

American University of Beirut

STAT 201

Elementary Statistics

Fall 2002-2003



Final Exam

Date: Friday, January 31, 2003 - 3:00 pm to 5:00 pm

Instructor: Mohamed Kobeissi

Name:

ID #:

Section: 3

This is **NOT** an open-book exam. Your exam should have 4 pages, and there are 35 questions totaling 175 points. A question with more than one answer will be counted as wrong. A correct answer is 5 points, a wrong or/and an unanswered question is 0 points.

Mark your answer in the following table please.

Question	Answer	Question	answer	Question	answer
1.	_____	13.	_____	25.	_____
2.	_____	14.	_____	26.	_____
3.	_____	15.	_____	27.	_____
4.	_____	16.	_____	28.	_____
5.	_____	17.	_____	29.	_____
6.	_____	18.	_____	30.	_____
7.	_____	19.	_____	31.	_____
8.	_____	20.	_____	32.	_____
9.	_____	21.	_____	33.	_____
10.	_____	22.	_____	34.	_____
11.	_____	23.	_____	35.	_____
12.	_____	24.	_____		

Good luck



Use the following information to answer questions 1 to 15. Cards with numbers are put in a box.

x	frequency
2	5
3	10
4	6
6	7
7	2
	30



1. What is the sample mean?
a) 5.0 b) 4.0 c) 3.5 d) 4.5 e) none of the above
2. What is the sample standard deviation?
a) 2.4 b) 1.18 c) 1.62 d) -0.5 e) none of the above
3. What is the mode?
a) 6 b) 5 c) 4 d) 3 e) none of the above
4. What is the median?
a) 3 b) 4 c) 3.5 d) 4.5 e) none of the above
5. What is the first quartile, Q_1 ?
a) 2.5 b) 3 c) 3.5 d) 4 e) none of the above
6. What is the *IQR*?
a) 1 b) 2 c) 3 d) 1.5 e) none of the above

A single card is selected form the box. Let

- A*: event the number is odd.
B: event the number is even.
C: event the number is less or equal to 4.
D: event the number is greater or equal to 6.
E: event the number is between 3 and 6 included.

7. What is the probability of *A*?
a) 0.4 b) 1.5 c) 0.37 d) -1 e) none of the above
8. What is the event *B*?
a) {2, 4} b) {2, 4, 6} c) {4, 6} d) {2, 3, 4, 7} e) none of the above
9. What is the probability of *B*?



- a) 1.2 b) 0.9 c) 0.6 d) 0.71 e) none of the above

10. The relationship between events A and B is best described as

- a) disjoint b) dependent c) mutually exclusive d) independent e) none of the above

11. Determine $P(A \text{ or } B)$.

- a) 0.93 b) -0.33 c) 0.27 d) 1 e) none of the above

12. Determine $P(B \& C)$.

- a) $5/30$ b) $11/30$ c) $6/30$ d) $1/30$ e) none of the above

13. Determine $P(\text{not } E)$.

- a) $7/30$ b) $5/30$ c) $2/30$ d) $23/30$ e) none of the above

14. Which of the following events are mutually exclusive?

- a) (not A) & C b) B & D c) C & D d) C & (not B) e) none of the above

15. Determine $P((A \& \text{not } C) \text{ or } B)$.

- a) $3/30$ b) $17/30$ c) $20/30$ d) $9/30$ e) none of the above

16. Two populations, 1 and 2, both have the same mean. If population 2 has a larger variance than population 1 then which of the following statements best describes this situation?

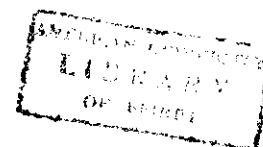
- a) Population 1 is left skewed and population 2 is right skewed.
b) Data in population 2 will cluster closer to the mean than the data in population 1.
c) Data in population 1 will cluster closer to the mean than the data in population 2.
d) None of the above.

17. Which of the following statement is a correct interpretation of z -scores or standardized scores?

- a) The z -scores are a transformation of data into standard deviation units away from the median.
b) The z -scores are a transformation of data into standard deviation units away from the mean.
c) The z -scores are the quartiles of the data.
d) The z -scores are a transformation of data that depends only on the sample size.
e) None of the above.

18. Which of the following statements is false?

- a) The mean and median are equal for all symmetric distributions.
b) Histograms, stem-and-leaf diagram and boxplots are used to show the shape of a data set.
c) The probability of an event is a number between 0 and 1.
d) The total area under the standard normal curve is 1 but its not true for other normal curves.
e) None of the above

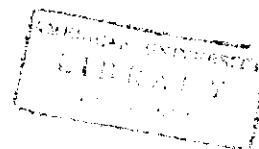


19. What is the area under the standard normal curve that lies to the left of -1.56?
a) -0.0594 b) 0.0594 c) 0.9406 d) -0.9406 e) none of the above
20. What is the area under the standard normal curve that lies between -3 and 3?
a) 1.001 b) 0.9544 c) 0.9974 d) 0.6826 e) none of the above
21. What is the z-score that has an area of 0.70 to its right under the standard normal curve?
a) -0.53 b) 0.54 c) 0.53 d) -0.54 e) none of the above
22. What are the two z-scores that divide the area under the standard normal curve into a middle 0.85 area and two 0.075 areas?
a) -1 and 1 b) -0.67 and 0.67 c) -2 and 2 d) -1.43 and 1.43 e) none of the above
23. What is the area under the standard normal curve that lies between either to the left of -1.25 or to the right of 2.13?
a) 0.1112 b) 0.1222 c) 0.1212 d) 0.2211 e) none of the above
24. For a normal population with mean 56.8 and standard deviation 8.2, 95.44% of the population lies in the interval
a) (54.8,58.8) b) (40.4,73.2) c) (40.8,72.8) d) (-3,3) e) none of the above
25. If each observation in a set of data increases by 1. Which of the following statements is false?
a) The mean of the data increases by 1.
b) The standard deviation of the data increases by 1.
c) The median of the data increases by 1.
d) The mode of the data increases by 1.
e) None of the above



Use the following information to answer questions 26 to 28. The times of the finishers in the New York City 10 km run are normally distributed variable with a mean of 61 minutes and a standard deviation of 9 minutes.

26. What is the first quartile of the finishing time?
a) 66.4 b) 36.4 c) 16.4 d) 46.4 e) none of the above
27. What percent of people have finishing time between 70 and 79?
a) 23.6% b) 33.6% c) 13.6% d) 43.6% e) none of the above
28. What percent of people have finishing time between 43 and 79?
a) 99.74% b) 95.44% c) 68.26% d) 50% e) none of the above



Use the data of the following table to answer questions 29 to 35.



x	y
0	4
2	2
2	0
5	-2
6	1

29. What is the regression equation of the data set?

- a) $\hat{y} = 2.875 + 0.625x$ b) $\hat{y} = -2.875 + 0.625x$ c) $\hat{y} = 2.875 - 0.625x$ d) $\hat{y} = -2.875 - 0.625x$
e) none of the above

30. For $x = 2$, what is the predicted value of y ?

- a) -1.625 b) 3.625 c) -3.625 d) 1.625 e) none of the above

31. What is the total sum of squares, SST?

- a) -10 b) 10 c) -20 d) 20 e) none of the above

32. What is the regression sum of squares, SSR?

- a) 9.375 b) 9.175 c) -9.375 d) -9.175 e) none of the above

33. What is the coefficient of determination r^2 ?

- a) 0.67 b) 0.87 c) 0.47 d) 0.37 e) none of the above

34. For least squares regression, what statement best describes the coefficient of determination r^2 ?

- a) The total variation of y with respects to x
b) The proportion of total variation explained by the regression
c) The deviation not explained by the regression
d) the determined variation of regression
e) none of the above

35. What is the linear correlation coefficient of the data?

- a) -0.685 b) 0.875 c) -0.875 d) 0.685 e) none of the above

