



“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 15 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.

Researchers want to determine whether drivers are significantly more distracted while driving when using a cell phone than when talking to a passenger in the car. In a study involving 48 people, 24 people were randomly assigned to drive in a driving simulator while using a cell phone. The remaining 24 were assigned to drive in the driving simulator while talking to a passenger in the simulator. Part of the driving simulation for both groups involved asking drivers to exit the freeway at a particular exit. In the study, 7 of the 24 cell phone users missed the exit, while 2 of the 24 talking to a passenger missed the exit.

Scoring:

(a) Would this study be classified as an experiment or an observational study? Provide an explanation to support your answer.

E I

(b) State the null and alternative hypotheses of interest to the researchers.

E I

(c) One test of significance that you might consider using to answer the researchers' question is a two-sample z -test. State the conditions required for this test to be appropriate. Then comment on whether each condition is met.

E P I

(d) Using an advanced statistical method for small samples to test the hypotheses in part (b), the researchers report a p -value of 0.0683. Interpret, in everyday language, what this p -value measures in the context of this study and state what conclusion should be made based on this p -value.

E P I

Total: __/4