**KSU ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Due: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Dependent-Samples *t-*Test – Class Participation (Productivity Level) – Answer Key**

A researcher wants to know whether the size of a person’s computer monitor has any effect on their productivity level. Each of 10 participants completed a task first on a 15-inch monitor and then again on a 42-inch monitor. The number of minutes it took participants to complete the task was recorded as the measure of productivity.

**Step 1. State your hypotheses.**

**a. Is it a one-tailed or two-tailed test? Two-tailed**

**b. Hypotheses in words:**

**HA: There will be a different amount of time spent on the tasks when a participant uses a 15 inch monitor compared to using a 42-inch monitor.**

**H0: There will be no difference in the amount of time spent on the tasks when a participant uses a 15 inch monitor compared to using a 42-inch monitor.**

**c. Hypotheses in symbols:**

 **HA: µD ≠ 0**

**H0: µD = 0**

**Step 2. Set the significance level 🡺 α = .05 Determine tcrit. tcrit = + 2.262 df = 9**

**Step 3. Select and compute the appropriate statistical test.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 15 in. | 42 in. | **D** |  |  |
| 5 | 2 | **3** | **1.5** | **2.25** |
| 4 | 3 | **1** | **-.5** | **.25** |
| 4 | 1 | **3** | **1.5** | **2.25** |
| 2 | 3 | **-1** | **-2.5** | **6.25** |
| 6 | 3 | **3** | **1.5** | **2.25** |
| 3 | 1 | **2** | **.5** | **.25** |
| 5 | 4 | **1** | **-.5** | **.25** |
| 2 | 2 | **0** | **-1.5** | **2.25** |
| 2 | 1 | **1** | **-.5** | **.25** |
| 4 | 2 | **2** | **.5** | **.25** |
| **ΣX1 = 37** | **ΣX2 = 22** | **ΣD = 15** |  | **= 16.5** |
| **3.7** | **2.2** |  **1.5** |  |  |

**Step 4. Make a decision.** Determine whether the value of the test statistic is in the critical region. Draw a picture. Label tcrit and tobt.

Is zobt in the critical region? **Yes**

Should you reject or retain the H0? **Reject**

tobt = 3.50

tcrit = 2.262

tcrit = -2.262

**Step 5. Report the statistical results.**

***t*(9) = 3.50, *p* < .05**

**Step 6. Write a conclusion.**

**Participants who use a 17-inch monitor (*M* = 3.7) spent significantly more time in minutes to complete the performance tasks from when they used a 42-inch monitor (*M* = 2.2), *t*(9) = 3.50, *p* < .05.**

**Step 7. Compute the estimated d.**

****

****

**Step 8. Compute r2 and write a conclusion.**

****

**Monitor size can account for 57.65% of the variability in productivity level.**