

**Exam 4C Data Section  
Spring 2021**

**Calculations Worksheet**

THIS DATA WILL BE USED FOR ALL THREE QUESTIONS IN THE DATA SECTION. You may print and use this page as a worksheet or create your own. Some questions in the Multiple Choice/Short Answer section will refer to your work here.

A student is working on her thesis. She turns to you for help in analyzing her data. She is looking at the relationship between *sensation seeking* (a need or desire for excitement in one's life) and *number of verbal arguments* people report having in the last month. Sensation seeking is measured with a pen-and-paper instrument, and high sensation seeking scores indicating more need for excitement. The data are presented below.

<b>NUMBER OF ARGUMENTS</b>	<b>SENSATION SEEKING</b>			
7	9			
8	20			
6	8			
8	22			
14	22			
12	26			
10	27			
10	27			

## **Exam 4C Data Section**

- 1) Answer the questions below fully and completely on separate pages.
- 2) Label and number each.
- 3) Upload the images or pdfs to Blackboard. Submit all work, including all calculations.

### **DS1. Correlation (24 points)**

**DS1a.** Calculate the correlation coefficient that describes the relationship between number of verbal arguments and sensation seeking score from the data presented above. (16 pts)

**DS1b.** What does this correlation tell you about the relationship? Interpret the correlation fully. (4 pts)

**DS1c.** What proportion of variability in sensation seeking is accounted for by the relationship with the number of verbal arguments? (4 pts)

### **DS2. Significance of a Correlation (20 points)**

**DS2a.** Perform a hypothesis test to determine if the correlation you calculated in 1A is significant. Use .05 as the level of significance. Show all four steps of hypothesis testing. (16 points)

**DS2b.** Which is possible for your decision and conclusion for this hypothesis test, a Type 1 or a Type 2 Error? (4 points)

### **DS3. Regression (20 points)**

**DS3a.** Construct a prediction equation that will allow you to predict the sensation seeking score from knowing the number of verbal arguments. Note: Pay close attention to which variable is the predictor. (8 points)

**DS3b.** What sensation seeking score can be expected from a person who has 7 verbal arguments? (3 pts)

**DS3c.** Is the prediction you made in 3b a valid prediction? **WHY or WHY NOT?** (3 pts)

**DS3d.** What sensation seeking score can be expected from a person who has 15 verbal arguments? (3 pts)

**DS3e.** Is the prediction you made in 3d a valid prediction? **WHY or WHY NOT?** (3 pts)