Name:

Lesson 8.3: Day 1: How much does an Oreo weigh?







Mrs. Gallas wanted to estimate the average weight of an Oreo cookie to determine if the average weight was less than advertised. She selected a random sample of 30 cookies and found the weight of each cookie (in grams). The mean weight was $\bar{x} = 11.1921$ grams with a standard deviation of $s_x = 0.0817$ grams. Make a 95% confidence interval to estimate the true mean weight of an Oreo.

- What is the **point estimate** for the true mean? ______
- 2. Identify the population, parameter, sample and statistic.

Population:	Parameter:
-	

Sample: _____ Statistic: _____

- 3. Was the sample a random sample? Why is this important?
- 4. What is the formula for calculating the standard deviation of the sampling distribution of \bar{x} ?
- 5. What condition must be met to use this formula? Has it been met?
- 6. In the formula for the standard deviation of the sampling distribution of \bar{x} , we don't know the value of σ (if we did, we would have known μ) so we will use s_x instead. Find the **standard error**.
- 7. Would it be appropriate to use a normal distribution to model the sampling distribution of \bar{x} ? Justify your answer.
- 8. When finding the margin of error for a confidence interval for a proportion we use z*. For a mean we will use _____ as the critical value. Why???



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- What *t** is needed for this confidence interval? Use Table B and the degrees of freedom = n 1 to find it.
- 10. Calculate the **margin of error** using *t** and the standard error.
- 11. Calculate the 95% confidence interval using **point estimate +/- margin of error**.
- 12. Interpret the interval.
- 13. Write a specific formula for a confidence interval for a population mean.
- 14. According to Nabisco, an Oreo weighs 11.3 grams. Does our confidence interval provide convincing evidence that the true average weight is less than 11.3 grams? Explain.

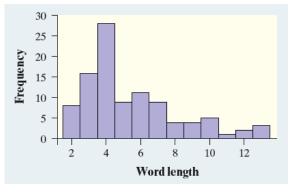


Lesson 8.3 Day 1– Constructing a Confidence Interval for μ

Important ideas:

Check Your Understanding

- 1. Use Table B to find the critical value t* that you would use for a confidence interval for a population mean m in each of the following settings. If possible, check your answer with technology.
 - (a) A 96% confidence interval based on a random sample of 22 observations
 - (b) A 99% confidence interval from an SRS of 71 observations
- 2. Judy is interested in the reading level of a medical journal. She records the length of a random sample of 100 words. The histogram displays the distribution of word length for her sample. Determine if the conditions for constructing a confidence interval for a mean have been met in this context.



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