

For each claim, state the null and alternative hypotheses. Identify which one is the claim. Then, state if it will be a right-tailed, left-tailed, or two-tailed test.

1. The proportion of college students that ride a bicycle on campus is at most 75%.
2. The average points scored by a basketball team is less than 88 points.
3. The average yearly salary of teachers is \$51,497.

Describe the Type I and Type II errors for a hypothesis test of the following claim. Remember to state you null and alternative hypotheses first.

4. The average weight loss for a sample of people who exercise 30 minutes a day is 8.2 pounds.
5. A company claims that its brand of paint has a mean drying time of less than 45 minutes.

Find the critical value(s) and rejection region(s) for each test detailed below. Include a sketch.

6. t-dist.: left-tailed, $\alpha = 0.05$, $n = 10$
7. t-dist.: two-tailed, $\alpha = 0.10$, $n = 18$
8. normal-dist.: right-tailed, $\alpha = 0.01$
9. normal-dist.: two-tailed, $\alpha = 0.09$

Given the p-value and the level of significance α , state whether you would reject H_0 or fail to reject H_0 .

10. p-value = 0.157 and $\alpha = 0.05$

11. p-value = 0.007 and $\alpha = 0.01$

12. Your $z = -2.1$ and $\alpha = 0.05$. Find your p-value for a left-tailed test. Do you reject H_0 or fail to reject H_0 ?

13. Your $z = 1.8$ and $\alpha = 0.01$. Find your p-value for a right-tailed test. Do you reject H_0 or fail to reject H_0 ?

14. Your $z = \pm 1.8$ and $\alpha = 0.05$. Find your p-value for a two-tailed test. Do you reject H_0 or fail to reject H_0 ?

Read each problem and then decide the appropriate test statistic (t or z) to find. Find the test statistic.

15. A researcher claims people who want a healthier lifestyle take more than 5000 steps per day. In a study of 40 people, the mean number of steps taken per day was 5430 steps, with a population standard deviation of 600 steps.

16. A manager states that in his factory, the average number of days per year missed by his employees is more than the national average of ten days. Last year, a random sample of 40 of his employees missed an average of 10.5 days with a standard deviation of 3.63 days.

17. On average, 86% of all enrolled college students are undergraduates. A random sample of 500 college students revealed that 410 were undergraduates.