Cautions regarding HT's and CI's

CREDIT: The questions on this document were written by Erik Packard, PhD, Associate Professor of Mathematics at Colorado Mesa University.

- Problem 3
    - On October 2, 2007, on www.denverpost.com a poll question was asking if the Colorado Rockies Matt Holliday should be the MVP (Most Valuable Player). Do you think a 95% CI for the percentage of all baseball fans who would choose Holliday would have a 95% chance of having the true answer? Explain.

- Problem 7
    - We want to see if there is good evidence that the average high temperature in Grand Junction is decreasing. We take as a sample the first 30 days of the year (January 1st through January 30th). A hypothesis is done comparing the sample data with the average high temperature for all days throughout the year and the *p*-value is 0.0000009983. Explain what that means.

- Problem 11
    - A biologist has data on the density of 55 different plants in a study area from both 1975 and 2005. Hypothesis tests are done for each plant to see if its density has changed over the 30 years. One test for each plant is done. Suppose a significance level of 5% is used for each test.

        A) What is the chance that one particular plant will incorrectly be labeled as having changed its density?

        B) What is the chance that at least one of the 55 plants will mistakenly be labeled as having changed its density?