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Quiz Chapter 23

Indicate the answer choice that best completes the statement or answers the question.

	1	2	3	4	5	6	7	8
a								
b								
c								
d								
e								

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Quiz Chapter 23

1. A government agency funds research on cancer. The agency funds 25 research projects, all of which are testing various drugs to see if they are effective in reducing brain tumors. One of the projects (project number 12) finds that the drug they are studying significantly reduces the size of tumors with a *P*-value of 0.028. The other 24 projects found no significant effects (*P*-values all greater than 0.05) of the drugs that they studied. Is it proper to conclude that the drug in project number 12 is effective in reducing the size of brain tumors?

   a. Yes. The *P*-value is below 0.05.

   b. Yes. The sample size of 25 is not too small.

   c. Both A and B.

   d. None of the above.

Quiz Chapter 23

2. Which is more informative: confidence intervals or significance tests?

a. Significance tests, because they use a *P*-value.
b. Significance tests, because they compare two hypotheses.
c. Confidence intervals, because they estimate the population parameter.
d. Confidence intervals, because they use sample information.
e. Both A and B.

Quiz Chapter 23

3. An anthropologist wants to compare the average lifespans of the current residents of a village in Uganda to that of those who resided there 100 years ago. Five residents who died this year are randomly selected to be compared to five residents who died 100 years ago. Although the difference in average lifespans is 16.4 years, the results are not statistically significant (P-value = 0.2169). The most likely explanation is

a. that it is unlikely that the measurements from 100 years ago are accurate.
b. that 16.4 years isn't really a long time when considering an entire lifetime.
c. that the sample size is small, so variability makes large differences hard to detect.
d. that the calculation was in error.

Quiz Chapter 23

4. In general, we try to avoid using P-value ≤ 0.05 as the golden rule for determining what is significant. What factors should be considered in deciding whether to reject the null hypothesis?

a. The plausibility of the null hypothesis.
b. The consequences of rejecting the null hypothesis.
c. Both A and B.
d. None of the above. Using P-value ≤ 0.05 universally is a good idea.

Quiz Chapter 23

5. A television show runs a call-in survey each morning. One January morning, the show asked its viewers whether they were optimistic or pessimistic about the economy in the coming year. The majority of those phoning in their responses answered "pessimistic," and the show reported the results as statistically significant. We may safely conclude

a. there is deep concern in the nation about the economy.
b. it is unlikely that if all Americans were asked their opinion, that the result would differ from that obtained in the poll.
c. there is strong evidence that the majority of Americans are pessimistic about the economy in the coming year.
d. very little other than the majority of those phoning in are pessimistic about the economy in the coming year.

Quiz Chapter 23

6. Which of the following would be most helpful in assessing the practical significance of a test of hypotheses about a proportion?

a. Test the hypotheses using significance level $\alpha = 0.001$.

b. Report the *P*-value of your test.

c. Take another sample and retest just to make sure the results are not due to chance.

d. Construct a 99% confidence interval for the proportion in order to see the magnitude of the proportion.

Quiz Chapter 23

7. How small must a *P*-value be in order to consider it convincing evidence against the null hypothesis?

a. The *P*-value must always be less than 0.05 (5% significance level).
b. The *P*-value must be small enough to persuade others to believe H_a instead of H_0.
c. The *P*-value must be very small if the risk of changing from H_0 to H_a is large.
d. Both B and C.
e. Answers A, B, and C are correct.

Quiz Chapter 23

A manufacturer of carpet wanted to reduce the number of flaws per square yard of carpet. Data gathered from quality control measures indicated that Brand A typically had 2.5 flaws per square yard. A mechanical engineer for the company developed a modification of the current process that she thought might reduce the number of flaws. To determine if this was true, one of the machines in the plant was modified according to her specifications. A sample of 30 square yards of carpet was analyzed for flaws. The sample yielded a mean of 2.2 flaws per square yard. Assume the standard deviation of the measurements is 0.66.

8. Find the *P*-value of the test.
   a. 0.0062
   b. 0.0124
   c. 0.62
   d. 0.9938

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Answer Key

1. d

2. c

3. c

4. c

5. d

6. d

7. d

8. a