Recall that s^2 (sample variance) is an unbiased estimate for σ^2 (population variance) and similarly, s (sample standard deviation) is a good estimate for σ (population standard deviation).

Also recall that these are roughly Chi-square (χ^2) distributed.

** What is the formula for χ^2?

Let's use this to test a claim and work through an example.

Read the problem on page 1.4.

1. What is the claim?

2. What is the null hypothesis and the alternative hypothesis?

H_0:

H_a:

3. Calculate χ^2.

4. Is the test one-tailed or two-tailed? Why?

5. Find the critical value(s) and sketch a graph of the critical region.

6. Should the null hypothesis be rejected or fail to be rejected? Why?

7. State your conclusion about the claim?

Homework Problems

Use the process above to test the claim in each problem.

1. The men's basketball players in the Big East division have a mean of 8.4 and a standard deviation of 5.2 for points per game. Syracuse University, one of the Big East teams, has 13 players and a standard deviation of 6.2. Test the claim that Syracuse University basketball team has the same standard deviation as the Big East division. Use a 0.05 level of significance.

2. In 2008, the national average on the ACT Math exam was 21.0 and the standard deviation was 5.2. A group of 25,640 test takers in Mississippi had a standard deviation of 4.1. Test the claim that the group of Mississippi test takers has a smaller standard deviation than the national standard deviation. Use a 0.01 level of significance.