Lesson 9.2: Day 1: Are you sure Mr. Cedarlund isn't a good free throw shooter?

VS

In Lesson 9.1 we used simulation to estimate a P-value to decide whether or not Mr. Cedarlund was exaggerating about his free throw percentage. Today, we will use a formula to find a P-value (somewhat informally)

1. We're going to carry out the significance test from lesson 9.1 again. Here is the hypotheses:

$H_0: p = 0.8$
$H_a: p < 0.8$

2. Suppose Mr. Cedarlund had several sections of AP Stats and each found a different P-Value because each dotplot was different. Would it be appropriate to use a normal distribution to model the sampling distribution of $\hat{p}$?

   b. Are there any other conditions we should check?

3. Large Counts Condition – So What?
   We check the Large Counts condition…

   Random Condition – So What?
   We check the random condition….

   10% Condition – So What?
   We check the 10% condition….

4. Now that conditions have been met, find the mean and standard deviation of the sampling distribution of $\hat{p}$.

5. Use the mean and standard deviation you found to label the Normal curve.

6. How many standard deviations below the mean (z-score) is $\hat{p} = 0.64$? Label it on the normal curve.

7. Find the probability of an 80% shooter making 32/50 ($\hat{p} = 0.64$) or less.

8. What conclusion can we make?

Significance Test for *p*

Important ideas:

Check Your Understanding

According to the U.S. Census Bureau, the proportion of students in high school who have a part-time job is 0.25. An administrator at a local high school (pop 2500) suspects that the proportion of students at her school who have a part-time job is less than the national figure. She would like to carry out a test at the $\alpha = 0.05$ significance level. The administrator selects a random sample of 200 students from the school and finds that 39 of them have a part-time job.

(a) State appropriate hypotheses for performing a significance test. Be sure to define the parameter of interest.

(b) Explain why the sample result gives some evidence for the alternative hypothesis.

(c) Check if the conditions for performing the significance test are met.

(d) Calculate the standardized test statistic and P-value.

(e) What conclusion would you make?