Name _____ Pd _____

Life After High School?

Did the events of September 11 impact the future of high school seniors? Educators have expressed fear that the economic impact may mean that fewer students can afford to attend college. Some commentators have suggested that a heightened sense of patriotism may increase military enlistments, while others think that the existence of actual hostilities may deter young people from choosing a military path. A polling organization wants to investigate what this year's high school seniors are planning to do after they graduate.

Question 1. During the 1990s, about 63%[1] of high school graduates enrolled in college. The pollsters hope to estimate the percentage of this year's seniors planning to attend college with a margin of error no greater than 4%. What sample size would suffice if they want to have 90% confidence in the estimate?

The pollsters randomly select five cities in upstate New York and then randomly select one high school in each city. The guidance office at each of the chosen schools is instructed to ask 100 randomly selected seniors what their current plans are, and to report back to the pollsters. The data collected from the five school are summarized in the table.

Plans	Count
college	289
employment	112
military	26
other (travel, parenting, etc)	51
undecided / no response	22

Question 2. Determine a 90% confidence interval for the percentage of seniors planning to go to college this year. Explain briefly what your interval means.

Question 3. During the 1990s, about 4.5%[2] of high school seniors enlisted in the military. Do these data suggest that the percentage who enlist is different this year? Test an appropriate hypothesis and state your conclusion.

Question 4. A few of the seniors did not respond to the guidance office queries, and others said they were undecided. Some of these students might eventually decide to enlist in the military. Suppose that half of this small group also enlist. Would this cause you to change your conclusion in Question 3? Explain.

Question 5. Explain, in context, what a Type I error and Type II error would be.

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[1] United States Bureau of Labor Statistics, www.bls.gov/news.release/hsgec.nr0.htm
[2] Defense Technical Information Center, dticaw.dtic.mil/prhome/poprep99/html/chapter2

Life After High School?

Scoring Rubric

This Investigative Task has 11 components within the five questions.
Each is rated on a 0-4 scale, based on **E**ssentially correct, **P**artially correct, or **I**ncorrect solutions.

Question	Category	Components	Score
1	*Sample Size*	E: determines the minimal sample size needed (minor errors okay) P: uses incorrect critical value or misinterprets the result	E P I
2	*Mechanics*	E: determines the correct confidence interval (minor errors okay) P: has correct procedure, but uses wrong critical value or notation	E P I
2	*Conclusion*	E: correctly interprets the interval in context P: has a correct interpretation but the wrong population	E P I
3	*Hypotheses*	E: writes correct hypotheses (two-tail) with proper notation P: writes one-tail hypotheses or uses wrong notation	E P I
3	*Model*	E: checks conditions and identifies test by name P: checks conditions, but does not identify the test	E P I
3	*Mechanics*	E: has correct sketch, values, notation, and p-value (consistent with Ha) P: makes one mistake among the four listed above	E P I
3	*Conclusion*	E: links p-value to the correct conclusion in proper context P: has the correct conclusion, but the linkage is missing or unclear	E P I
4	*Mechanics*	E: correctly finds the revised p-value P: makes one mistake among the sketch, values, notation, or p-value	E P I
4	*Conclusion*	E: links p-value to the revised conclusion in proper context P: has the correct conclusion, but the linkage is missing or unclear	E P I
5	*Errors*	E: correctly identifies errors, consistent with stated hypotheses I: reverses the errors (with respect to stated hypotheses)	E I
5	*Errors*	E: correctly explains both kinds of errors in context P: explains only one type of error correctly in context	E P I

Es count as 1 point; **P**s are ½ point.

Grade based on the sum of the 11 components: 11 = A+, 10 = A, 9 = A-, etc.