

Ottocento Lesson #15 Statistics Conclusions Worksheet

Video Solutions at: https://youtu.be/GqJsG_6y_Sk

Question 1

A statistician conducted a survey by selecting a random sample of 350 amateur weightlifters from New York City and asked them their personal best for a bench press. To which of the following populations can the results of the survey be safely generalized?

- A) The 350 weightlifters from New York City in the sample
- B) All weightlifters
- C) All professional weightlifters from New York City
- D) All amateur weightlifters from New York City

Question 2

A county school board in a certain state is proposing a shift in the school year (begin earlier in summer but end earlier in spring). A sample of 130 high school students was selected at random from all high school students in the county. The selected students were asked whether they approved of the proposed change, and 90 students responded that they did not approve of the proposed change. Which of the following is the largest population to which the results of the survey can be generalized?

- A) The 90 students who responded that they did not approve of the proposed change
- B) The 130 students who were surveyed
- C) All high school students in the county
- D) All high school students in the state



Question 3

A Rocket League tournament organizer wanted to study the relationship between the number of goals a team scores in a round and the number of demolitions a team tallies in a round. For the study, the organizer selected 46 teams at random from all Rocket League teams in a certain tournament. The table displays the information for the 30 teams that earned at least 2 demolition per round.

<i>Number of teams</i>	Number of goals scored per round		
Demos earned per round	0 to 12 goals	13 or more goals	Total
2 to 8 demos	5	7	12
9 or more demos	3	15	18
Total	8	22	30

Which of the following is the largest population to which the results of the study can be generalized?

- A) All Rocket League teams in the tournament
- B) The 30 Rocket League teams in the sample that earned at least 2 demolitions per round
- C) The 46 Rocket League teams in the sample
- D) All Rocket League teams in the tournament that scored 13 or more goals per round



Question 4

A statistician conducted a survey by selecting a random sample of 1,600 people who indicated that they disliked a certain standardized test. The participants were asked whether they liked or disliked the standardized test's new digital format (after taking a practice test). Of those surveyed, 75% said they liked the new format. Which of the following inferences can appropriately be drawn?

- A) At least 75% of people who dislike standardized tests will like the new format shown.
- B) Most people who dislike this standardized test will like the new format shown.
- C) 25% of people who dislike this standardized test will dislike the new format.
- D) Most people who like this standardized test will like the new format.

Question 5

Thirty residents of a certain rural town will be selected to participate in a survey about the upcoming mayoral election. Which of the following methods of choosing the 30 residents would result in a random sample of residents of the rural town?

- A) Tell all residents that volunteers are needed to take the survey. Give the survey to the first 100 viewers who volunteer.
- B) Obtain a numbered list of all residents of the rural town. Use a random number generator to select 30 residents from the list. Give the survey to those 30 residents.
- C) Walk into a busy restaurant in the rural town. Assign each diner a number. Put all the numbers on slips of paper. Place the slips in a hat. Give the survey to the people corresponding to the first 30 numbers drawn from the hat (being sure to thoroughly shuffle in between selections).
- D) Obtain a list of all residents attending an upcoming fireworks show. Give the survey to the first 30 residents on that list.



Question 6

A restaurant chain has 40 eateries located in different areas throughout a state. A researcher for the company believes that employee job satisfaction varies greatly from location to location. Which of the following sampling methods is most appropriate to estimate the proportion of all employees of the restaurant chain who are satisfied with their job?

- A) Selecting 8 employees from each location at random and then surveying each employee selected
- B) Surveying the 20 highest-paid employees and the 20 lowest-paid employees
- C) Creating a website on which employees can express their opinion and then using the first 40 responses
- D) Selecting one of the 40 locations at random and then surveying each employee at that location

Question 7

Near the end of a radio show, the host invited listeners to respond to a poll on the show's website that asked, "Do you support the new environmental bill discussed during the show?" At the end of the show, the host reported that 76% responded "Yes," and 18% responded "No." Which of the following best explains why the results are unlikely to represent the sentiments of the population of the United States?

- A) The show did not allow viewers enough time to respond to the poll.
- B) Those who responded to the poll were not a random sample of the population of the United States.
- C) The percentages do not add up to 100%, so any possible conclusions from the poll are invalid.
- D) The host's discussion of the bill did a poor job of highlighting the benefits of the new environmental bill.



Question 8

In order to determine if Treatment Z is successful in improving headache, a research study was conducted. 800 participants were selected at random from a large population of people with headaches. Half of the participants were randomly assigned to receive a placebo treatment (control) and the other half received Treatment Z. The results indicated that most participants who received Treatment Z experienced significantly worse headaches as compared to the placebo treatment (perhaps due to a side effect). Based on the design and results of the study, which of the following conclusions is most appropriate?

- A) Treatment Z is likely to improve headache in people without headaches.
- B) Anyone who receives Treatment Z will experience a worsening headache.
- C) Treatment Z is likely to worsen headache in people with headaches.
- D) Treatment Z is the least effective headache treatment available.

Question 9

The effectiveness of a new study plan on student learning objectives is being studied. A psychometrician selected 50 students from a certain school. The students were obtained from two 25-person classes. The students from one class were given the old, standard study plan, and the students from the second class were given the new study plan. How should the experiment be changed to allow the researcher to conclude whether the new study plan has an effect on student learning objectives?

- A) The 25 highest achieving students should receive the old study plan and the rest should receive the new study plan.
- B) All 50 students should receive the new study plan.
- C) The students receiving the old study plan should be given 5 additional hours to study per week.
- D) Half of the students from each class should be randomly assigned to each study plan.

Question 10

A survey was taken of the values of paintings at a certain art exhibit. The survey found the median painting price was \$750 and the mean painting price was \$500. Which of the following situations could explain the difference between the median and mean painting price in the art exhibit?

- A) There are a few paintings valued much less than the rest.
- B) Many of the paintings are valued between \$500 and \$750.
- C) There are a few paintings valued much more than the rest.
- D) The standard deviation of the data set formed by all of the painting prices is very high.