"FRAPPY"

{Free Response AP Problem...Yay!}

The following problem is taken from an actual Advanced Placement Statistics Examination. Your task is to generate a complete, concise statistical response in 25 minutes. You will be graded based on the AP rubric and will earn a score of 0-4. After grading, keep this problem in your binder for your AP Exam preparation.

A survey given to a random sample of students at a university included a question about which of two well-known comedy shows, S or F, students preferred. The students were asked the question, "Do you prefer S or F?" The responses are shown below.

Preference		
S	F	Total
185	139	324

Scoring:

(a) Based on the results of this survey, construct and interpret a 95% confidence interval for the proportion of students in the population who would respond S to the question, "Do you prefer S or F?"

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(b) What is the meaning of "95% confidence" in part (a)?

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(c) In a follow-up survey, a separate group of randomly selected students was asked "Do you prefer F or S?" The responses are shown below.

Preference		
S	F	Total
68	88	156

Based on these two surveys, is there evidence that the stated preference depends on the order in which the comedy shows were listed in the survey question? Justify your answer.

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(d) Suppose the test in part (c) indicates that the order in which the shows were listed does make a difference.

Is the pooled value $\frac{185+68}{324+156} = 0.527$ a reasonable estimate for the proportion of students at the university who would respond S? If so, justify your answer. If not, what would be a more reasonable estimate? Explain why.

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Total:__/4