U6/Cn9/Day 1

Name: _____ Hour: _____ Date: _____

Is Mr. Bohn a good free throw shooter?

VS

Mr. Bohn claims he is an 80% free throw shooter. To prove his skills he shoots 50 free throws and makes 32 shots. Is Mr. Bohn exaggerating about his free throw skills?

1. Identify the population, parameter, sample and statistic.

Population: all possible free throw attempts by Mr. Bohn Parameter: p, the true proportion of all free throw attempts that Mr. Bohn makes

Sample: the 50 free throw attempts Statistic: $\hat{p} = 32/50$

2. There are two possible explanations for why Mr. Bohn only made 32/50 shots.

1.) Mr. Bohn makes 80% of his FT but had a bad day.

2.) Mr. Bohn actually doesn't make that many of his FT

To test Mr. Bohn's claim, we will **assume #1, he is an 80% free throw shooter**, and examine the likelihood that he makes 32/50 shots through simulation.

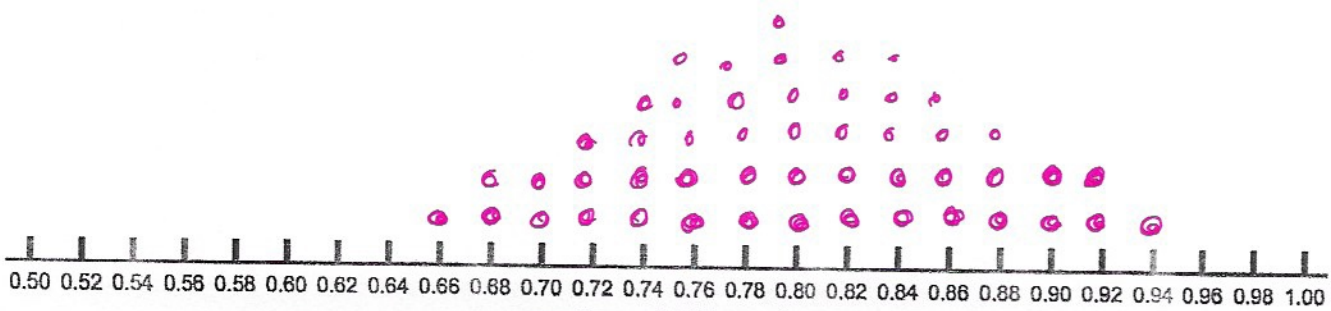
3. Use the spinner provided to simulate 50 free throws **shot by an 80% free throw shooter** by spinning 50 times. What is your sample proportion of shots made?

$\hat{p} = 38/50 = .76$

4. Repeat for another sample of 50 spins. Calculate the sample proportion.

$\hat{p} = 35/50 = .70$

5. Add your sample proportions to the dotplot on the board. Each person in your group should add two dots to the board. Sketch the dotplot below.



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6. What does each dot represent?

The proportion of FT attempts made in one sample of 50 attempts.

7. One student says, "Each dot represents the proportion of free throws made out of 50 free throws shot by Mr. Bohn" Is this correct? Explain.

No, each dot represents the proportion of shots made by someone who makes 80% of their FT.

8. What percentage of the dots represent a percentage of 64% or less?

0

Interpret this percentage in context.

If Mr. Bohn really made 80% of his F.T., he would almost never have a sample result this low. Therefore, we are going to reject his claim. We have convincing evidence that his FT percentage is not 80%

9. Based on your answer to Question 8, does the observed $\hat{p} = 0.64$ result give convincing evidence that Mr. Bohn is exaggerating? Or is it plausible that an 80% shooter can have a performance this poor by chance alone?

Yes. No, not likely.

Assignment #9.1b

(1) I. The population of interest is older vs. college students. The parameter we wish to test a claim about is μ, the true mean SSHA score for these students.

$H_0: \mu = 115$

$H_a: \mu > 115$

(2) I. The population of interest is Jordanian children. The parameter we wish to test a claim about is μ, the true mean amount of hemoglobin for these individuals.

$H_0: \mu = 12$

$H_a: \mu < 12$

(3) I. The population of interest is students at Simon's community college. The parameter we wish to test a claim about is p, the true proportion of left-handed students at Simon's college

$H_0: p = .12$

$H_a: p \neq .12$

(4) I. The population of interest is teens at Yvonne's school. The parameter we wish to test a claim about is p, the true proportion of these teens who rarely/never argue with their friends.

$H_0: p = .72$

$H_a: p \neq .72$

(5) I. The population of interest is measurements of temperature in the Sternes cabin. The parameter we wish to test a claim about is σ, the true standard deviation of these measurements.

$H_0: \sigma = 3$

$H_a: \sigma > 3$

(6) I. The population of interest is jumps in a particular ski jumping competition. The parameter we wish to test a claim about is σ, the true standard deviation of these jumps.

$H_0: \sigma = 10$

$H_a: \sigma > 10$