

Re look at  
at least  
part of #5  
then it's wrong  
8/10

1. What is required in order to use the level of significance ( $\alpha$ ) to reject a null hypothesis?

It is required to decide the risk level ( $\alpha$ ) we are willing to tolerate of rejecting the null hypothesis when it is true. Common values of  $\alpha$  are .01, .05, .10, traditionally researchers select the value of .05. This means:

If  $\alpha > .05$  then you reject the null hypothesis. In other words if you can reject the null hypothesis more than 5% of the time then the null hypothesis is false.

$\alpha$ -value  $< 0.05$  you reject the null hypothesis.

2. Environmental chemists often use a "95% confidence interval" when rejecting a null hypothesis. What would be the value for  $\alpha$  in this test?

$$100 - 95 = 5\%, 5\% = 5/100 = 0.05, \\ \alpha = 0.05$$

3. Look at the graph on text page 128. When in the region of rejection on either end of the curve, what becomes of the  $\mu_1 = \mu_2$  relationship?

Population parameter is not equal. Rejecting the null hypothesis proves the alternative hypothesis.  $\mu_1 \neq \mu_2$ .

4. In reality (particularly in environmental chemistry), the relationship  $\mu_1 = \mu_2$  is never exactly true. We must be willing to accept a range of values for  $\mu_1$  &  $\mu_2$  that we consider to be not significantly different from each other, even though not equal. What region of the graph on p. 128 would we consider " $\mu_1 = \mu_2$ "?

Region of nonrejection.

5. Refer to the data table below. It contains scores (maximum score 1.0) for two environmental chemistry classes, A and B. If comparing these, we would establish a null hypothesis that the average scores are not different from each other (in effect  $A = B$ ).

Set up these scores by copying and pasting the data into an Excel table. Then calculate the average of each column (using  $=\text{average}(x1:x15)$ ) where the "x1" values are cell addresses. Then calculate the standard deviation (using  $=\text{stdev}(x1:x15)$ ). The standard deviation defines a range of uncertainty around the average (analogous to the "region of non-rejection" in the figure on p. 128). Below, write the range of values for both averages  $\pm$  one standard deviation.

Scores A	Scores B
0.84	0.70