AS2 (Assignment 2, Unit 4): Computing the Z-test Statistic

Research Scenario #1

The State College is evaluating a new English composition course for freshman. A random sample of n = 25 freshmen is selected from the State College. All 25 students are placed in the new English composition course during their first semester. One year later, a writing sample is obtained for each student and their writing samples are graded using a standardized evaluation technique. The average score for the sample is M= 76. For the general population of the State College, writing scores form a normal distribution with a mean = 70 and a standard deviation = 20.

Based on the above research scenario, please answer the following questions:

What is the researcher's hypothesis?

_____

What is the null hypothesis?

_____

1. Name the population: _____
2. Name the sample: _____
3. What is the independent variable? _____
4. What is the dependent variable? _____
5. What is the appropriate hypothesis test? _____
6. What two means are you comparing in this test? _____
7. Please calculate the appropriate hypothesis test using all four steps:

Step 1:

Step 2:

Step 3:

Step 4: _____

Write the statistical statement for your results: _____

Interpret your results (relating back to the hypothesis):
_____
_____
_____

Is there a probability of Type I error? Yes _____ No _____

If yes, what is the probability of a Type I error? _____

Is yes, how could you have decreased that probability?
_____

Is there a probability of Type II error? Yes_____ No_____

If it is appropriate, please calculate effect size: Answer:_____

Research Scenario #2:

A researcher would like to determine whether there is any relationship between students' grades and where they choose to sit in the classroom. Specifically, the researcher suspects that the better students choose to sit in the front of the room. To test this hypothesis, the researcher asks her colleagues to help identify a sample of n = 100 students who all sit in the front row in at least one class. At the end of the semester, the grades are obtained for these students and the average grade point average is M= 3.25. For the same semester, the average grade point average for the entire college is $\mu = 2.95$ with a standard deviation of 1.10.

Based on the above research scenario, please answer the following questions:

What is the researcher's hypothesis?

_____

What is the null hypothesis?

_____

1. Name the population: _____
2. Name the sample: _____
3. What is the independent variable? _____
4. What is the dependent variable? _____
5. What is the appropriate hypothesis test? _____
6. What two means are you comparing in this test? _____

7. Please calculate the appropriate hypothesis test using all four steps:

Step 1:

Step 2:

Step 3:

Step 4: _____

Write the statistical statement for the results: _____

Interpret your results (relating back to the hypothesis):
_____
_____
_____

Is there a probability of Type I error? Yes ____ No_____

Is there a probability of Type II error? Yes ____ No____

If appropriate, please compute effect size: Answer: _____