AP Statistics Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chapter 8 Practice Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4-step Practice Questions** – You’ll need to do these on separate paper ☺ Don’t forget to CYA.

**1. Suppose we are interested in finding out the proportion of the population at PHS that has seen “The Office”. We contact an SRS of 100 students in the school. Of these 100 students, 63 report seeing “The Office”.**

A. Find a 95% confidence interval for the true proportion of PHS students who have seen The Office. Interpret.

B. The producers of The Office state that 74% of all people have seen The Office. Do you think this statistic is true for PHS? Back up your answer statistically.

**2. *Consumer Reports* tested 14 brands of vanilla yogurt and found the following numbers of calories per serving:**

**160 200 220 230 120 180 140**

**130 170 190 80 120 100 170**

A. Create a 90% confidence interval for the average calorie count of vanilla yogurt. Interpret.

B. A diet guide claims that you will get 120 calories from a serving of vanilla yogurt. What does this evidence indicate about this claim? Back up your answer Statistically.

**3. Ms. Jones was an all-star basketball player in high school, and is confident that her free throw percentage was 70%. To prove that she still has skills, she took 50 free throws and made 31 of them. Think of these 50 shots as being a random sample of all the free throws she has ever taken.**

A. Find a 99% confidence interval for the true proportion of free throws Ms. Jones would make.

B. Make a comment about Ms. Jones’ claim.

**Sample Size Questions**

1. A random sample was done on ages when Americans bought their first house. A 98 percent confidence interval was constructed and the interval was  years old. Assuming a standard error of 6.4 years, how big was the sample size?

2. In an internet poll done,  of Americans feel that President Trump should not be using twitter. Assuming a SRS and a 95% confidence interval, what was the likely sample size?

3. You are designing a survey in which you would like to be 98% confident for a population parameter p. You have no idea what p-hat is (you haven’t done the survey yet) but you know you would like to keep error to .03. What should your sample size be?

**Helpful Summary:**

|  |  |  |
| --- | --- | --- |
|  | **µ** | **p** |
| **Critical Value** | **T\***  **z\* (ONLY) if you know σ** | **z\* (we force sample size to be big enough** |
| **Calculator command for critical value** | **invT (area left, df)** | **invNorm (area left, 0,1)** |
| **Assumptions** | * **SRS** * **Independence** * **Normality (either stated, CLT applies for n>30, or make plot)** | * **SRS** * **Independence** * **(n)(p-hat)>10; (n)(q-hat)>10** |
| **Confidence Interval** |  |  |
| **To find n** |  | Use .5 for p-hat and q-hat if no value is known. |