



## “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.

A study was conducted to determine if taking vitamin C reduces the occurrence of the flu. The study was conducted using 808 student volunteers who did not take a flu shot. The subjects were randomly assigned to one of two groups: a treatment group who received 1,000 milligrams of vitamin C daily or a control group who received a placebo flavored to taste like the vitamin C treatment. All participants were monitored to ensure that they adhered to their assigned treatment on a daily basis throughout the period of the study. At the end of the flu season, each subject's medical record was reviewed by a physician to determine whether he or she had contracted the flu during the period of the study. The physician did not know which treatment each subject received. The results of the study are shown in the table below.

	Flu	No Flu	Total
Placebo	331	74	405
Vitamin C	302	101	403
Total	633	175	808

### Scoring:

(a) Is this study an experiment or an observational study? Explain your answer.

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(b) Based on this study, a health expert claims that there is evidence to suggest that vitamin C reduces the occurrence of the flu in the population of students who would volunteer for such a study. State the name of a test and the null and alternative hypotheses that the health expert could have used to support this claim. Do not carry out the test.

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Total: \_\_/4