

1. A golf course designer believes that the average distance that a golfer can drive a ball has increased from the value of 225 yd he was told in school. To test this, he has collected the following sample data (in yd):

231 231 240 214 218 230 253 224 227 227 204 229
253 222 230 252 251 203 247 247 230 218

Use this data to test the designer's hypothesis at the 0.05 significance level and answer the following questions. Assume that the distance a golfer can drive is normally distributed.

The designer's null hypothesis is:

- ☐ A. $\mu \leq 225$
- ☐ B. $\mu = 225$
- ☐ C. $\mu \neq 225$
- ☐ D. $\mu \geq 225$

To two decimal places, $p =$

Conclusion:

- ☐ A. Reject the null hypothesis
- ☐ B. Do not reject the null hypothesis

If a Type I error has occurred in this test, what has happened?

- ☐ A. The designer found that the average was not greater than 225 when really it isn't
- ☐ B. The designer found that the average was not greater than 225 when really it is

- ☐ C. The designer found that the average was greater than 225 when really it is
- ☐ D. The designer found that the average was greater than 225 when really it isn't

If a Type II error has occurred in this test, what has happened?

- ☐ A. The designer found that the average was greater than 225 when really it is
- ☐ B. The designer found that the average was greater than 225 when really it isn't
- ☐ C. The designer found that the average was not greater than 225 when really it isn't
- ☐ D. The designer found that the average was not greater than 225 when really it is

2. Jubal chose 32 people at random and checked whether their watches were ahead of, behind, or exactly on the correct time. If a watch was ahead, he wrote a positive number representing the number of seconds the watch was ahead; if behind, a negative number; if exactly right, a 0. His data had a mean of -1.55 seconds and a standard deviation of 3.36 seconds. Test the hypothesis that the mean for all watches is exactly -0.46 seconds behind the correct time at the 0.05 level of significance.

Jubal's null hypothesis is:

- ☐ A. $\mu \leq -0.46$
- ☐ B. $\mu = -0.46$
- ☐ C. $\mu \neq -0.46$
- ☐ D. $\mu \geq -0.46$

To two decimal places, $p =$

Conclusion:

- ☐ A. Reject the null hypothesis
- ☐ B. Do not reject the null hypothesis

If a Type I error has occurred in this test, what has happened?

- ☐ A. Jubal found that the mean was not exactly -0.46 when in fact it is
- ☐ B. Jubal found that the mean was exactly -0.46 when in fact it is not
- ☐ C. Jubal found that the mean was exactly -0.46 when in fact it is
- ☐ D. Jubal found that the mean was not exactly -0.46 when in fact it is not

If a Type II error has occurred in this test, what has happened?

- ☐ A. Jubal found that the mean was exactly -0.46 when in fact it is not
- ☐ B. Jubal found that the mean was not exactly -0.46 when in fact it is
- ☐ C. Jubal found that the mean was exactly -0.46 when in fact it is
- ☐ D. Jubal found that the mean was not exactly -0.46 when in fact it is not

3. Jeanene read that the average American house had 1008 square feet of room for each inhabitant. To test this, she studied the blueprints of 16 randomly chosen houses in her town. She found an average of 1022.37 with $s=42.8$. Which of the following correctly describes the test and hypotheses she should use?

- ☐ A. A z -test with $H_0: \mu \leq 1008$, $H_a: \mu > 1008$
- ☐ B. A z -test with $H_0: \mu = 1008$, $H_a: \mu \neq 1008$
- ☐ C. A t -test with $H_0: \mu \leq 1008$, $H_a: \mu > 1008$

☐ D. A t -test with $H_0: \mu = 1008$, $H_a: \mu \neq 1008$

☐ E. Cannot satisfy normality; do not test

4. A car manufacturer states that the mean mileage for its entire fleet is 30 mpg. Wishing to test this claim, Jane tests 23 randomly chosen cars and finds a mean mileage of 31.77 mpg with a standard deviation of 3.78 mpg. What should she report as the result of her test?

☐ A. Reject the null at the 0.01 level of significance

☐ B. Normality not established; do not test

☐ C. Fail to reject the null at the 0.05 level of significance

☐ D. Reject the null at the 0.05 level of significance

5. Jada has been told by a breeder that the number of spots on a registered dalmatian dog averages 39 with a standard deviation of 2.46. To test this, she counted the spots on 32 such dogs and found a mean of 38.31. What should she report as the result of her test?

☐ A. Reject the null at the 0.05 level of significance

☐ B. Normality not established; do not test

☐ C. Fail to reject the null at the 0.05 level of significance

☐ D. Reject the null at the 0.01 level of significance