$\sum y_i^2 = 11028$

注意：1、考試求公平及公正，請同學務必自律，維護學校與學生之榮譽。

2、考試時不得有交談、窺視、夾帶、抄襲、傳遞、代考或其它作弊等舞弊行為，考畢務必交卷，不得攜卷出場，違者依考場規則議處。