**MA 207 Hypothesis Test for Two Means Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Suppose that a simple random sample is drawn from each of two independent normal populations and a measurement is taken. Those data are summarized below. We want to test whether there is difference between the means of the two populations. Prior to performing the test, we decide on a level of significance of.

|  |  |  |  |
| --- | --- | --- | --- |
| Population | Sample Size | Sample mean | Sample Standard Deviation |
| 1 | 36 | 66.0 | 6 |
| 2 | 27 | 61.8 | 9 |

1. Explain the idea behind a significance test (also called a hypothesis test).
2. Is a two-sample *t*-test appropriate? Why or why not? (Check the assumptions.)
3. State the null and alternative hypotheses. Is the alternative one-sided or two-sided?
4. State the test statistic appropriate for this situation. Compute it.
5. Determine the P-value. Draw a labeled curve and shade a region to represent the *P*-value. Is the region one-sided or two-sided?
6. What does the P-value mean in practical terms in the context of this problem?
7. Complete the sentence: Test results are statistically significant if…
8. Explain what you conclude at the . level of significance.
9. Compute the 95% confidence interval for the difference of the population means. Does the hypothesized value fall within this interval? Explain what that means.
10. Would your conclusion be different if, before the experiment, you had selected the α = .01 level of significance?