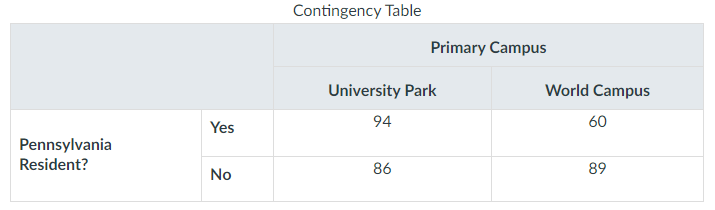
Note:

* Use minitab software for this assignment
* Please provide screenshots of minitab output.

Question Set 1: Pennsylvania State Residency by Campus

Researchers are comparing the proportion of Penn State University Park students who are Pennsylvania residents to the proportion of Penn State World Campus students who are Pennsylvania residents. Data from a random sample are presented in the contingency table below:



Question Set 1\_A:

Check assumptions for a confidence interval for two proportions, we can use the normal approximation if there are at least 10 “successes” (i.e. Yes’s) and 10 “failures” (i.e. No’s) in each group (UP and WC).

Question Set 1\_B:

Use Minitab to construct a 95% confidence interval to estimate the difference between the population proportion of all UP students who are Pennsylvania residents versus the population proportion of all WC campus students who are Pennsylvania residents.

Question Set 1\_C:

Interpret the confidence interval you computed in Question Set 1\_B by completing the following sentence. I am 95% confident that…

Question Set 1\_D:

State the null and alternative hypotheses to determine if there is a statistical difference in PA residents between UP and WC.

Note: Before you insert the image, circle or highlight both the hypotheses (H0 and Ha) and z test statistic in your Minitab results.

Question Set 1\_E:

Decide to reject or fail to reject the null hypothesis.

Question Set 2: California Bar Exam

The State Bar of California is considering changing its exam structure such that instead of 200 multiple-choice questions, there will be 180. Before making any changes permanent, they first want to collect data to compare the outcomes of the two structures. They have obtained a representative sample of 85 Law students and randomly assigned each to take either the new or old exam. The summarized sample data is given in the table below.

A white grid with black text

Description automatically generated

Question Set 2\_A:

Use Minitab to construct a 95% confidence interval to estimate the mean difference in the bar exam scores of the two groups. Include the supporting Minitab output.

Question Set 2\_B:

Step 1. Interpret the confidence interval you computed above by completing the following sentence.

I am 95% confident that... in the populations of all law students taking the CA Bar exam \_\_\_\_\_\_\_\_

Step 2. Briefly explain the implication of the confidence interval containing or not containing “0”.

Question Set 2\_C:

For a hypothesis test for two independent means, what two assumptions must be met to use a t distribution? Are both assumptions met for the data above? Hand calculations are not required.

Question Set 2\_D:

Compute the test statistic.

Question Set 2\_E:

Decide to reject or fail to reject the null hypothesis.

Question Set 2\_F:

State a real-world conclusion.

Question Set 2\_G:

Cohen's d Calculations: By-hand, compute Cohen’s d for the difference in the two-sample means. Remember to show all the work.

For a review of Cohen’s d see page (<https://online.stat.psu.edu/stat200/lesson/6/6.4>)

Question Set 2\_H:

Cohen's d Interpretation: Interpret the value of Cohen’s d that you computed in the previous question. Be sure to discuss how Cohen’s d is measured by the standard deviation.

Question Set 3: Personal Research

* Find a news story or scientific article dealing with inferring two samples (proportion or mean). Post the URL below with a short description of the finding.

Reflection:

* How confident are you in your answers?
* What was the most challenging part of the lab?