Republic of the Philippines 

POLYTECHNIC UNIVERSITY OF THE PHILIPPINES

Elective 3

**INTRODUCTION TO DATA SCIENCE**

Home Activity

**STATISTICAL INFERENCE**

**Name: Prof.**

**Year and Section:**

**Homework / Home Activity Rubric**

| **Predictor** | **Below Standard**  **(2)** | **Approaching**  **Standard**  **(3)** | **At Standard**  **(4)** | **Above Standard**  **(5)** |
| --- | --- | --- | --- | --- |
| **Completion** | Student turned in  assignment but mostly  incomplete | Some of the assigned  work is complete | Most of the assigned  work is complete | All of the assigned  work is complete |
| **Accuracy** | Little to none of the  answers are correct | Some of the answers  are correct | Most of the answers  are correct | All of the answers are  correct |
| **Work Shown** | Student did not show  any work | Some steps for  problem solving are  missing | Most work is  meticulously shown | All work is  meticulously shown |
| **Neatness** | Homework is  disorderly, with many  smudges or tears | Homework is in a  packet with several  smudges or tears | Homework is in an  orderly packet and is  neat, with a few  smudges or tears | Homework is in an  orderly packet and is  incredibly neat, with  no smudges or tears |

**The rubric above will be used to evaluate your answer.**

**1.** The following Temperatures in a City were recorded during a week in October: {78, 76, 71, 70, 68, 70, 71}

a. From the given temperatures above, find the **Mean** temperature.

b. Find the **Median** temperature.

c. Find the **Mode**.

d. Using a given dataset, create a histogram (using R) and calculate the standard deviation e. Find the **Range**.

f. Explain what does the **range** tell you?

g. What is the best **measure of center** and why?

**2.** Consider influenza epidemics for two parent heterosexual families. Suppose that the probability is 17% that at least one of the parents has contracted the disease. The probability that the father has contracted influenza is 12% while the probability that both the mother and father have

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contracted the disease is 6%. What is the probability that the mother has contracted influenza?

**3.** What is the difference between descriptive and inferential statistics? Please provide an example experimentation on your own, any field that is ***interesting to you*** and use R Programming Language. Screenshot your codes and results, then explain it to differentiate the two statistics.

**4.** A bag contains 4 red balls and 6 green balls. If a ball is randomly selected from the bag, what is the probability that it is red?

**5.** The average score on a test is 85 with a standard deviation of 5. If a student receives a score of 92, what is their Z-score? Also, include your insights.

**6.** A test is designed such that the mean score is 500 and the standard deviation is 100. If a student scores a 700, what is their Z-score? Then your insights?

**7.** Do you think getting the measures of central tendency is enough to say that we have already the important facts about our dataset? Explain your answer.

**8.** A set of data has the following five numbers: 2, 4, 5, 9, and 11. Explain the step-by-step procedure on finding the interquartile range (IQR) of the data we have.

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