Started on	Sunday, 5 September 2021, 9:14 PM
State	Finished
Completed on	Sunday, 5 September 2021, 10:22 PM
Time taken	1 hour 8 mins
Grade	**32.00** out of 44.00 (**73**%)

Question 1

Correct

Mark 1.00 out of 1.00

The p-value is

Select one:

- a. The probability that we're making the right decision.
- b. The probability that the results are "important".
- c. None of the above ✔

The correct answer is: None of the above

Question 2

Correct

Mark 1.00 out of 1.00

A committee on community relations in a college town plans to survey local businesses about the importance of students as customers. From telephone book listings, the committee chooses 150 businesses at random. The sample for this study is

Select one:

- a. all businesses in the country.
- b. all businesses in the college town.
- c. the 150 businesses chosen. ✔

The correct answer is: the 150 businesses chosen.

Question 3

Correct

Mark 1.00 out of 1.00

Researchers identified 242 children in the Cleveland area who had been born very prematurely (at about 29 weeks). They examined these children at age 8 and again at age 20, comparing them to another group of 233 children not born prematurely. Their report said that the "preemies" engaged in significantly less risky behavior than the others. Difference showed up in the use of alcohol and marijuana, conviction of crimes, and teenage pregnancy.

Select one:

- a. This is an observational study ✔
- b. This is an experiment
- c. There is not enough information to determine whether this is an observational study or an experiment.

The correct answer is: This is an observational study

Question 4

Correct

Mark 1.00 out of 1.00

The p-value is defined as

Select one:

- a. The probability that the null hypothesis is true.
- b. The probability that the alternative hypothesis is true.
- c. The probability of observing results (data) as or more extreme than ours, assuming the null hypothesis is true. ✔
- d. The probability of observing results (data) as or more extreme than ours, assuming the alternative hypothesis is true.
- e. Both A and C
- f. Both B and C
- g. None of the above

The correct answer is: The probability of observing results (data) as or more extreme than ours, assuming the null hypothesis is true.

Question 5

Correct

Mark 1.00 out of 1.00

Peter and Elena are two figure skating judges. Their scores can be anything between 0.0 and 10.0, including decimal values. The correlation between the scores that they award is 0.9. What plot should we use to investigate the relationship between Peter and Elena's scores?

Select one:

- a. boxplot
- b. scatterplot ✔
- c. bar chart
- d. mosaic plot

The correct answer is: scatterplot

Question 6

Correct

Mark 1.00 out of 1.00

Peter and Elena are two figure skating judges. Their scores can be anything between 0.0 and 10.0, including decimal values. The correlation between the scores that they award is 0.9. This means that:

Select one:

- a. If a skater earns a higher score from Peter, she tends to earn a higher score from Elena as well. ✔
- b. If a skater earns a higher score from Peter, she tends to earn a lower score from Elena.
- c. There is no relationship between Peter and Elena's scores.
- d. Peter and Elena must be colluding (they are agreeing ahead of time what scores they will give).
- e. Both A and D
- f. Both B and D
- g. None of the above.

The correct answer is: If a skater earns a higher score from Peter, she tends to earn a higher score from Elena as well.

Question 7

Incorrect

Mark 0.00 out of 1.00

The ages at marriage for brides and grooms are obtained from a randomly selected group of heterosexual marriage licenses. You want to determine whether the mean age for grooms is significantly higher than the mean age for their brides. What kind of test should you perform?

Select one:

- a. 1-sample test for the mean on the differences
- b. 2-sample test for two means ✖
- c. 2-sample proportion test
- d. Test for correlation

The correct answer is: 1-sample test for the mean on the differences

Question 8

Correct

Mark 1.00 out of 1.00

Nationally, 42% of Americans say that they attend church weekly. The Central Limit Theorem says

Select one:

- a. If you take many large randomly-chosen samples, the sample proportions will have approximately a Normal distribution. ✔
- b. If you have a sample where the proportion is less than 42%, the next sample you take will have a proportion higher than 42%.
- c. You will get a sample proportion above 42% by taking a very large sample.
- d. None of the above.

The correct answer is: If you take many large randomly-chosen samples, the sample proportions will have approximately a Normal distribution.

Question 9

Complete

Mark 2.00 out of 2.00

Consider the box plots in FIGURE 5. Using only these box plots, compare the age of Democratic presidents and Republican presidents.

The average age of Democratic and Republican presidents are the same, However the maximum age of Democratic Presidents is older than Republicans, however there are 2 instances where Republican Presidents have been older than Democratic Presidents.

Comment:

Question 10

Correct

Mark 1.00 out of 1.00

Which of the statements about sampling distributions are true?

Select one:

- a. The sampling distribution is the distribution of sample statistics computed for different samples of the same size from the same population.
- b. A sampling distribution shows us how the sample statistic varies from sample to sample.
- c. Both A and B are true. ✔
- d. Neither A nor B are true

The correct answer is: Both A and B are true.

Question 11

Correct

Mark 1.00 out of 1.00

Peter and Elena are two figure skating judges. Their scores can be anything between 0.0 and 10.0, including decimal values. We have a group of 30 ice skaters who have been scored by both Peter and Elena, and we wish to test if there is strong agreement between Peter's scores and Elena's scores. What kind of test should you perform?

Select one:

- a. 1-sample proportion test
- b. 2-sample test for two means
- c. 2-sample proportion test
- d. Test for correlation ✔

The correct answer is: Test for correlation

Question 12

Correct

Mark 1.00 out of 1.00

Anyone can find the ESPN SportsNation poll online at espn.com/sportsnation. A web user may simply click on a response to become part of the sample. One of the poll questions from winter 2019 was:
"Which 8-7 team will earn the AFC's final wild-card berth: Buffalo Bills, LA Chargers, or Tennessee Titans?"
In all, 4,608 people responded, with 44% saying they believed the Bills would earn the wild-card spot. You can conclude that

Select one:

- a. about 44% of American adults think the Bills would earn the wild-card spot.
- b. about 44% of ESPN.com users think the Bills would earn the wild-card spot.
- c. the poll uses a simple random sample, so the results tell us little about the population.
- d. the poll uses voluntary response, so the results tell us little about the population. ✔
- e. the sample is too small to draw any conclusion.

The correct answer is: the poll uses voluntary response, so the results tell us little about the population.

Question 13

Complete

Mark 2.00 out of 2.00

The US Census Bureau's American Housing Survey (AHS) contains information about housing and living conditions for samples from certain metropolitan areas. From respondents in the Atlanta metropolitan area, the time (in minutes) that respondents typically traveled on their commute to work each day was recorded. They include only cases where the respondent worked somewhere other than home. A 90% confidence interval for the mean commute time in Atlanta is (27.6, 30.6). Interpret the interval below.

Based on the given information we can be 90% sure that the mean commute time in Atlanta is between 27.6 and 30.6 minutes.

Comment:

Question 14

Correct

Mark 1.00 out of 1.00

A committee on community relations in a college town plans to survey local businesses about the importance of students as customers. From telephone book listings, the committee chooses 150 businesses at random. The population for this study is

Select one:

- a. all businesses in the U.S.
- b. all businesses in the college town. ✔
- c. the 150 businesses chosen.

The correct answer is: all businesses in the college town.

Question 15

Incorrect

Mark 0.00 out of 1.00

Emily is interested in comparing the percentage of Wooster seniors with GPAs above 3.0 versus sophomores with GPAs above 3.0. She takes a random sample from each class year, and constructs a 95% confidence interval for this quantity:
(proportion of seniors with GPAs above 3.0 - proportion of sophomores with GPAs above 3.0).
The 95% confidence interval is (-0.09, 0.20). Using this interval, what can we say about the difference between class years? (You may assume the appropriate conditions are met.)

Select one:

- a. The prop. of seniors with GPAs above 3.0 is higher than prop. of sophomores with GPAs above 3.0.
- b. The prop. of sophomores with GPAs above 3.0 is higher than the prop. of seniors with GPAs above 3.0.
- c. There is no significant difference in the two class years.
- d. We can't say anything about whether there's a significant difference, because she didn't do the hypothesis test.
- e. This interval doesn't even make any sense, because proportions can't be less than 0. ✖

The correct answer is: There is no significant difference in the two class years.

Information

All Questions on this page refer to FIGURE 1 in the attached document.

Question 16

Correct

Mark 1.00 out of 1.00

Which of the following are true?

Select one:

- a. The standard deviation of "Percent taking SAT" will be bigger than the standard deviation of "Average state score on SAT"
- b. The standard deviation of "Percent taking SAT" will be smaller than the standard deviation of "Average state score on SAT" ✔
- c. The two SDs will be approximately equal
- d. There is no way to know what the relationship between the two SDs will be, based on the information given.

The correct answer is: The standard deviation of "Percent taking SAT" will be smaller than the standard deviation of "Average state score on SAT"

Question 17

Incorrect

Mark 0.00 out of 1.00

For "Percent taking SAT",

Select one:

- a. the mean will be larger than the median.
- b. the mean will be less than the median. ✖
- c. the mean will be approximately equal to the median.
- d. there is no way to know what the relationship between the mean and the median will be, based on the information given.

The correct answer is: the mean will be larger than the median.

Question 18

Correct

Mark 1.00 out of 1.00

Suppose we wanted to plot "Percent taking SAT" by whether a state was in the midwest or not. What type of graph would be appropriate?

Select one:

- a. boxplot ✔
- b. scatterplot
- c. bar chart

The correct answer is: boxplot

Question 19

Incorrect

Mark 0.00 out of 1.00

The "Percent taking SAT" graph is

Select one:

- a. right-skewed.
- b. left-skewed. ✖
- c. skewed, but we can't tell whether it's left-skewed or right-skewed
- d. approximately symmetric, but not Normal.
- e. approximately Normal.
- f. There's no way to tell what shape the distribution has.
- g. It doesn't make sense to talk about the shape of this graph.

The correct answer is: right-skewed.

Question 20

Incorrect

Mark 0.00 out of 1.00

The slope of the regression line means that

Select one:

- a. As average state math SAT score increases by 1 point, we expect percent taking SAT to decrease by 1.092%.
- b. As percent taking SAT increases by 1%, we expect the average state math SAT score to decrease by 1.092.
- c. As average state math SAT score increases by 1 point, we expect percent taking SAT to decrease by 0.866%.
- d. As percent taking SAT increases by 1%, we expect the average state math SAT score to decrease by 0.866. ✖
- e. Both A and B
- f. Both C and D

The correct answer is: As percent taking SAT increases by 1%, we expect the average state math SAT score to decrease by 1.092.

Question 21

Incorrect

Mark 0.00 out of 1.00

A teacher giving a true/false test wants to make sure her students do better than they would if they were simply guessing, so she forms hypotheses to test this. The null and alternative hypotheses are:

Select one:

- a. Ho: Proportion of questions a student gets correct = Proportion of questions a student gets incorrect; ✖
  Ha: Proportion of questions a student gets correct ≠ Proportion of questions a student gets incorrect
- b. Ho: Proportion of questions a student gets correct = Proportion of questions a student gets incorrect;
  Ha: Proportion of questions a student gets correct > Proportion of questions a student gets incorrect
- c. Ho: Proportion of questions a student gets correct ≠ Proportion of questions a student gets incorrect;
  Ha: Proportion of questions a student gets correct = Proportion of questions a student gets incorrect
- d. Ho: Proportion of questions a student gets correct > Proportion of questions a student gets incorrect;
  Ha: Proportion of questions a student gets correct = Proportion of questions a student gets incorrect
- e. Ho: Proportion of questions a student gets correct = 0.5;
  Ha: Proportion of questions a student gets correct ≠ 0.5
- f. Ho: Proportion of questions a student gets correct = 0.5;
  Ha: Proportion of questions a student gets correct > 0.5
- g. Ho: Proportion of questions a student gets correct ≠ 0.5;
  Ha: Proportion of questions a student gets correct = 0.5
- h. Ho: Proportion of questions a student gets correct > 0.5;
  Ha: Proportion of questions a student gets correct = 0.5

The correct answer is: Ho: Proportion of questions a student gets correct = 0.5;
Ha: Proportion of questions a student gets correct > 0.5

Question 22

Incorrect

Mark 0.00 out of 1.00

A survey of US women with Ph.D.'s was conducted. Of the 102 respondents in marriages or long-term partnerships with men, 57% reported that their spouse/partner also held a doctorate degree. Using this survey, what group(s) can we make a conclusion about?

Select one:

- a. All US women
- b. All US women with Ph.D.'s
- c. All US women with Ph.D.'s who are married
- d. All US women with Ph.D.'s who are married or in long-term partnerships ✖
- e. All of the above
- f. None of the above

The correct answer is: None of the above

Information

The next 3 questions refer to FIGURE 4 and the following study:

Elle, a medical student, wants to test if the average human body temperature actually is 98.6 degrees (Fahrenheit). She takes a random sample 100 adults from various races, nationalities, ages, and genders. FIGURE 4 shows a sampling distribution for the hypotheses $H_0 : \mu = 98.6$ versus $H_a : \mu \neq 98.6$. The statistic used for each sample is the sample mean, $\bar{x}$.

Question 23

Correct

Mark 1.00 out of 1.00

Which of the possible sample results provides the most evidence against H_0?

Select one:

- a. $\bar{x}$=98.0 ✔
- b. $\bar{x}$=98.5
- c. $\bar{x}$=98.9

The correct answer is: $\bar{x}$=98.0

Question 24

Incorrect

Mark 0.00 out of 1.00

Elle calculates a p-value of 0.047. Her sample mean was equal to which of the following values?

Select one:

- a. \(\bar{x} \)=98.0
- b. \(\bar{x} \)=98.5 ✖
- c. \(\bar{x} \)=98.9

The correct answer is: \(\bar{x} \)=98.9

Question 25

Correct

Mark 1.00 out of 1.00

Elle calculates a p-value of 0.047. Make a conclusion about her research question.

Select one:

- a. Reject Ho
- b. Don't reject Ho
- c. Reject Ha
- d. There is strong evidence to conclude that the average human body temperature actually is 98.6 degrees.
- e. There is moderate evidence to conclude that the average human body temperature actually is 98.6 degrees.
- f. There is strong evidence to conclude that the average human body temperature is NOT 98.6 degrees.
- g. There is moderate evidence to conclude that the average human body temperature is NOT 98.6 degrees. ✔
- h. There is no evidence to conclude that the average human body temperature is NOT 98.6 degrees.
- i. We can't make any conclusion because Elle's sample is not representative of the population.

The correct answer is: There is moderate evidence to conclude that the average human body temperature is NOT 98.6 degrees.

Information

All the questions on this page refer to this cancer study:

Researchers wanted to ascertain the efficacy of different methods in treating cancer of the larynx. After recruiting 172 cancer patients, they randomly assigned them to receive either surgery or radiation therapy. Of the 92 patients who received the surgery, 81 went into remission. Of the 80 patients who received radiation, 67 went into remission.

Question 26

Correct

Mark 1.00 out of 1.00

What type of graph would be appropriate to graph these results?

Select one:

- a. boxplot
- b. scatterplot
- c. bar chart ✔

The correct answer is: bar chart

Question 27

Correct

Mark 1.00 out of 1.00

This study is

Select one:

- a. an observational study.
- b. an experiment. ✔
- c. can't tell without more information.

The correct answer is: an experiment.

Question 28

Correct

Mark 1.00 out of 1.00

What is the explanatory variable?

Select one:

- a. Therapy (surgery or radiation) ✔
- b. Cancer of the larynx (yes or no)
- c. Outcome (remission or not)
- d. Number of people who went into remission

The correct answer is: Therapy (surgery or radiation)

Question 29

Correct

Mark 1.00 out of 1.00

What is the response variable?

Select one:

- a. Therapy (surgery or radiation)
- b. Cancer of the larynx (yes or no)
- c. Outcome (remission or not) ✔
- d. Number of people who went into remission

The correct answer is: Outcome (remission or not)

Question 30

Complete

Mark 2.00 out of 2.00

A 95% confidence interval for the difference in success proportions between the two methods (surgery - radiation) is (-0.06, 0.148). Interpret this interval in context.

The given information says that we can be 95% confident that the difference in success proportions between the two methods (surgery - radiation) will be between -0.06 and 0.148.

Comment:

Information

All the questions on this page refer to the information and table in FIGURE 6.

Question 31

Correct

Mark 1.00 out of 1.00

Being an Accounting major and being an Economics major are mutually exclusive events.

Select one:

- a. True ✔
- b. False
- c. Can't tell from information given.

The correct answer is: True

Question 32

Incorrect

Mark 0.00 out of 1.00

In this sample, the probability of randomly selecting a male Accounting major is

Select one:

- a. 20/123 = 16.3%
- b. 20/80 = 25%
- c. 86/123 = 69.9%
- d. 20/26 = 76.9% ✖

The correct answer is: 20/123 = 16.3%

Question 33

Correct

Mark 1.00 out of 1.00

The percentage of women who are majoring in Accounting is

Select one:

- a. 6/123 = 4.9%
- b. 6/43 = 14.0% ✔
- c. 6/26 = 23.1%
- d. 63/123 = 51.2%

The correct answer is: 6/43 = 14.0%

Question 34

Correct

Mark 1.00 out of 1.00

The distribution of major is bell-shaped and symmetric.

Select one:

- a. True
- b. False
- c. This is a nonsensical statement ✔

The correct answer is: This is a nonsensical statement

Information

All the questions on this page refer to the information and table in FIGURE 6.

Question 35

Correct

Mark 1.00 out of 1.00

What type of bias will the business school's sample definitely suffer from?

Select one:

- a. Non-response bias (lack of response) ✔
- b. Undercoverage (sending the questionnaires to an incomplete/biased sub-sample of students)
- c. Response bias (respondents are lying or don't understand the question)
- d. None

The correct answer is: Non-response bias (lack of response)

Question 36

Correct

Mark 1.00 out of 1.00

The business school's administration wants to test if the percentage of Econ students who are women is equal to the percentage of Marketing students who are women. What test should they perform?

Select one:

- a. 1-sample test on the mean
- b. 2-sample test for two means
- c. 1-sample proportion test
- d. 2-sample proportion test ✔
- e. Test for correlation

The correct answer is: 2-sample proportion test

Question 37

Incorrect

Mark 0.00 out of 1.00

The business school's administration wants to test if the percentage of Econ students who are women is equal to the percentage of Marketing students who are women. Would you feel comfortable conducting this test?

Select one:

- a. No, because the individuals were not chosen randomly and thus are probably not representative of all students.
- b. No, because the sample size conditions for the test are not met.
- c. Both A and B are issues.
- d. Yes. ✖
- e.

The correct answer is: Both A and B are issues.

Information

All the questions below refer to this data set:

The American Community Survey is given to a random sample of several thousand American households each year. The ACS from 2010 has data on each employed respondent's income (wages and salary for the past 12 months in $1,000's) and sex (including only those who identified as either male or female).

We wish to use this data to test if men have significantly higher incomes than women, on average.

Question 38

Correct

Mark 1.00 out of 1.00

The hypotheses we wish to test are:

Select one:

a. Ho: income for men = income for women;
Ha: income for men \(\neq \) income for women

b. Ho: income for men = income for women;
Ha: income for men > income for women

c. Ho: income for men \(\neq \) income for women;
Ha: income for men = income for women

d. Ho: income for men > income for women;
Ha: income for men = income for women

e. Ho: average income for men = average income for women;
Ha: average income for men \(\neq \) average income for women

f. Ho: average income for men = average income for women; ✔
Ha: average income for men > average income for women

g. Ho: average income for men \(\neq \) average income for women;
Ha: average income for men = average income for women

h. Ho: average income for men > average income for women;
Ha: average income for men = average income for women

The correct answer is: Ho: average income for men = average income for women;
Ha: average income for men > average income for women

Question 39

Incorrect

Mark 0.00 out of 1.00

Would you feel comfortable conducting this test?

Select one:

a. No, because the individuals were not chosen randomly and thus are probably not representative of all Americans.

b. No, because the sample size conditions for the test are not met.

c. Both A and B are issues. ✖

d. Yes.

e.

The correct answer is: Yes.

Question 40

Complete

Mark 1.00 out of 2.00

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