



## “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.

For many years, the medically accepted practice of giving aid to a person experiencing a heart attack was to have the person who placed the emergency call administer chest compression (CC) plus standard mouth-to-mouth resuscitation (MMR) to the heart attack patient until the emergency response team arrived. However, some researchers believed that CC alone would be a more effective approach.

In the 1990s a study was conducted in Seattle in which 518 cases were randomly assigned to treatments: 278 to CC plus standard MMR and 240 to CC alone. A total of 64 patients survived the heart attack: 29 in the group receiving CC plus standard MMR, and 35 in the group receiving CC alone. A test of significance was conducted on the following hypotheses.

$H_0$ : The survival rates for the two treatments are equal.

$H_A$ : The treatment that uses CC alone produces a higher survival rate.

### Scoring:

This test resulted in a  $p$ -value of 0.0761.

(a) Interpret what this  $p$ -value measures in the context of this study.

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(b) Based on this  $p$ -value and study design, what conclusion should be drawn in the context of this study? Use a significance level of  $\alpha = 0.05$ .

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(c) Based on your conclusion in part (b), which type of error, Type I or Type II, could have been made? What is one potential consequence of this error?

E P I

**Total: \_\_/4**