

المراجعة النهائية
للييلة الاختبار

STAT 110

وتشمل حلول أهم أسئلة البلاك بورد
بالإضافة إلى الأفكار الأساسية بالمنهج

تمنياتي
للكم بالنوفيق

السعدي



ملحوظة هامة:

إذا واجهتك فكرة غير واضحة عليك بالرجوع إلى الهموركات السابقة التي كانت تحل قبل التست بنك مباشرة

1

Weight of lobsters in a tank in a restaurant is an example of ... variable.

- A. nominal
- B. quantitative
- C. discrete
- D. qualitative

2

The entire units of a phenomenon is called ...

- A. variable.
- B. frame.
- C. sample.
- D. population

3

A value that changes from one individual to another is called ...

- A. statistic.
- B. constant.
- C. parameter.
- D. variable.

4

Categories of magazines in a Physician's office (sports, women's, health, men's news) is an example of ... variable.

- A. continuous
- B. ordinal
- C. nominal
- D. discrete

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5

Capacity of the NFL football stadiums is an example of ... variable.

- A. continuous
- B. discrete
- C. ordinal
- D. nominal

6

Mail carriers of a large city are divided into four groups according to gender (male or female) and according to whether they walk or ride on their routes. Then 35 are selected from two randomly selected groups and interviewed to determine whether they have been bitten by a dog in the last year. This is an example of ... sample.

- A. stratified
- B. cluster
- C. systematic
- D. random

7

The statement "Experts say that mortgage rates may soon hit bottom" is an example of ...

- A. parameter.
- B. descriptive Statistics.
- C. inferential Statistics.
- D. simulation.

8

Life of a TV tube is ...

- A. statistic.
- B. parameter.
- C. constant.
- D. variable.

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9

The height of each member of a basketball team is an example of ... variable.

- A. discrete
- B. nominal
- C. qualitative
- D. quantitative

10

The universe or totality of items or things under consideration is called ...

- A. a statistic.
- B. a parameter.
- C. a population.
- D. a sample.

11

A _____ is a characteristic or measure obtained by using the data values from a population.

- A. statistic
- B. sample mean
- C. parameter
- D. sample variance

12

The following data represents the final scores of a random sample of students:

90	81	87	77
90	93	81	95
78	96	88	83
82	90	86	90
73	82	84	99

If the mean is equal to 86.25, and the standard deviation is equal to 6.79, then the standard scores of students who got 73, 82, and 99 are equal to _____, _____, and _____, respectively.

- A. -0.77, -0.04, 1.29
- B. -1.22, -0.77, 1.44
- C. -1.95, -0.63, 1.88
- D. -1.95, 0.26, 0.55



13

The following data represents the ages of a group of patients:

60	54	67	51
66	64	61	63
57	58	66	45
54	40	51	61
59	86	66	63

The values of ages corresponding to the 15th, 25th, and 65th percentiles are equal to ____, ____, and ____, respectively.

- A. 51, 54, 63
- B. 51, 63, 66
- C. 51, 54, 66
- D. 54, 63, 66

14

The _____ is the easiest average to compute.

- A. mode
- B. range
- C. mean
- D. median

15

The _____ for a data set is unique and not necessarily one of the data values.

- A. mean
- B. range
- C. median
- D. mode

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16

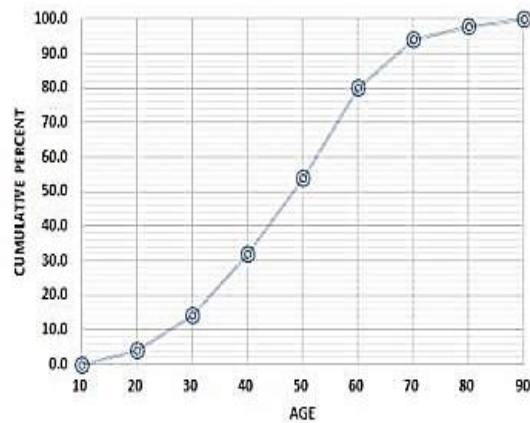
The yearly saving of a family for the last 10 years can be best displayed using ...

- A. histogram.
- B. time series graph.
- C. pie graph.
- D. bar chart.

17

Using the following graph, the percentage of people with age of at most 30 years ...

Ogive

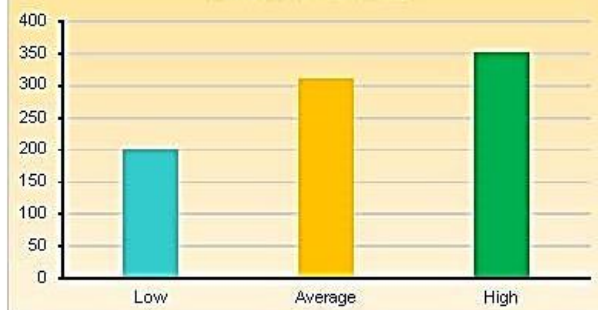


- A. can't be determined.
- B. is about 14%.
- C. is about 10%.
- D. is about 16%.

18

The following graph is called ...

Fund Risk Levels



- A. pie chart.
- B. bar chart.
- C. blood graph.
- D. Pareto chart.

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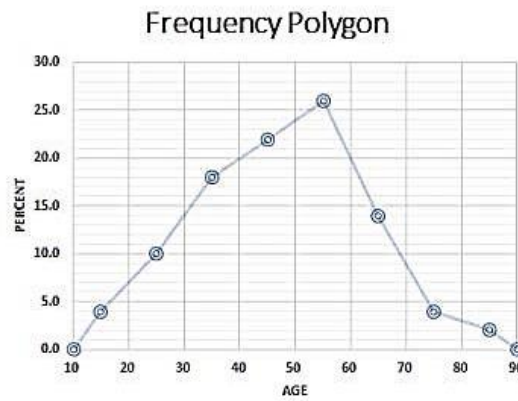
19

The monthly number of car's accidents can be best displayed using ...

- A. pie graph.
- B. bar chart.
- C. time series graph.
- D. histogram.

20

The number of classes in the following graph ...



- A. is 8.
- B. is 7.
- C. is 10.
- D. cannot be determined.

21

In a frequency distribution, the classes must ...

- A. contain a maximum of 10 observations.
- B. have the same frequency.
- C. be exhaustive.
- D. be measured on an ordinal scale.

ALSAADI



22

The three types of frequency distributions are ..., ..., and ...

- A. qualitative, quantitative, time series.
- B. nominal, ordinal, quantitative.
- C. categorical, ungrouped, grouped.
- D. nominal, ordinal, continuous.

23

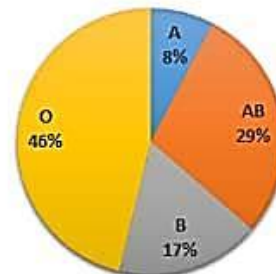
A bar chart is used most often when ...

- A. you want to organize data along certain time interval.
- B. you want to show frequencies as compared to total observations.
- C. you want to show frequencies by class intervals.
- D. you want to display frequencies by category.

24

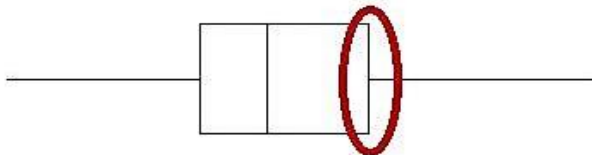
The degree of A blood type in the following graph is approximately ...

Blood Type



- A. 28.8
- B. 104.4
- C. 165.6
- D. 61.2

25



The circled part of the above box plot represents _____

- A. the 3rd quartile.
- B. the 3rd percentile.
- C. the 1st quartile.
- D. the 1st percentile.



26

The _____ for a data set is unique and not necessarily one of the data values.

- A. mode
- B. range
- C. median
- D. mean

27

Three persons earn 15 SAR an hour, six earn 30 SAR an hour, and one earns 36 SAR an hour. The earning average per hour is approximately ...

- A. 27 SAR.
- B. 29 SAR.
- C. 87 SAR.
- D. 26.1 SAR.

28

Which one of the following is referred to as a parameter?

- A. The population mode.
- B. The population data.
- C. The sample data.
- D. The sample median.

29

The measure of variation that gives the largest variability in the data set is ...

- A. the range.
- B. the variance.
- C. the standard deviation.
- D. the IQR.

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30

The mean can take any value in the range ...

- A. $(-\infty, +\infty)$.
- B. $(0, +\infty)$.
- C. $(0, 1)$.
- D. $(-\infty, 0)$.

31

A statistic that tells the number of standard deviations a data value is above or below the mean is called ...

- A. a percentile.
- B. a standard deviation.
- C. a z-score.
- D. a quartile.

32

What is the most appropriate measure of central tendency for the following data set?

A, C, A, B, C, B, A, D

- A. range
- B. median
- C. mean
- D. mode

33

If there is a negative linear relationship between two variables, then the probability that the value of the correlation coefficient will be greater than or equal to -1 is ...

- A. 0
- B. 0.25
- C. 0.5
- D. 1

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34

A correlation coefficient of 2 implies ...

- A. very bad relationship between the variables.
- B. wrong calculations.
- C. a perfect linear relationship between the variables.
- D. no relationship between the variables.

35

The complement of guessing 16 correct answers on a 16 multiple choice questions exam is ...

- A. guessing at most 15 incorrect answers.
- B. guessing 16 incorrect answers.
- C. guessing at most 15 correct answers.
- D. guessing at least 15 incorrect answers.

36

In a statistics class there are 22 juniors and 8 seniors; 5 of the seniors are females, and 12 of the juniors are males. If a student is selected at random, find the probability of selecting a junior or senior.

- A. 0.6000
- B. 0.1000
- C. 1
- D. 0.9000

37

In a train yard there are 7 tank cars, 12 boxcars, and 9 flatcars. How many ways can a train be made up consisting of 2 tank cars, 8 boxcars, and 3 flatcars? (Order is not important)

- A. 37442160
- B. 600
- C. 36288
- D. 873180

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38

The number of multiple births in the United States for a recent year indicated that there were 29819 sets of twins, 788 sets of triplets, 510 sets of quadruplets, and 122 sets of quintuplets. Choose one set of siblings at random. Find the probability that it represented more than two babies.

- A. 0.0163
- B. 0.0455
- C. 0.9545
- D. 0.0202

39

Roll a die: Get a number greater than 3, and get a number less than 3. The events are ...

- A. not mutually exclusive
- B. mutually exclusive
- C. outcome
- D. sample

40

The number of suits sold per day at a retail store is shown in the table along with the corresponding probabilities.

X	25	26	27	28	29
P(x)	0.4	0.25	0.13	0.16	0.06

The best graph that can be used for displaying this probability distribution is ...

- A. Pareto graph.
- B. histogram.
- C. pie chart.
- D. bar chart.

41

An insurance company insures a person's antique coin collection worth \$20669 for an annual premium of \$271. If the company figures that the probability of the collection being stolen is 0.003, what will be the company's expected profit in the first year?

- A. 208.993
- B. 208.18
- C. -208.18
- D. -208.993



42

The number of suits sold per day at a retail store is shown in the table along with the corresponding probabilities.

X	22	23	24	25	26
P(x)	0.24	0.21	0.17	0.3	0.08

What is the sample size?

- A. Cannot be determined
- B. 26
- C. 120
- D. 5

43

A discrete random variable ...

- A. has a finite number of possible values that can be counted which are determined by chance.
- B. has an infinite number of values that can be counted which are determined by measurement.
- C. has an infinite number of values that can have decimal and fractional values which are determined by chance.
- D. has an infinite number of values that can have decimal and fractional values which are determined by count.

44

Surveying 588 prisoners to see how many different crimes they were convicted of. Is it a binomial experiment?

- A. Yes.
- B. Not known.
- C. No.
- D. Maybe.

45

Find the mean for the number of heads when 103 coins are tossed.

- A. 12.875
- B. 5.074446
- C. 25.75
- D. 51.5



46

The number of trials for a binomial experiment?

- A. is unchanged.
- B. is unlimited.
- C. can be infinite.
- D. must be fixed.

47

The mean of the sample means equals the ...

- A. sample mean.
- B. sampling error.
- C. population mean.
- D. standard error of the mean.

48

The difference between a sample mean and a population mean is due to ...

- A. population error.
- B. standard error.
- C. standard error of the mean.
- D. sampling error.

49

What is not a property of the standard normal distribution?

- A. It's uniform.
- B. It's bell-shaped.
- C. It's symmetric about the mean.
- D. It's unimodal.



50

Which of the following is **not** a requirement of the binomial distribution?

- A. Only two outcomes are possible.
- B. The probability of a failure is the same for each trial.
- C. The trials must be dependent.
- D. The sample size must be fixed.

51

A store contains 16 laptops. The probability that a laptop will be defective is 0.25. Then the mean number of non-defective laptops is ...

- A. 1.732051
- B. 3
- C. 4
- D. 12

52

The probability of z between 0 and 0.4 is about ...

- A. 0.8446
- B. 0.6554
- C. 0.1554
- D. 0.5

53

In a normal distribution, what is the percentage of the area that falls below the mean?

- A. 95 %.
- B. 50 %.
- C. 99.7%.
- D. 68 %.

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54

What is the standard deviation of the sample means called?

- A. The sampling distribution.
- B. The central limit theorem.
- C. Normal distribution.
- D. The standard error of the mean.

55

All variables that are approximately normally distributed can be transformed to standard normal variables.

- A. Not possible.
- B. Not known.
- C. False.
- D. True.

56

The difference between a sample mean and a population mean is due to ...

- A. standard error.
- B. population error.
- C. standard error of the mean.
- D. sampling error.

57

The standard deviation of all possible sample means equals the ...

- A. square root of the population standard deviation.
- B. population standard deviation divided by the square root of the sample size.
- C. population standard deviation divided by the population mean.
- D. population standard deviation.

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58

The probability that a cellular phone company sells X number of new phone contracts per day is shown below:

X	6	7	8	9	10
$P(x)$	0.36	0.27	0.14	0.16	0.07

What is the probability that they will sell at most 7 contracts 3 days in a row?

- A. 0.63
- B. 0.37
- C. 0.050653
- D. 0.250047

59

A continuous random variable ...

- A. has an infinite number of values that can have decimal and fractional values which are determined by chance.
- B. has an infinite number of values that can have decimal and fractional values which are determined by count.
- C. has a finite number of possible values that can be counted which are determined by chance.
- D. has a finite number of possible values or an infinite number of values that can be counted which are determined by measurement.

60

An insurance company insures a person's antique coin collection worth \$20921 for an annual premium of \$280. If the company figures that the probability of the collection being stolen is 0.008, what is the expected profit for the person in the first year?

- A. 112.632
- B. -110.392
- C. -112.632
- D. 110.392

61

The standard variation can take any value in the range ...

- A. $(-\infty, +\infty)$.
- B. $(0, 1)$.
- C. $(-\infty, 0)$.
- D. $(0, +\infty)$.

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62

Suppose your statistics instructor tells you that you scored 82 on an exam and that the class mean was 74. You should hope that the **standard deviation** of the exam scores was ...

- A. any value.
- B. 1.
- C. smaller than 1.
- D. larger than 1.

63

The most appropriate measure of central tendency for the values -21, -24, -27, -23, -25, -26, -22, -30, -29, -31, 35 is the ...

- A. median.
- B. range.
- C. mode.
- D. mean.

64

When data are categorized as single, married, divorced or widowed, the most appropriate measure of central tendency is the ...

- A. median.
- B. mean.
- C. range.
- D. mode.

65

A measure obtained from population data is called ...

- A. sample.
- B. parameter.
- C. statistic.
- D. population.

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66

Three persons earn 15 SAR an hour, six earn 30 SAR an hour, and one earns 36 SAR an hour. The earning average per hour is approximately ...

- A. 29 SAR.
- B. 87 SAR.
- C. 27 SAR.
- D. 26.1 SAR.

67

A single, extremely large value can affect the ...

- A. median more than the range.
- B. mean more than the mode.
- C. median more than the mean.
- D. mode more than the mean.

68

When the shape of the distribution is symmetrical and the value of the median is 67, then the value of the mean ...

- A. should be 75
- B. cannot be determined.
- C. should be 60
- D. should be 67

69

What is the range of values for the positive correlation coefficient?

- A. $0 < r < +1$
- B. $0 < r \leq +1$
- C. $0 \leq r < +1$
- D. $0 \leq r \leq +1$

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70

The regression line is called the ...

- A. line of worst fit.
- B. line of perfect fit.
- C. line of best fit.
- D. line of single fit.

71

As the value of the correlation coefficient approaches 0, as the strength of the relationship becomes ...

- A. weaker.
- B. positive.
- C. moderate.
- D. stronger.

72

If there is a positive linear relationship between two variables, then the probability that the value of the correlation coefficient will be less than or equal to 1 is ...

- A. 1
- B. 0.25
- C. 0
- D. 0.5

73

The following equation describes the relationship between two variables x and y :

$$y' = -2x + 3$$

The value of the correlation coefficient between x and y should be ...

- A. 0
- B. -0.8
- C. -2
- D. 3

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74

Drawing a ball from an urn, not replacing it, and then drawing a second ball are ...

- A. dependent events.
- B. mutually exclusive events.
- C. not known.
- D. independent events.

75

At a used-book sale, 101 books are adult books and 155 are children's books. Of the adult books, 68 are nonfiction while 61 of the children's books are nonfiction. If a book is selected at random, find the probability that it is a children's book or a fiction book.

- A. 0.7344
- B. 0.4961
- C. 0.7617
- D. 0.6328

76

In a recent survey about subscription to sports TV channels, we found 8 out of 10 households had subscription to sports TV channels. Choose 4 households at random. Find the probability that non of the 4 households had subscription to sports TV channels.

- A. 0.2000
- B. 0.4096
- C. 0.9984
- D. 0.0016

77

Elementary and secondary schools were classified by the number of computers they had.

Computers	1-10	11-20	21-50	51-100	100+
Schools	382	448	718	2282	3833

Choose one school at random. Find the probability that it has more than 100 computers.

- A. 0.5002
- B. 0.0990
- C. 0.1847
- D. 0.8381

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78

In a recent year there were the following numbers (in hundreds) of licensed drivers in Saudi Arabia.

	Male	Female
Age 19 and under	4111	4055
Age 20	3627	4142
Age 21	2023	1818

Choose one driver at random. Find the probability that the driver is at least 20 years old.

- A. 0.898
- B. 0.208
- C. 0.690
- D. 0.587

79

How many different ways can a researcher select 5 rats from 20 rats and assign each to a different test?

- A. 1860480
- B. 100
- C. 15504
- D. 25

80

The complement of guessing 16 correct answers on a 16 multiple choice questions exam is ...

- A. guessing at most 15 correct answers.
- B. guessing at least 15 incorrect answers.
- C. guessing at most 15 incorrect answers.
- D. guessing 16 incorrect answers.

81

The probability of a certain event E is ...

- A. equal to 1.
- B. equal to 0 or 1.
- C. between 0 and 1.
- D. equal to 0.



82

A store manager wishes to display 7 different kinds of laundry soap in a row. How many different ways can this be done?

- A. 42
- B. 21
- C. 5040
- D. 7

83

If you would like to buy a car and you have the choice of Mini or Full-Size, each in one of three colors red, pink or orange. What is the sample space for the choices?

- A. {Mini red, Mini pink, Mini orange, Full-Size red, Full-Size pink, Full-Size orange}
- B. {Mini Full-Size, red pink orange}
- C. {Mini, Full-Size, red, pink, orange}
- D. {Mini, red, Mini, pink, Mini, orange, Full-Size, red, Full-Size, pink, Full-Size, orange}

84

The probability that a cellular phone company sells X number of new phone contracts per day is shown below:

X	5	6	7	8	9
$P(x)$	0.38	0.25	0.14	0.15	0.08

What is the probability that they will sell 6 or less contracts 3 days in a row?

- A. 0.37
- B. 0.250047
- C. 0.050653
- D. 0.63

85

If a person rolls doubles when he tosses two dice, he wins \$11. For the game to be fair, how much should he pay to play the game?

- A. 1.833333
- B. 9.166667
- C. 11
- D. 22



86

The mean of a discrete probability distribution is also called the ...

- A. median.
- B. variance.
- C. standard deviation.
- D. expected value.

87

The speed of a jet airplane is an example of ...

- A. fixed variable.
- B. probability.
- C. discrete random variable.
- D. continuous random variable.

88

Determine which one of the following is a probability distribution.

A.

X	-4	-3	-2	-1	0
P(X)	1/8	1/4	1/8	1/4	1/4

B.

X	-2	-1	0	1	2
P(X)	1/5	1/10	1/10	1/5	1/5

C.

X	2	3	4	5	6
P(X)	2/3	2/5	2/7	2/9	2/11

D.

X	-2	-1	0	1	2
P(X)	1/4	1/4	1/4	1/4	1/4

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89

The amount of drug injected into a guinea animal is an example of ... variable.

- A. Discrete
- B. continuous
- C. ordinal
- D. nominal

90

A portion of the universe that has been selected for analysis is called ...

- A. a sample.
- B. a population.
- C. a statistic.
- D. a parameter.

91

Techniques used to organize, summarize and present the data that have been collected are called ...

- A. populations.
- B. descriptive statistics.
- C. inferential statistics.
- D. samples.

92

Religious affiliation is an example of ... variable.

- A. continuous
- B. ordinal
- C. discrete
- D. nominal

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93

A value that changes from one individual to another is called ...

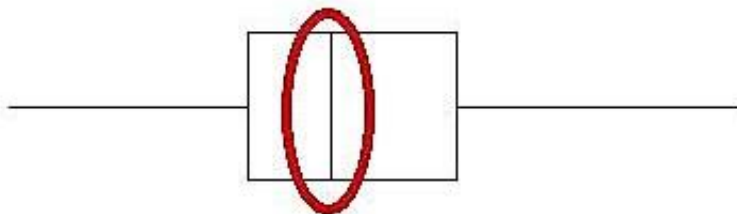
- A. variable.
- B. statistic.
- C. parameter.
- D. constant.

94

The value that occurs most often in a data set is called the _____.

- A. range
- B. median
- C. mean
- D. mode

95



The circled part of the above box plot represents _____.

- A. the median.
- B. the mode.
- C. the variance.
- D. the mean.

96

A _____ is a characteristic or measure obtained by using the data values from a sample.

- A. population variance
- B. population mean
- C. statistic
- D. parameter



97

The following data set displays the number of children for 7 families:

3, 5, 4, 6, 2, 43, 0

Reference: Ch3

The most appropriate measure of average for the above data is the ...

- A. median
- B. mode
- C. mean
- D. range

98

If you get a score less than the average of the scores, then the value of the z score will be ...

- A. one.
- B. zero.
- C. positive.
- D. negative.

99

The standard variation can take any value in the range ...

- A. $(-\infty, +\infty)$.
- B. $(0, +\infty)$.
- C. $(-\infty, 0)$.
- D. $(0, 1)$.

100

The measures of central tendency that will always have unique values are ...

- A. mode and median.
- B. mean and mode.
- C. median and mean.
- D. mode and weighted mean.

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101

When data are categorized as, for example, places of residence (rural, suburban, urban), the most appropriate measure of central tendency is the ...

- A. range.
- B. mode.
- C. mean.
- D. median.

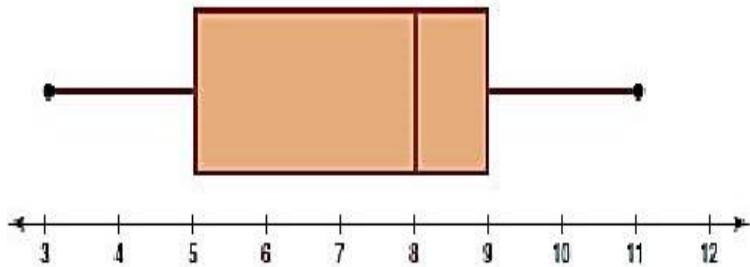
102

The average height of all students in KAU is called ...

- A. data.
- B. parameter.
- C. statistic.
- D. population.

103

The data of the following boxplot is ...



- A. positively skewed.
- B. symmetrical.
- C. bimodal.
- D. negatively skewed.

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104

The variable that is used to predict the value of another is called ...

- A. dependent variable.
- B. correlation variable.
- C. variable of determination.
- D. independent variable.

105

The following information shows the amount of debt students who graduated from college incur.

\$1 to \$ 5000	\$5001 to \$ 20,000	\$20,001 to \$ 50,000	\$ 50,000 +
15%	15%	33%	37%

If a person who graduates has some debt, find the probability that it is between \$1 and \$ 20,000.

- A. 37%
- B. 30%
- C. 15%
- D. 70%

106

An event and its complement are ...

- A. dependent.
- B. not mutually exclusive.
- C. mutually exclusive.
- D. independent.

107

In a statistics class there are 15 juniors and 10 seniors; 7 of the seniors are females, and 5 of the juniors are males. If a student is selected at random, find the probability of selecting a senior or a female.

- A. 0.8000
- B. 0.8800
- C. 1
- D. 0.1200



108

At a used-book sale, 103 books are adult books and 155 are children's books. Of the adult books, 69 are nonfiction while 60 of the children's books are nonfiction. If a book is selected at random, find the probability that it is not a children's nonfiction book.

- A. 0.7674
- B. 0.6318
- C. 0.7326
- D. 0.5000

109

If you have 6-color code strips to choose from. How many different 6-color code stripes can be made on a sports car? All colors are used only once.

- A. 720
- B. 30
- C. 6
- D. 15

110

If a die is rolled one time, find the probability of Getting a number less than 7.

- A. $\frac{1}{3}$
- B. 0
- C. $\frac{2}{3}$
- D. 1

111

Smoking excessively and having lung cancer are ...

- A. not known.
- B. independent events.
- C. dependent events.
- D. mutually exclusive events.

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112

A probability experiment is conducted. Which of these **cannot** be considered a probability outcome?

- A. 24%
- B. 0
- C. 0.44
- D. 125%

113

The blood pressures of patients admitted to a hospital on a specific day is an example of ...

- A. fixed variable.
- B. continuous random variable.
- C. probability.
- D. discrete random variable.

114

When the binomial distribution is used, the outcomes must be ...

- A. dependent.
- B. independent.
- C. both.
- D. none of the above.

115

A student takes a 12-question, true/false exam and guesses on each question. Find the probability of passing with honor if the lowest grade for passing with honor is 10 correct out of 12.

- A. 0.983887
- B. 0.016113
- C. 0.019287
- D. 0.980713

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116

A correlation coefficient of -1 implies ...

- A. very bad relationship between the variables.
- B. no relationship between the variables.
- C. wrong calculations.
- D. a perfect linear relationship between the variables.

117

The variable x in the equation of the regression line $y' = a + b x$ is called ...

- A. independent variable.
- B. confounding variable.
- C. resultant variable.
- D. dependent variable.

118

A correlation coefficient of -1 implies ..

- A. a perfect linear relationship between the variables.
- B. very bad relationship between the variables.
- C. wrong calculations.
- D. no relationship between the variables.

119

If there is a positive linear relationship between two variables, then the probability that the value of the correlation coefficient will be less than or equal to 1 is ...

- A. 1
- B. 0
- C. 0.5
- D. 0.25

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120

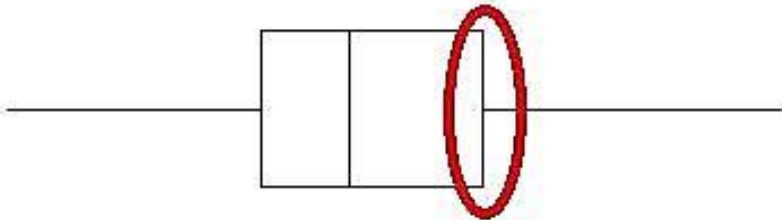
The following data is recorded to determine the relationship between the number of hours a person goes without sleeping (x) and the number of mistakes he makes on a simple test (y):

x	y
22	9
22	4
24	4
16	0
27	10
17	10

Predict the number of mistakes for a person who goes 21 hours without sleeping.

- A. 6.041985
- B. 37.698473
- C. 9.667939
- D. 38.446565

121



The circled part of the above box plot represents _____

- A. the 1st percentile.
- B. the 3rd quartile.
- C. the 3rd percentile.
- D. the 1st quartile.

122

The _____ for a data set is unique and not necessarily one of the data values.

- A. mean
- B. mode
- C. median
- D. range

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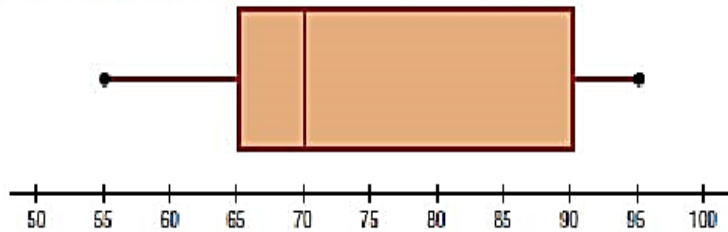
123

What is a z score?

- A. Is a measure that tells how many standard deviation a data value is above or below the mean.
- B. Is a measure of central tendency.
- C. Is a measure that tells how many mean a data value is above or below the standard deviation.
- D. Is a measure of how data values are related.

124

The value of the mode if exist depending on the information obtained from the following boxplot ...



- A. should be equal 70.
- B. should be less than 70.
- C. can be any value.
- D. should be greater than 70.

125

What is the most appropriate measure of central tendency for the following data set?

A, C, A, B, C, B, A, D

- A. mean
- B. mode
- C. range
- D. median

A
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126

The measure of central tendency that is **computed using all the values** in the data set is called ...

- A. the mode.
- B. the mean.
- C. the range.
- D. the median.

127

If the distribution of the data set is **positively skewed and the value of the mean is 54**, then the value of the median ...

- A. should be 54.
- B. cannot be determined.
- C. should be 49.
- D. should be 64.

128

The standard variation can take any value in the range ...

- A. $(0, +\infty)$.
- B. $(-\infty, +\infty)$.
- C. $(0, 1)$.
- D. $(-\infty, 0)$.

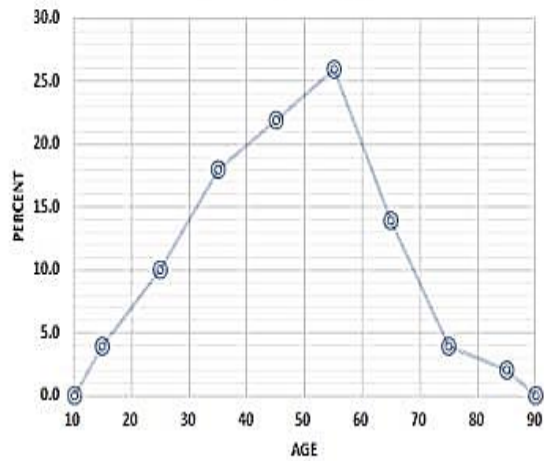
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129

The sample size used to create the following graph ...

Frequency Polygon



- A. is 10.
- B. cannot be determined.
- C. is 90.
- D. is 450.

130

The data given below shows the cumulative frequency of students' grades in a class:

Less than the upper Limit	Less than 51	Less than 58	Less than 65	Less than 72	Less than 79
Cumulative Frequency	6	17	31	47	72

Reference: cumfreq

Find the class midpoint of the fourth class.

- A. 47
- B. 68.5
- C. 23.5
- D. 101

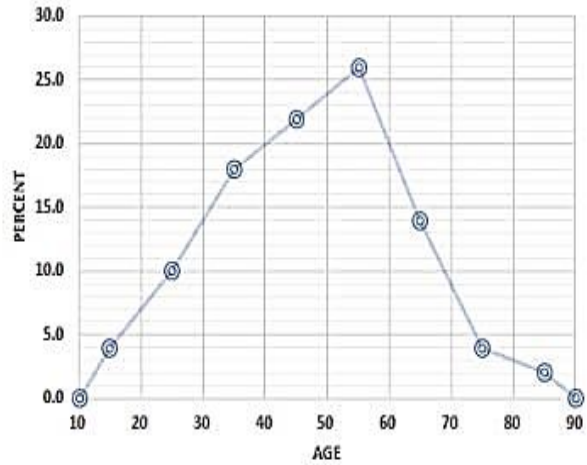
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131

In the following graph, if the frequency of the third class is 45 then the sample size ...

Frequency Polygon



- A. cannot be determined.
- B. is 300.
- C. is 250.
- D. is 200.

132

The best graph for displaying data of a discrete variable is ...

- A. histogram.
- B. time series graph.
- C. pie chart.
- D. bar chart.

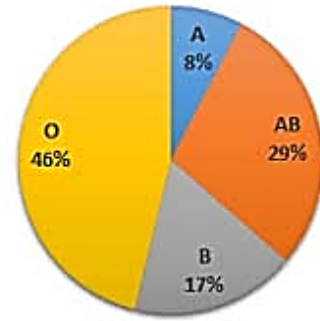
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133

The degree of O blood type in the following graph is approximately ...

Blood Type



- A. 28.8
- B. 165.6
- C. 61.2
- D. 104.4

134

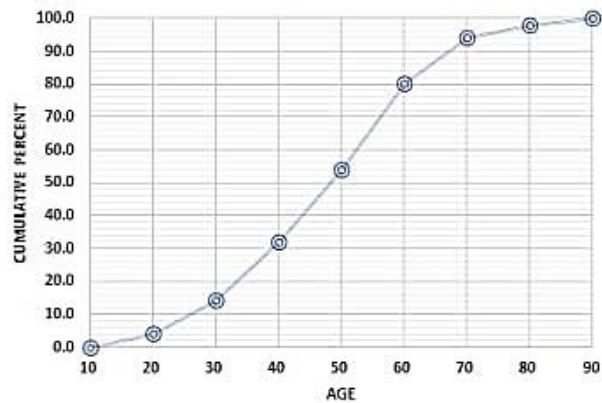
The monthly number of car's accidents can be best displayed using ...

- A. histogram.
- B. bar chart.
- C. time series graph.
- D. pie graph.

135

Using the following graph, if the sample size is 250 then the frequency of the fifth class ...

Ogive



- A. is about 65.
- B. is about 135.
- C. is about 200.
- D. can't be determined.

A
L
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A
A
D
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136

The data given below shows the cumulative frequency of students' grades in a class:

Less than the upper Limit	Less than 51	Less than 58	Less than 65	Less than 72	Less than 79
Cumulative Frequency	6	17	31	47	72

Reference: cumfreq

Find the class **midpoint of the fourth class.**

- A. 68.5
- B. 47
- C. 23.5
- D. 101

137

The distance between consecutive lower class limits is called the ...

- A. class midpoint.
- B. frequency distribution.
- C. class width.
- D. class frequency.

138

The frequency distribution is a ...

- A. table form consists of classes and frequencies.
- B. chart form consists of classes and frequencies.
- C. raw data.
- D. graph form consists of classes and frequencies.

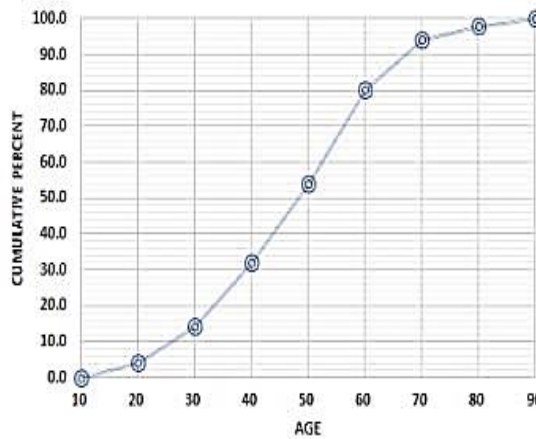
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139

Using the following graph, if the sample size is 200 then the number of people with age greater than 30 years ...

Ogive



- A. is about 172.
- B. can't be determined.
- C. is about 28.
- D. is about 60.

140

The following table illustrates the number of gallons of milk sold in a grocery store:

Number of Gallons	Frequency
8	7
21	3
28	5
37	6
52	9
64	1

The best graph for displaying this type of data is ...

- A. histogram.
- B. bar chart.
- C. pie chart.
- D. ogive.

141

In a recent survey, 21 people preferred milk, 32 people preferred coffee, and 8 people preferred juice as their primary drink for breakfast. If a person is selected at random, find the probability that the person preferred juice as her or his primary drink.

- A. 0.131148
- B. 0.737705
- C. 0.868852
- D. 0.47541

A
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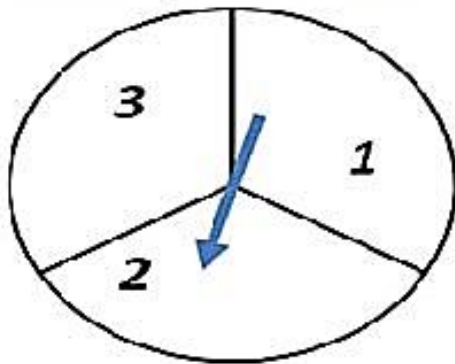
142

Classical probability uses ... to compute probabilities.

- A. populations
- B. the sample space
- C. a frequency distribution
- D. samples

143

The wheel spinner shown here is spun twice. The sample space is ...



- A. $S = \{(1,1), (2,2), (3,3)\}$
- B. $S = \{(2,1), (2,3), (3,1)\}$
- C. $S = \{(1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3)\}$
- D. $S = \{(1,2), (1,3), (2,3)\}$

144

If 17% of U.S. federal prison inmates are not U.S. citizens, find the probability that 5 randomly selected federal prison inmates will not be U.S. citizens.

- A. 0.606
- B. 0.000
- C. 1.000
- D. 0.394

A
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145

Wake Up cereal comes in 2 types, crispy and crunchy. If a researcher has 10 boxes of each, how many ways can she select 7 boxes of each for a quality control test?

- A. 120
- B. 14400
- C. 604800
- D. 70

146

An investigative agency has 6 different cases and 3 agents. How many different ways can the cases be assigned if only one case is assigned to each agent?

- A. 120
- B. 18
- C. 216
- D. 20

147

How many ways can a baseball manager arrange a batting order of 8 players?

- A. 28
- B. 40320
- C. 8
- D. 56

148

A couple has three children. Find the probability that at least one child of each gender.

- A. $1/8$
- B. $2/4$
- C. $1/4$
- D. $3/4$

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149

At a particular school with 301 male students, 98 play football, 34 play basketball, and 10 play both. What is the probability that a randomly selected male student plays neither sports?

- A. 0.595
 B. 0.359
 C. 0.113
 D. 0.405

150

The student in a class is Saudi citizen and the student is a business major. The events are ...

- A. mutually exclusive
 B. outcome
 C. sample
 D. not mutually exclusive

The standard deviation of a distribution is 20. If a sample of 225 is selected, what is the standard error of the mean?

- A) $\frac{4}{45}$ B) $\frac{7}{5}$ C) $\frac{4}{3}$ D) $\frac{3}{4}$

Solution

$$\sigma = 20$$

$$n = 225$$

$$\text{Standard error of the mean} = \frac{\sigma}{\sqrt{n}} = \frac{20}{\sqrt{225}} = \frac{4}{3}$$



Determine whether each statement is true or false. If the statement is false, explain why.

- ① The total area under a normal distribution is infinite.
- ② The standard normal distribution is a continuous distribution.
- ③ All variables that are approximately normally distributed can be transformed to standard normal variables.
- ④ The z value corresponding to a number below the mean is always negative.
- ⑤ The area under the standard normal distribution to the left of $z = 0$ is negative.
- ⑥ The central limit theorem applies to means of samples selected from different populations.

Select the best answer.

- ⑦ The mean of the standard normal distribution is
 a. 0 b. 1 c. 100 d. variable
- ⑧ Approximately what percentage of normally distributed data values will fall within 1 standard deviation above or below the mean?
 a. 68% b. 95% c. 99.7% d. Variable
- ⑨ Which is not a property of the standard normal distribution?
 a. It's symmetric about the mean. b. It's uniform.
 c. It's bell-shaped. d. It's unimodal.



- 10) When a distribution is positively skewed, the relationship of the mean, median, and mode from left to right will be .
- a. Mean, median, mode
 - b. Mode, median, mean
 - c. Median, mode, mean
 - d. Mean, mode, median

- 11) The standard deviation of all possible sample means equals
- a. The population standard deviation.
 - b. The population standard deviation divided by the population mean.
 - c. The population standard deviation divided by the square root of the sample size.
 - d. The square root of the population standard deviation.

Complete the following statements with the best answer.

- 12) When one is using the standard normal distribution,
 $P(z < 0) = \underline{0.5}$.
- 13) The difference between a sample mean and a population mean is due to Sampling error.
- 14) The mean of the sample means equals Population mean.
- 15) The standard deviation of all possible sample means is called Standard error of the mean.



نظريّة التّهيبة المركزيّة
The Central Limit Theorem

في حالة : مجتمع أخذت منه عينة حجمها n .

n : sample size taken from population
A sampling distribution of sample means is a distribution using the means computed from all possible random samples of a specific size taken from a population Properties of the Distribution of Sample Means

1. The mean of the sample means will be the same as the population mean.
2. The standard deviation of the sample means will be smaller than the standard deviation of the population, and it will be equal to the population standard deviation divided by the square root of the sample size.

The Binomial Distribution

توزيع ذات الحدين

A binomial experiment is a probability experiment that satisfies the following four requirements:

1. There must be a fixed number of trials.
2. Each trial has only two outcomes: success or fail.
3. The outcomes of each trial must be independent of each other.
4. The probability of a success must remain the same for each trial.



Determine whether each statement is true or false. If the statement is false, explain why.

- 1- The expected value of a random variable can be thought of as a long-run average. **True**
- 2- The number of courses a student is taking this semester is an example of a continuous random variable. **False**
- 3- When the binomial distribution is used, the outcomes must be dependent. **False**
- 4- A binomial experiment has a fixed number of trials. **True**



Complete these statements with the best answer:

- 5- Random variable values are determined by _____. **chance**
- 6- The mean for a binomial variable can be found by using the formula _____. **$n \cdot p$**
- 7- One requirement for a probability distribution is that the sum of all the events in the sample space must equal _____. **1**

Select the best answer :

- 8- What is the sum of the probabilities of all outcomes in a probability distribution ?
 a) 0 b) $\frac{1}{2}$ **c) 1** d) it cannot be determined
- 9- How many outcomes are there in a binomial experiment ?
 a) 0 b) 1 **c) 2** d) It varies.

كل التمنيات لكم بالنفوق ولا ننسونا من صالح دعواتكم

خيّاتي

السعدي