

Put your answers on Canvas Test_5_2022

Italicized phrases are true. Do not assume more than is given in a question.

A = True, B = False unless indicated otherwise. If any part of an answer is incorrect, treat all of it as incorrect. If different parts of an option are inconsistent with each other, consider it incorrect.

1-6 (3 pts). You have found that adding both fertilizer and special microbes to the soil in which you grow tomatoes leads to a huge improvement in the size and flavor of the tomatoes harvested. In the following table, which gives the 4 different possible combinations of fertilizer and microbes, this means that the tomatoes grown under the conditions of cell (Z) are far superior to those grown under (W). But you would like to know whether only one of those additives is sufficient. For the table, which comparison(s) will allow you to look at the effect of fertilizer while controlling for the presence of microbes?

(A) – will allow you to do so; (B) will not

		Fertilizer	
		No	Yes
Microbes	No	(W)	(X)
	Yes	(Y)	(Z)

- 1. (A)(B) W & X
- 2. (A)(B) W & Y
- 3. (A)(B) W & Z
- 4. (A)(B) X & Y
- 5. (A)(B) X & Z
- 6. (A)(B) Y & Z

7-8 (3 pts) Athletic teams wearing red jerseys have higher average winning rates than teams wearing other colors. When investigating the possible cause of this association, indicate whether the following design would control for different 3rd variables given in the question (underlined). (A) = True (B) = False

Design: For each team included in the study (there are many teams, both young and old), you assign a new jersey color at random. All else is unchanged. Going forward, you then study the winning rates according to color.

- 7. (A)(B) The design would control for the number of years a team has been in existence.
- 8. (A)(B) The design would control for average height of the players on a team.

9-12 (4 pts). Researchers are attempting to identify the dietary causes of high pig weight in pig farms. The variables (factors) being considered are in columns: V, X, Y, Z and M. Each row (option) describes the factors present (+) and absent (-) in the diet fed to a select group of pigs. Each row also has an associated average weight for the group (rightmost column). Which statements are correct about the factors being controlled? **Weight** is not a factor; the column is included merely to remind you what is being studied.

Option	factor					Weight
	V	X	Y	Z	M	
(A)	+	-	+	+	-	W _A
(B)	+	-	+	+	+	W _B
(C)	+	-	+	-	+	W _C
(D)	+	-	-	+	-	W _D
(E)	+	-	-	-	-	W _E
(F)	+	-	+	-	-	W _F
(G)	-	+	-	-	+	W _G
(H)	+	-	+	-	+	W _H

A = true, B = false

9. (A)(B) The pair of options F & G controls for all factors except Z.
10. (A) (B) Pair A & B controls for all factors except M
11. (A) (B) Excluding G, all possible pairs of options in the table control both for factor V and for factor X
12. (A)(B) Assuming that no factors other than V, X, Y, Z and M are important to weight, when comparing the weight of pigs from row B with those from F, any difference in weights would be attributed to factor Z.

13-15 (3pts) You observe a higher rate of cancer in residents living near nuclear power plants (NPP) than in residents living far from plants. You are investigating the cause but cannot do experiments. Which of the following designs would control for average level of smoking (a 3rd variable) in comparing cancer rates among residents living near NPP versus far from NPP?

A = smoking is controlled B = smoking not controlled

13. (A)(B) Among residents living near NPP, compare cancer rates of smokers with those of non-smokers.
14. (A)(B) Compare cancer rates of smokers living near NPP with cancer rates of non-smokers living away from NPP
15. (A)(B) Compare cancer rates in a random group of residents living near the power plant with cancer rates in a random group of residents living away from the power plant.

For 16-18 and 19-21 you are given a description of an experimental design and then asked about design properties. Use the following 3 options for those questions:

- (A) is a treatment variable,
- (B) is controlled by the experimental design
- (C) is not controlled and also not a treatment variable

16-18 (3pts) You wish to know how to make split pea soup so that the peas fall apart in the cooking process; sometimes they remain hard even when cooked for hours. You suspect the answer may be the type of water used for cooking. Read the design and answer the questions about design properties.

Design: You cook one batch of split peas with tap water in a pressure cooker for 2 hrs. You cook a different batch of split peas with distilled water in a crockpot (slow cooker) for 2 hours. Salt and carrots are added to both batches when you start cooking. After the 2 hours, you compare the outcomes of each batch.

- 16. (A)(B)(C) The type of water used
- 17. (A)(B)(C) The addition of carrots
- 18. (A)(B)(C) Cooking time

19-21 (3pts) A researcher decides to evaluate the effect of exam difficulty on teaching evaluations at UI. Design: Two UI instructors are involved in the experiment. One instructor teaches two sections of a lower division course (same course number and content, one at 8:30 AM and the other at 11:30 AM, with different students). The other instructor teaches two sections of an upper division course, again at 8:30 AM and at 11:30 AM (same course number and content between the two sections, but different content from the lower division course). For each instructor, the 8:30 section is given the harder exams. At the end of the semester, student evaluation scores are compared between the 8:30 and 11:30 lower division sections and also between the two upper division sections. Evaluation scores are not compared between lower division and upper division courses.

- 19. (A)(B)(C) exam difficulty
- 20. (A)(B)(C) instructor
- 21. (A)(B)(C) average student GPA of the class

Experiments (and knowing the difference)

22-28. (8pts) Which of the following studies describe experiments, regardless of whether the experiment was designed well or poorly and regardless of ethics. In each problem, the goal is given. The question is whether the option describes an experiment with respect to the goal (underlined).

(A) = is an experiment (B) is not

22. (A)(B) You normally eat meat but you avoid meat for 6 months to see if your persistent gout (arthritis) gets better.

23. (A)(B) You wonder whether your periodic difficulty sleeping may stem from test anxiety. You recall from memory the nights over the last two months when you did not sleep well, and you compare those dates with dates of your exams during the same period. Poor sleep precedes exams by 2-4 days.

24. (A)(B) Out of an interest in knowing whether chocolate consumption affects wealth, a researcher compares per capita chocolate consumption with the per capita rate of millionaires across different cities. To their surprise, the data show that the rate at which people are millionaires increases with chocolate consumption.

(A) = is an experiment (B) is not

25. (A)(B) A psychic who makes predictions according to standard protocols chooses to start giving false predictions to see if it affects client responses.

26. (A)(B) Jimmy is trying to avoid unsightly bed bug bites on his body; he can't avoid the bites, but maybe he can change their appearance. On occasion, he has taken an antihistamine to improve his sleep, and on reflection, he recalls that the bites are less noticeable on days after nights when he took an antihistamine. He thus concludes that antihistamines help avoid the unsightliness of bed bug bites.

27. (A)(B) You are an avid collector of moths. The work involves going out at night and placing a bright light next to a white sheet; the moths fly to the light land on the sheet, where you count or collect them. You want to find out if the phase of the moon affects the numbers of moths. You have records of collections over the last 10 years, and you compare those to NASA records of moon phases on each collecting night. You discover a negative correlation.

28. (A)(B) You want to know if where you sit in the room during an exam affects your score. On each of the four exams during the semester, you sit in a different part of the room to see if your performance changes.

29-31. From the descriptions given below, answer the questions about the distinctions between experimental versus correlational data and controls.

29 (2pts). From thousands of people for which you have histories of smoking and cancer, you compare cancer rates in a randomly chosen subset of smokers to cancer rates in a randomly chosen subset of non-smokers.

- (A) The comparison is experimental and controls for many third variables between the two groups
- (B) The comparison uses correlational data and controls for many third variables between the two groups
- (C) The comparison is experimental and does NOT control for third variables between the two groups
- (D) The comparison uses correlational data and does NOT control for third variables between the two groups

30 (2pts) You compare smoking rates between people who get cancer with those who don't get cancer

- (A) The comparison is experimental and controls for many third variables between the two groups
- (B) The comparison uses correlational data and controls for many third variables between the two groups
- (C) The comparison is experimental and does NOT control for third variables between the two groups
- (D) The comparison uses correlational data and does NOT control for third variables between the two groups

31 (2pts) From people for which you have histories of smoking and cancer AND information on lifestyles, gender, and age, compare cancer rates between smokers and non-smokers when controlling for all recorded lifestyle properties, gender and age.

- (A) The comparison is experimental and controls for some but not necessarily all third variables between the two groups
- (B) The comparison is experimental and controls for all third variables between the two groups
- (C) The comparison uses correlational data and controls for some but not all third variables between the two groups
- (D) The comparison uses correlational data and controls for all possible third variables between the two groups

The Secrets of the Psychics video

32. (2.5pts) What makes an experiment of Ray Hayman's palm reading effort to test whether clients responded to the personal accuracy of a reading?
- (A) Ray changed the way readings were normally done to see if it made a difference in the client's reaction.
 - (B) Ray had read books on how to read palms.
 - (C) The client responded positively to the readings.
 - (D) The 'study' involved blind and replication.
 - (E) It was an experiment, but none of (A)-(C) give the right reason.
 - (F) It was not an experiment.
- 33 (2.5pts). What was the manipulation that makes the horoscope 'study' an experiment?
- (A) An entire class of students was used.
 - (B) The horoscopes were deliberately created differently than normal to test an idea.
 - (C) The students responded positively.
 - (D) The horoscopes were handed out in envelopes.
 - (E) None
34. (2.5pts) What would have been a valid control group for the horoscope experiment?
- (A) The responses from a different group of students given these horoscopes
 - (B) The responses from these students to the same horoscope given on another day.
 - (C) The responses from students to horoscopes prepared the 'right' way (personalized to each individual).
 - (D) The responses from these students to the same horoscopes given to them by someone else.
- 35-36 (2.5pts). The horoscope experiment shown was set up as a contrast to the way horoscopes are usually done -- individualized. When considering the **experiment shown in the video as the treatment** and the way **horoscopes are usually done as the control**, which of the following are correct interpretations of treatment and controlled variables across these two ways of delivering horoscopes?
35. (A)(B) The expectation of personalized accuracy by the subjects (students) is a treatment variable.
36. (A)(B) The development of personalized versus uniform horoscopes is a treatment variable.

Facilitated Communication

37. (2.5pts) The reason that the tests of FC shown in the video constitute experiments is:
- (A) The tests involved the design features of blind and replication.
 - (B) The tests changed the FC environment in a specific way to test a model
 - (C) There was a social need to resolve whether FC represented legitimate communication for autism.
 - (D) The tests were observed by third parties.
 - (E) None
- 38 (2.5pts) Consider whether the tests shown of Facilitated Communication included controls.
- (A) Yes: controls were the cases of different facilitators used with the same 'child.'
 - (B) Yes: controls were the cases in which the same photo was shown to both child and facilitator
 - (C) No: controls would have constituted letting the child hold the arm of the facilitator
 - (D) No: from what was shown, we have no way of knowing whether controls were included.

39 (1pt) Consider whether the tests of Facilitated Communication shown included replication. (choose the most complete but also correct answer)

- (A) Yes. Replication was evident from the testing of multiple children and multiple facilitators
- (B) Yes. Replication was evident from the testing of multiple children, multiple facilitators and across multiple institutions
- (C) Yes. Replication was evident from the testing of multiple children, multiple facilitators, multiple organizations, and different types of tests.
- (D) No. Replication was lacking because the basic tests were always done the same way -- with the facilitator not knowing what the child had seen.