Principles of statistics

First exam

Doctor 2021

- For questions 1-3

Given the following data: -5 , -3 , 1 , 3, 4 , 4 , 4 , 5

1) The median is:

a)3.5 b)4 c)3 d)4 e)1.63

2) The mean is:

a)3.5 b)4 c)3 d)4 e)1.63

3) The mode is:

a)3.5 b)4 c)3 d)4 e)1.63

4) The distribution of a sample is skewed to the left with Mean 40, in such a case only one of the following could be correct :

a. Mode =43 and Median =46

b. Mode =46 and Median =42

c. Mode =33 and Median =36

d. Mode =37 and Median =43

e. Mode =42 and Median =37

Ans: 1) a 2) e 3) d 4) b

5) The table below shows the number of daily studying hours for a sample of 50 students.

Class	3-5	6-8	9-11	12-14
Frequency	10	20	15	5

The percentage of students study less than 7 hours is:

a. 40% b. 50% c. 60% d. 45% e. 47.5%

6) The table below shows the means and standard deviations of 3 samples as well as a grade for each sample (W,X,Y, respectively).

Sample	Mean	Standard Deviation	Score
Sample I	6	2	W=12
Sample II	24	2	X=20
Sample III	30	4	Y=40

Based on the z-score, the order of the relative positions (from lower to upper) of the W,X and Y grades is:

a) W<X<Y b) X<Y<W c) Y<X<W d) Y<W<X e) W<Y<X

Ans: 5) a 6) b

7) For a given sample, the mean is 15 and the variance is 2. If we multiply each observation by 1:1 then we add 2, then, the new mean and the new variance are, respectively:

a) 15.5 & 1.62 b) 14.5 & 4.42 c) 18.5 & 2.42
d) 15.5 & 3.62 e) 18.5 & 1.21

8) If a committee of four students is to be formed from a group of 5 male and 3 female students, then the probability that the committee contains at least one female student is:

a) 41/42 b) 5/9 c) 13/14 d) 4/9 e) 1/42

9) A sample data of size 160 observations has mean= 72. If at least 120 observations fall in the interval 67-77. Based on Chebyshev's theorem, the minimum percentage of observations that should fall in the interval 62-82 is:

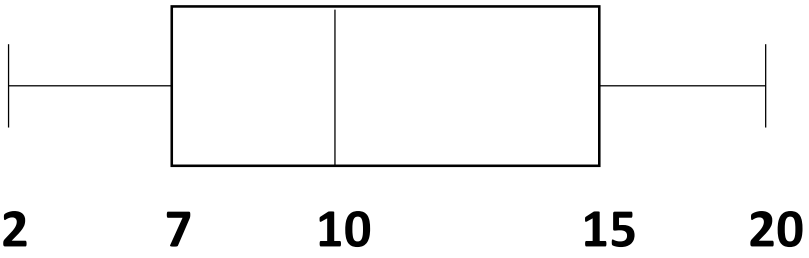
a) 93.75% b) 75% c) 96% d) 88.88% e) 55.55%

10) Let A and B be two events in a sample space such that P(A)= 0.5 , P(B)= 0.7 , A and B are independent, then $P(\overline{A} \cup \overline{B})$ equals to:

a) 0.7 b) 0.85 c) 0.4176 d) 0.1176 e) 0.65

Ans: 7) c 8) c 9) a 10) e

11) The boxplot below summarizes the grades of 100 students in a mathematics quiz.



The IQR of the quiz is:

a) 18 b) 7 c) 15 d) 8 e) 5

12) If P(A|B) = 0.5 , P(A) =0.3 and P(B) =0.4 then P(B|A) =

a) 1/6 b) 2/3 c) 1/3 d) 5/6 e) 1/2

13) Given the following table

	Male	Female
Average (mean)	550	X
Sample size	15	10

If the mean of the two samples (combined) together is 498, then X =

a) 446 b) 430 c) 410 d) 420 e) 436

Ans: 11) d 12) b 13) d

- **For Questions (14-15)**

Suppose there are 70 male students and 30 female students in a chemistry class. Assume that 55 of the males and 25 of the females passed the course.

14) The probability that a randomly selected student will pass the course is:

a) 0.55 b) 0.70 c) 0.80 d) 0.83 e) 0.25

15) The probability that a randomly selected student is a male student if he/she has passed the course is:

a) 0.3125 b) 0.55 c) 0.7584 d) 0.2416 e) 0.6875

Ans: 14) c 15) e

The End

Good Luck

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