

### Problem #1

In Lesson 07, you computed a mean and standard deviation for 36 die rolls. With the lesson commentary, you were asked to use that mean and standard deviation to perform a formal t-test of a null hypothesis.

Complete the five steps of the t-test, showing your work for each step. As with the example provided in lesson commentary, the null hypothesis is that the population mean is 3.5 and an alternative hypothesis that the population mean is not 3.5. In addition, the degrees of freedom will be 35 so your critical value is 2.03.

#### Step #1: State your Hypothesis and Null Hypothesis

Null Hypothesis = 3.5

Alternative Hypothesis  $\neq$  3.5

#### Step #2: Identify the critical Value to which you compare the T-Statistic

Critical Value: 2.03

#### Step #3: Compute the Required Statistics

Mean = 3.50

1+1+1+1+1+2+2+2+2+2+2+3+3+3+3+3+3+3+3+4+4+4+4+4+5+5+5+5+5+5+5+6+6+6+6+6/36=3.50

Standard Deviation = 1.7

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2}$$

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### Problem#2

You have already related sample means to p-values in an exercise in the lesson. Because sample means directly relate to t-statistics, you can also relate t-statistics to p-values. Following are four t-statistics and four p-values for your 36 die-roll examples. Which t-statistics are associated with which p-values?

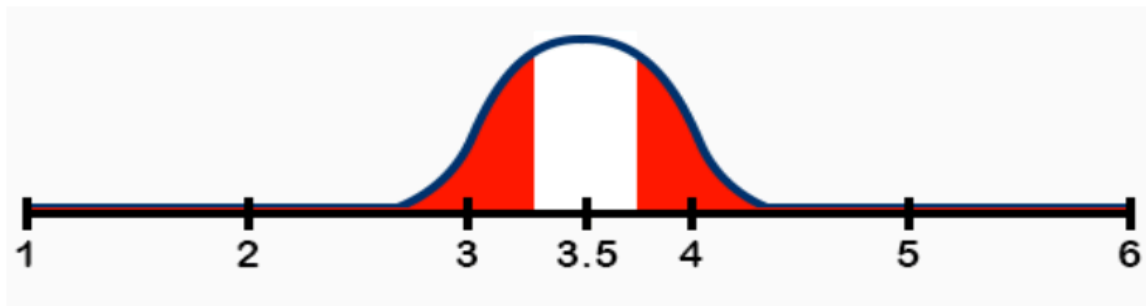
**T-statistic #1: 1.28 = P-Value C: 0.21**  
**T-statistic #2: 0.67 = P-Value B: 0.50**  
**T-statistic #3: 2.82 = P-Value D: 0.008**  
**T-statistic #4: 2.03 = P-Value A: 0.05**

### Problem#3

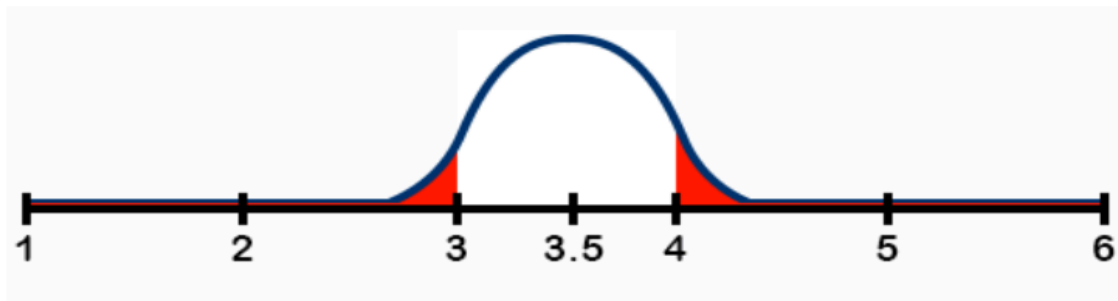
This lesson contained multiple figures that represented different values for the below graphs. Figure 3A and 3B below contain two additional figures. Which figure relates to a p-value of 0.10? Which figure relates to a p-value of 0.50?

Graphic 3A represents a p-value of a .10 and Graphic 3B represents a p-values of a 0.50.

3A



3B



Problem#4

You are testing the following null hypothesis: The average GPA at your college is equal to 3.15. The alternative hypothesis is that the average GPA at your college is not equal to 3.15.

Below you will find two different p-values and two different conclusions. Match the p-values to the conclusions.

**P-value A: 0.85 = Conclusion #2: We have no evidence to suggest that the average GPA is anything other than 3.15.**

**P-value B: 0.01 = Conclusion #1: We are very confident that the average GPA is not equal to 3.15.**