Practice Exam in Preparation for Exam 1

PY221

**Use the following information to answer questions 1 – 6**

A researcher wants to know if the amount of heat in a classroom affects the amount of aggression in disgruntled college students who have to take a stupid PY221 test. Heat is defined with two conditions: high (82 degrees) and low (60 degrees). Two classrooms are used for the experiment, and the researcher sets a high or low temperature in each one. Aggression is defined as the number of times each student karate chops their instructor on the way out of class.

1) What is the *independent* variable in this study?

a) the amount of heat

b) the classroom

c) the amount of aggression

d) low and high

2) Which statement is correct regarding the independent variable?

a) It is a quantitative variable

b) It is a qualitative variable

c) It is a binary variable

d) It is a categorical variable

e) b, c, and d are all correct statements

3) What’s the *dependent* variable in this study?

a) the level of heat

b) the test scores of the students

c) the amount of aggression

d) the effect of heat on aggression

4) If the researcher wanted to standardize their procedures across levels of the independent variable, what could they do?

a) randomly assign students to the two levels of the independent variable

b) give students in the high heat condition bottles of water to cool down, while not giving bottles of water

to students in the low heat condition

c) make sure the heat level was significantly different between the high and low conditions

d) make sure that the exam given to the high and low heat conditions is the same exam

5) If the researcher wanted to run a correlational study examining the relationship between heat and aggression, what could they do?

a) make sure that heat didn’t cause aggression

b) manipulate aggression and examine whether it impacts perceptions of how hot it is

c) measure both perceptions of how hot it is in the classroom, and # of karate chops at the instructor

d) standardize the procedures across levels of the predictor

6) Suppose the researcher analyzed the data in such a way that she could tell whether there was a significant difference in amount of karate chops across the two conditions. She learns that students in the high heat condition were significantly more aggressive than students in the low heat condition. She concludes that heat can cause an increase in aggression. The researcher could be described as having performed \_\_\_\_ before drawing this conclusion.

a) descriptive statistics.

b) random sampling.

c) standardization of the data.

d) inferential statistics.

7) You love hot sauce. So you go to Chipotle for some lunch and decide to rate a bunch of sauces on their hotness on a scale of 1 (like water) to 50 (OMG). If your scores have a mean of 26, a median of 20, and a variance of 16, what is the z-score for a hotness score of 18?

a) 11.00

b) -2.00

c) 2.00

d) 1.41

8) You love hot sauce. So you go to Chipotle for some lunch and decide to rate a bunch of sauces on their hotness on a scale of 1 (like water) to 50 (OMG). If Cholula Original Hot Sauce has a z-score of -2.30, what percentage of other hot sauces are *less* spicy than Cholula?

a) 1.07%

b) 10.7%

c) 74%

d) 98.93%

Use the following table of descriptive statistics to answer questions 9-12.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Variable* | *A* | *B* | *C* | *D* |
| Mean | 5 | 8 | 3 | 10 |
| Median | 5 | 8 | 6 | 6 |
| Mode | none | 8 | 7 | 5 |
| Standard deviation | 0 | 3.2 | 3 | 3 |

9) Which variable is most likely to have a negatively skewed distribution?

a) *A*

b) *B*

c) *C*

d) *D*

10) Which variable is most likely to have a positively skewed distribution?

a) *A*

b) *B*

c) *C*

d) *D*

11) Which variable is most likely to have a normal (bell-shaped and symmetrical) distribution?

a) *A*

b) *B*

c) *C*

d) *D*

12) Which of these statements is **TRUE** for *variable C?*

a) About 50% of the sample has scores above 6 and about 50% of the sample has scores below 6.

b) We know that there are 11 people in the sample.

c) Variable C must be a qualitative variable.

d) Seven participants in the sample gave the same score.

13) Lisa Simpson scores a 73 on an exam where the mean score is 70, and the median is also 70. The SS = 90, and the number of students in her class is 11. What % of her classmates beat her score? (This question involves many steps!)

a) 1.00%

b) 15.87%

c) 50.00%

d) 84.13%

The variance table below has a few missing values. Calculate them as needed to answer questions 14 - 16.

|  |  |  |  |
| --- | --- | --- | --- |
| **score** | **mean** | **deviation** | **deviation2** |
| **x** | **x̄** | **(x - x̄)** | **(x - x̄)2** |
| 30 | 50 | -20 | 400 |
| 40 |  | -10 | 100 |
| 50 | 50 | 0 | 0 |
| 60 |  |  |  |
| 60 |  | 10 |  |

14) The sum of squares is:

1. 100
2. 700
3. 4900
4. 4600

15) The variance is:

1. 26.46
2. 175
3. 700
4. 4900

16) The standard deviation is:

1. 11.83
2. 13.23
3. 175
4. 700

17) Which of the following conclusions is most likely to come from the results of an experimental study?

a) Eating a larger amount of chocolate every day is related to greater happiness.

b) Spending more time scrolling through Facebook each week is associated with lower happiness.

c) Exercising affects your blood pressure and cholesterol levels.

d) The more cats you pet each day, the more relaxed you feel.

18) A researcher wants to know if the amount of time a person spends on social media in a given day is related to how lonely they are. The researcher assigns people to a *no social media*, *low social media* (<20 minute), or *high social media* (> 2 hours) group. Each participant is in the same condition every day for a week, and every evening they answer a variety of questions, including one to measure their loneliness. What is the dependent variable in this study?

a) time spend on social media

b) the questionnaire that participants complete

c) whether loneliness changes depending on social media usage

d) loneliness

**Use the following scenario to answer questions 19 through 22.**

Suppose that a BSC administrator is interested in current BSC students’ opinions about whether they would prefer to take courses online or in person. The administrator emails a survey to all 986 students currently enrolled at BSC, and 65% respond to the survey (N=786). The questions are identical for all students. One question the survey asks is: How interested are you in taking in-person classes at BSC? 1=not at all interested to 5-extremely interested. The mean score is 3.95 and the standard deviation is 0.50 for this question in the survey. Assume a normal distribution for this variable.

19) Which statement is **FALSE**?

1. The mean of 3.95 is considered a population parameter.
2. The mean of 3.95 is considered a parameter estimate.
3. The mean of 3.95 is considered a sample statistic.
4. The standard deviation of 0.50 is considered a sample statistic.

20) What kind of variable is represented by: *How interested are you in taking in-person classes at BSC? 1=not at all interested to 5-extremely interested.*

1. binary
2. qualitative but not binary
3. a predictor variable
4. quantitative variable

21) Which statement is **TRUE** according to the scenario?

1. The sample of 786 is considered a convenience sample.
2. The sample of 786 is considered a random sample.
3. We do not know the true size of the population of currently-enrolled BSC students.
4. Random assignment was likely used in this survey.

22) What percentage of all 786 students answered with a rating *higher* than 3 on the 5-point scale?

1. ~2%
2. ~3%
3. ~50%
4. ~97%

23) Suppose another question on the survey is: How interested are you in taking *online* classes at BSC? 1=not at all interested to 5-extremely interested. The mean score is 2.70 and the standard deviation is 1.83 for this question in the survey. Which variable’s data – interest in in-person classes or interest in online classes – has less variability in scores?

1. interest in in-person classes
2. interest in online classes
3. they are about the same
4. it’s impossible to tell with the information provided

***Here’s a space to write down the concepts/topics you need to review the most…***

KEY – please return to Dr. V after checking your answers. Thanks ☺

1. A
2. E
3. C
4. D
5. C
6. D
7. B
8. A
9. C
10. D
11. B
12. A
13. B
14. B
15. B
16. B
17. C
18. D
19. A
20. D
21. A
22. D
23. A

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1. A
2. E
3. C
4. D
5. C
6. D
7. B
8. A
9. C
10. D
11. B
12. A
13. B
14. B
15. B
16. B
17. C
18. D
19. A
20. D
21. A
22. D
23. A

KEY – please return to Dr. V after checking your answers. Thanks ☺

1. A
2. E
3. C
4. D
5. C
6. D
7. B
8. A
9. C
10. D
11. B
12. A
13. B
14. B
15. B
16. B
17. C
18. D
19. A
20. D
21. A
22. D
23. A

KEY – please return to Dr. V after checking your answers. Thanks ☺

1. A
2. E
3. C
4. D
5. C
6. D
7. B
8. A
9. C
10. D
11. B
12. A
13. B
14. B
15. B
16. B
17. C
18. D
19. A
20. D
21. A
22. D
23. A

KEY – please return to Dr. V after checking your answers. Thanks ☺

1. A
2. E
3. C
4. D
5. C
6. D
7. B
8. A
9. C
10. D
11. B
12. A
13. B
14. B
15. B
16. B
17. C
18. D
19. A
20. D
21. A
22. D
23. A

KEY – please return to Dr. V after checking your answers. Thanks ☺

1. A
2. E
3. C
4. D
5. C
6. D
7. B
8. A
9. C
10. D
11. B
12. A
13. B
14. B
15. B
16. B
17. C
18. D
19. A
20. D
21. A
22. D
23. A