

MATH 160 Chapter 8 Problems

Note: These are just a few problems from chapter 8 to help you review. To study ALL the ch 8 problems, make sure to go over your homework.

Road-Gear, a tire manufacturer, is using a new production method to manufacture tires. A simple random sample of 25 tires are tested. The sample has a standard deviation of 20 inches. At the 0.05 significance level, test the claim that the new production method manufactures tires with less variation than the old production method. (The old production method manufactures tires with a standard deviation of 50 inches)

- 1) Which parameter is being tested here? a) μ b) σ c) P
- 2) What is the claim? _____
- 3) The null hypothesis H_0 : _____
- 4) The alternate hypothesis H_1 : _____
- 5) The test statistic is
- 6) The critical value is
- 7) Which is the correct conclusion for the problem. _____
 - a) The sample data support the claim that the new production method manufactures tires with less variation than the old production method
 - b) There is not sufficient sample evidence to support the claim that the new production method manufactures tires with less variation than the old production method
 - c) There is sufficient evidence to warrant rejection of the claim that the new production method manufactures tires with less variation than the old production method
 - d) There is not sufficient evidence to warrant rejection of the claim that the new production method manufactures tires with less variation than the old production method .
- 8) Based on the your results **should Road-Gear adopt this new production method to manufacture** tires? Is it really better than the old production method?

A car company claims that the mean gas mileage for its luxury sedan is 21 miles per gallon. You believe the claim is incorrect and find that a random sample of 17 cars has a mean gas mileage of 19 mpg and a standard deviation of 4 mpg. Assume that the gas mileage of all of the company's luxury sedans is normally distributed. Use a **significance level of 0.10** to test the company's claim.

9) What is the null hypothesis? H_0 : _____

10) What is the alternate hypothesis? H_1 : _____

11) Find the test statistic

12) The critical value is

13) The p-value is

14) **Which is the correct conclusion for the problem.** _____

- a) The sample data support the claim that the mean gas mileage for its luxury sedan is 21 miles per gallon.
- b) There is not sufficient sample evidence to support the claim that the mean gas mileage for its luxury sedan is 21 miles per gallon.
- c) There is sufficient evidence to warrant rejection of the claim that the mean gas mileage for its luxury sedan is 21 miles per gallon.
- d) There is not sufficient evidence to warrant rejection of the claim that the mean gas mileage for its luxury sedan is 21 miles per gallon.

A medical researcher claims that more than 10% of U.S. adults are smokers. In a random sample of 200 adults, 20% say that they are smokers. Test the claim that the proportion of adults who smoke is more than 10%. Use a significance level of .05

15) Where does the claim go? In the H_0 or in the H_1 ?

16) The null hypothesis H_0 : _____

17) The alternate hypothesis H_1 : _____

18) The test statistic is _____

19) The critical value is _____

20) The p-value is _____

21) Choose one. a) FAIL TO REJECT H_0 b) REJECT H_0 .

22) What is your conclusion? Write out using the conclusions summary in your book.