Test Information

QUESTION 1

1 points Save Answer

A large university surveyed a sample of their students currently living in dormitories to estimate the proportions of all students who prefer single rooms, double rooms, or multiple (more than two people) rooms in the dormitories on campus.

Which of the following should be considered before deciding whether the results from this sample can be generalized to all students at this university currently living in dormitories? (check all that apply)

- [ ] whether or not the sample was randomly selected
- [ ] the size of the sample compared to the number of students living in dormitories at the university
- [ ] whether the university surveyed at least 100 students
- [ ] the percentage of students contacted who responded

QUESTION 2

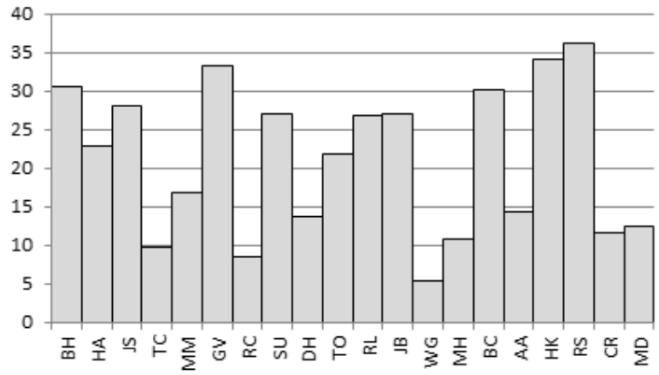
1 points Save Answer

A teacher kept track of the time it took her students to complete a particular exam (in minutes). These times (along with the students' initials) are recorded in the table below.

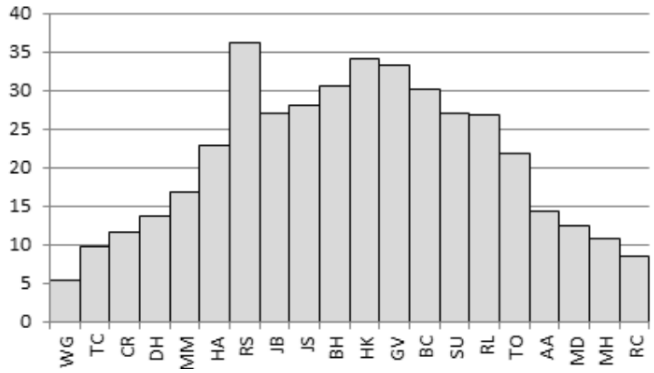
Student	Time	Student	Time	Student	Time
BH	31	SU	27	BC	30
HA	23	DH	14	AA	14
JS	28	TO	22	HK	34
TC	10	RL	27	RS	36
MM	17	JB	27	CR	12
GV	33	WG	5	MD	13
RC	9	MH	11		

Question Completion Status:

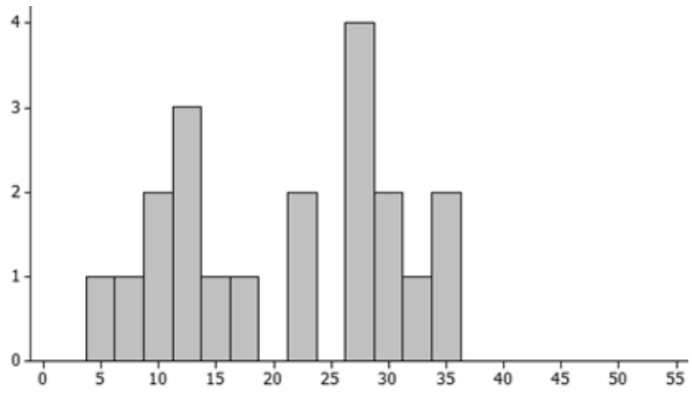
Graph A



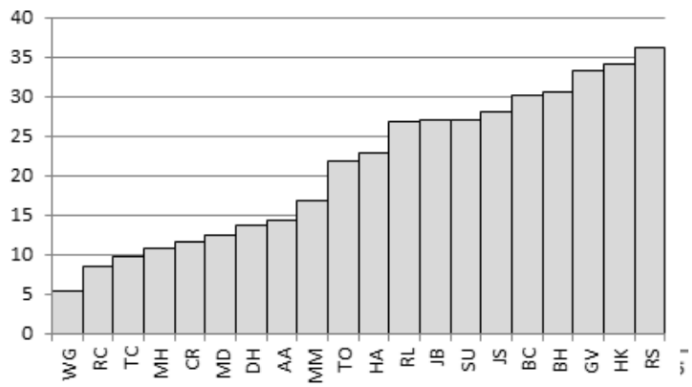
Graph B



Graph C



Graph D



Which of the graphs shown above is the most appropriate display of the distribution of times, in that the graph allows the teacher to describe the shape, center, and variability of the completion times?

Question Completion Status:

- Graph B
- Graph C
- Graph D

QUESTION 3 **1 points** Save Answer

Use the following information to answer the next three questions.

A high school statistics class wants to estimate the average cookie weight of a generic brand of chocolate chip cookies. They collect a random sample of 50 cookies from the manufacturing process and obtain the weight (in grams) for each cookie. Based on their data, the 95% confidence interval for the average weight per cookie is 25.65 to 26.35 grams.

For each of the following three statements, indicate whether it is a valid or invalid conclusion.

We can infer with 95% confidence that a randomly selected cookie manufactured for this generic brand will weigh between 25.65 to 26.35 grams.

- Valid
- Invalid

QUESTION 4 **1 points** Save Answer

We can infer with 95% confidence that mean weight of all cookies manufactured for this generic brand is between 25.65 and 26.35 grams.

- Valid
- Invalid

QUESTION 5 **1 points** Save Answer

We can infer with 95% confidence that the average weight for 50 cookies randomly selected from those manufactured for this generic brand will be between 25.65 and 26.35 grams.

- Valid
- Invalid

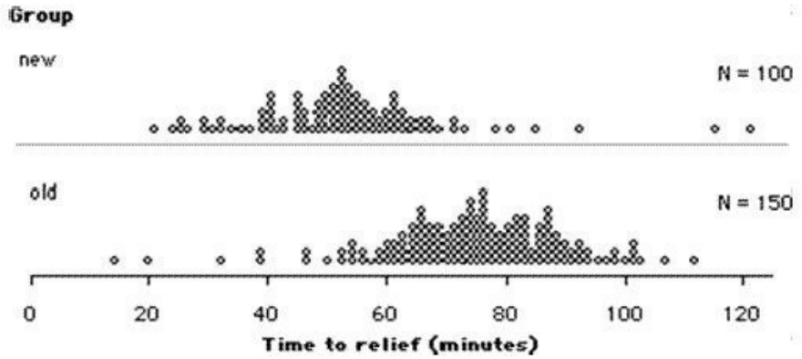
QUESTION 6 **1 points** Save Answer

Use the following information to answer the next two questions.

Two hundred fifty people who frequently suffer from headaches agreed

Question Completion Status:

headache, and the other 150 people received the old headache medication. The time until the patient reported that they no longer had a headache was recorded. The results are shown below:



Which of the following is the most valid conclusion for these data?

- The new medication may be preferable. People taking the new medication tended to feel relief about 20 minutes sooner, on average, than those taking the old medication.
- Neither medication is preferable. The number of patients in the two groups is not the same so there is no fair way to compare the two medications.
- The old medication works better. Two people who took the old medication felt relief in less than 20 minutes, compared to none who took the new medication. Also, the worst result - near 120 minutes - was with the new medication.

QUESTION 7

1 points Save Answer

Suppose the study finds a statistically significant tendency for faster relief with the new medication. From this study, can we conclude that the new medicine causes faster relief among individuals like those in this study?

- Yes, because this was a randomized experiment and statistically significant
- Yes, because both sample sizes are above 50
- No, because the difference was probably due to random chance alone
- No, because the sample sizes were too small

QUESTION 8

1 points Save Answer

Use the following scenario to answer the next two questions.

A researcher in environmental science conducted a study to investigate the impact of a particular herbicide on the level of a certain enzyme in fish. He randomly assigned 60 healthy fish to either a treatment group exposed to the herbicide or to a control group that was not exposed to the herbicide. At the end of the study, the researcher calculated that the average level of the enzyme was higher for the fish that were exposed to the herbicide than for the fish that were not exposed. But when he

Question Completion Status:

For each of the following statements, indicate whether it is a valid or invalid conclusion.

It is plausible that the herbicide does have an impact on the enzyme level but the sample size may have been too small to detect the difference?

- ○ Valid
- ○ Invalid

QUESTION 9

1 points Save Answer

We have strong evidence that the herbicide does not have an impact on the enzyme level

- ○ Valid
- ○ Invalid

QUESTION 10

1 points Save Answer

Researchers surveyed 1,000 randomly selected adults in the U.S. A statistically significant, strong positive association was found between income level and the number of containers of recycling they typically collect in a week. Please select the best interpretation of this result.

- ○ We **can** conclude that earning more money causes more recycling among U.S. adults because the association is statistically significant.
- ○ We **cannot** conclude that earning more money causes more recycling among U.S. adults because this type of study does not allow us to infer causation.
- ○ We **cannot** conclude that earning more money causes more recycling among U.S. adults because the sample is too small to draw any conclusions about the association between income level and amount of recycling for adults in the U.S.

QUESTION 11

1 points Save Answer

The United States has over 310 million residents. Suppose that you want to estimate the proportion of Americans who ate breakfast this morning to within a margin-of-error of 3 percentage points with 95% confidence. About how many people would you need to randomly sample? (Assume all selected will respond to the survey.) Circle the best answer from the following choices.

- ○ 30
- ○ 1500
- ○ 300,000
- ○ 10,000,000

Question Completion Status:

QUESTION 12 **1 points** Save Answer

A graduate student is designing a research study. She is hoping to show that the results of an experiment are statistically significant. What type of p-value would she want to obtain?

- ○ The magnitude of a p-value has no impact on statistical significance.
- ○ A large p-value
- ○ A small p-value

QUESTION 13 **1 points** Save Answer

Use the following scenario to the answer the next four questions.

A research article reports the results of a new drug test. The drug is hypothesized to decrease vision loss in people with macular degeneration more effectively than the current treatment. The article reports a p-value of 0.04 in the analysis section.

Indicate whether the following interpretations are valid or invalid interpretations of this p-value.

We conclude that the new drug is not effective because there is only a .04 probability that the drug is more effective than the current treatment.

- ○ Valid
- ○ Invalid

QUESTION 14 **1 points** Save Answer

We conclude that the new drug is effective because results like they found, or results even more favorable to the new drug, would only happen 4% of the time if the drug was not effective.

- ○ Valid
- ○ Invalid

QUESTION 15 **1 points** Save Answer

We conclude that the new drug is effective because there is only a 4% chance that it's not.

- ○ Valid
- ○ Invalid

QUESTION 16 **1 points**

Question Completion Status:

We conclude that the new drug is not effective because the difference in the proportion of macular degeneration patients with vision loss between the two treatments is only 0.04.

- ○ Valid
- ○ Invalid

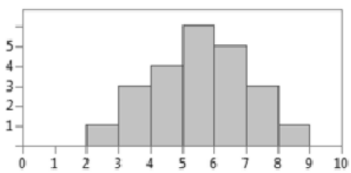
QUESTION 17

1 points Save Answer

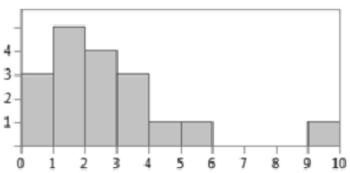
Use the following information to answer the next two questions.

Four histograms are displayed below. Match the description to the appropriate histogram.

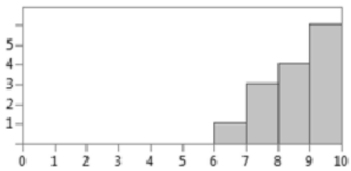
A



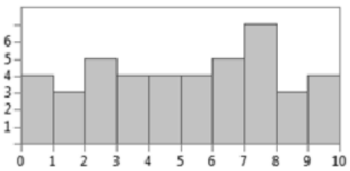
B



C



D



A distribution for the second to last digit of phone numbers sampled from students in a class (i.e., for the phone number 968-9667, the second to last digit is 6) is best represented by:

- ○ Histogram A
- ○ Histogram B
- ○ Histogram C
- ○ Histogram D

QUESTION 18

1 points Save Answer

A distribution for a set of scores on a ten-point quiz where the quiz was very easy - and most students did well - is best represented by:

- ○ Histogram A
- ○ Histogram B
- ○ Histogram C
- ○ Histogram D

Question Completion Status:

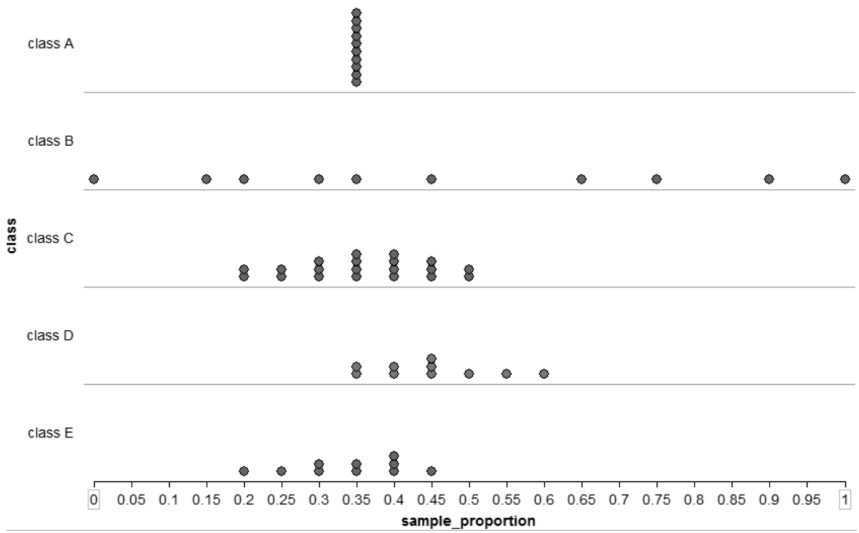
Suppose at a large university, 15% of the students are left-handed. Sam plans to take a random sample of 100 students and ask whether or not the student is left-handed. Kerry plans to ask a random sample of 50 students whether or not the student is left-handed. Who, Sam or Kerry, is more likely to find more than 25% of their sample is left-handed?

- Sam because a larger sample is more likely to have more left-handed students.
- Kerry because a smaller sample is more likely to have more left-handed students.
- Kerry because there is more variability in the sample proportions among smaller samples.
- Sam because there is more variability in the sample proportions among larger samples.
- Both have the same chance because both are planning to select a random sample from a population in which 15% are lefthanded.

QUESTION 20

1 points Save Answer

Imagine you have a barrel that contains thousands of candies with different colors, produced from a certain manufacturing process. We know that the manufacturing process produces yellow candies 35% of the time. Ten students each take a random sample of 20 candies from the barrel, and each student records the proportion of yellow candies in his or her sample.



Which of the dotplots above is the most plausible for the results for these ten students?

- Class A
- Class B
- Class C
- Class D
- Class E

Question Completion Status:

QUESTION 21

1 points Save Answer

The following table is based on records of accidents compiled by a State Highway Safety and Motor Vehicles Office. The Motor Vehicle Office wants to decide whether drivers are less likely to have a fatal accident if they are wearing a seat belt than if they are not wearing a seat belt.

Safety equipment in use	Nonfatal injury	Fatal injury	Row Total
Seat belt	412,368	510	412,878
No seat belt	162,527	1,601	164,128
Column total	574,895	2,111	577,006

Which of the following comparisons is most appropriate for supporting this conclusion?

- ○ Compare the ratios 510/412,878 and 1,601/164,128
- ○ Compare the ratios 510/577,006 and 1,601/577,006
- ○ Compare the ratios 412,368/412,878 and 510/412,878
- ○ Compare the numbers 510 and 1,601

QUESTION 22

1 points Save Answer

Use the following information to answer the three questions below.

A student claims she can be blindfolded and still distinguish between the tastes of Coke and Pepsi by a single sip alone. Her friends allow her to sip a sample of each soft drink and then to repeat that process 10 times, randomly deciding which one she tastes first. She correctly identifies which soda is which eight times out of the ten tries. She claims that this proves that she can reliably tell the difference between the two soft drinks. You want to determine the probability that someone would get at least eight right out of ten tries if they really couldn't tell the difference between the two sodas.

For each of the three statements below, check whether it is a valid or invalid method to provide an accurate estimate of this probability.

Have the student repeat this experiment many times and calculate the proportion of times she correctly distinguishes between the brands.

- ○ Valid
- ○ Invalid

QUESTION 23

1 points Save Answer

Simulate this process a large number of times on the computer with a 50% chance of guessing the correct soft drink on each try, and calculate the proportion of times there are eight or more correct guesses out of ten trials.

- ○ Valid

Question Completion Status:

QUESTION 24

1 points Save Answer

Repeat this experiment with a very large sample of people and calculate the percentage of people who make eight correct guesses out of ten tries.

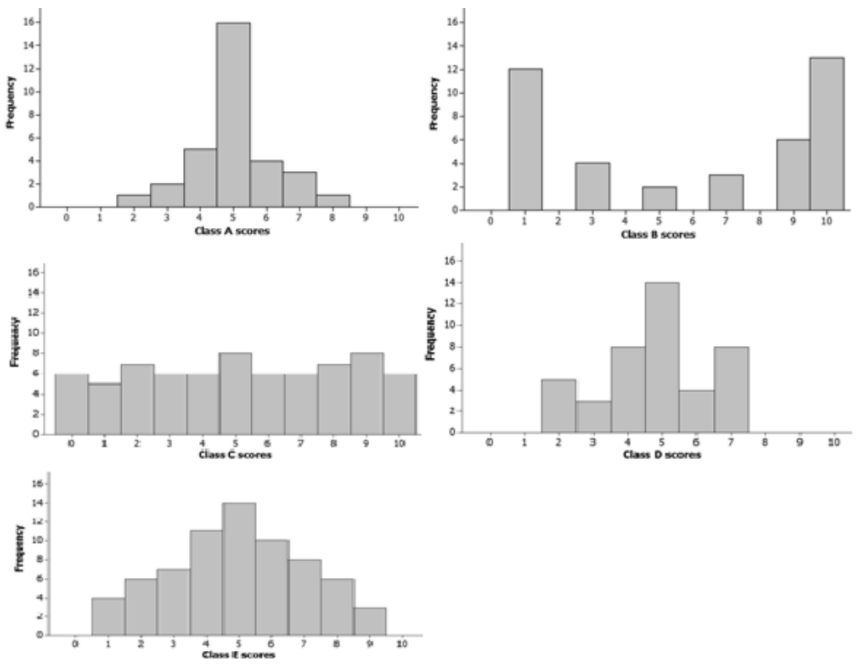
- ○ Valid
- ○ Invalid

QUESTION 25

1 points Save Answer

The next two questions refer to the following situation:

Five histograms are presented below. Each histogram displays test scores on a scale of 0 to 10 for one of five different statistics classes.



Which of the classes has the least variability (as measured by standard deviation) of scores?

- ○ Class A
- ○ Class B
- ○ Class C
- ○ Class D
- ○ Class E

QUESTION 26

1 points Save Answer

Which of the classes has the greatest variability (as measured by the

Class A

Class B

Class C

Class D

Class E

QUESTION 27

1 points Save Answer

A recent research study randomly divided participants into two groups: One group was given Vitamin E to take daily and the other group received only a placebo pill containing no Vitamin E. The research study followed the participants for eight years to see which participants developed a particular type of cancer during that time period. What is the primary purpose of the use of random assignment for making inferences based on this study?

A. So that the participants in the study are likely to be representative of the larger population.

B. So that the groups are expected to be similar in all respects except for the use of Vitamin E.

C. Both A. and B. are primary purposes of random assignment.

QUESTION 28

1 points Save Answer

When manufactured, pennies need a beveled edge (slightly angled) to help pop them out of the press. For this reason, it has been conjectured that spinning a penny on its edge is more likely to land with the tail side up than with the head side up. Suppose you investigate by spinning a penny 15 times (put it on its edge and flick it to spin on its own) and that you find that the penny lands with the tail side up 13 times. You determine that if a spun penny is equally likely to land tails or heads, then the probability of 13 or more tails in 15 coin spins is 0.004. What does this analysis tell you about whether this penny is more likely to land tails than heads if spun a large number of times?

Getting 13 tails in 15 spins likely happened just by chance and therefore this penny has a 50-50 chance to land tails when spun a large number of times.

There is strong evidence that this coin is more likely to land tails than heads if spun a large number of times.

These results prove that this penny is more likely to land tails than heads when spun a large number of times.

Nothing, spinning the penny only 15 times does not produce conclusive evidence either way.

QUESTION 29

1 points Save Answer

Question Completion Status:

likely to land tails when spun? Select one.

- 13 tails in 15 coin spins
- 130 tails in 150 coin spins
- They are equally convincing because 13/15 = 130/150

QUESTION 30 **1 points** Save Answer

Suppose that a random sample of 41 state college students is asked to measure the length of their right foot in centimeters. A 95% confidence interval for the mean foot length for students at this university turns out to be (21.709, 25.091). Based on this interval, what can we say about the claim that the mean foot length for students at this school is 25 cm?

- We have convincing evidence that the mean foot length at this school is not 25cm because 25 is near the right-hand endpoint of the interval.
- We don't have evidence that the mean foot length at this school differs from 25cm because 25 is inside the confidence interval.
- We have evidence that the mean foot length at this school is 25cm because 25 is inside the confidence interval.
- We can't make any statements about the claim based on the confidence interval, we would need the p-value.

QUESTION 31 **1 points** Save Answer

The next two questions refer to the following situation:

Suppose your teacher believes the confidence interval found in the previous question is too wide. She wants to know what could have been done to produce a narrower confidence interval and therefore a more precise estimate of the mean foot length for students at this university.

For each suggestion below, answer Yes, No or Can't Tell for whether this change would produce a narrower confidence interval.

Increase the sample size to 150

- Yes
- No
- Can't Tell

QUESTION 32 **1 points** Save Answer

Increase the confidence level to 99%

- Yes
- No
- Can't Tell

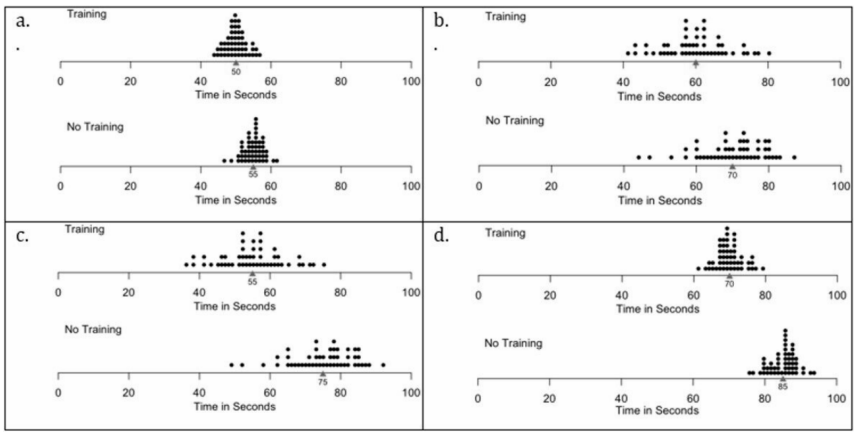
Question Completion Status:

QUESTION 33

1 points Save Answer

Use the following information to answer the question below.

There are 100 students at a summer camp that trains athletes to run a particular track race. To see whether adding weight training to the program can increase their speed, 50 athletes are randomly assigned to receive an additional weight-training program (the Training group) while the other 50 athletes do not receive the weight-training program (the No Training group). At the end of camp, all of the athletes from both groups run the same race and their times (in seconds) are recorded. Below are four pairs of hypothetical dotplots of their race times at the end of the study. A red triangle marks the mean for each dotplot and the value of the mean is printed below the triangle.



Which pair of dotplots provides the strongest statistical evidence that the Training group ran faster (smaller times), on average, than the No Training group?

- Pair A
- Pair B
- Pair C
- Pair D

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers | Save and Submit