Data Measurement

**As you proceed with the assignment, follow the written instructions. Screenshots are provided ONLY as a reference.**

**Make sure you submit all screenshots with a clearly visible menu bar including the date and timestamp.**

# **Objective**

# We collect data to gain a better understanding of something that occurs in the universe. Data points collected evolve from observations or experiments. From these collections of data we can gain insights and draw conclusions. Observations and measurements are data created about a phenomenon. Data is the reflection of a phenomena. As part of this exercise, measure the data and visualize it based on different phenomena that you have observed.

# **Requirements for Success**

You should perform the experiments and collect data manually avoiding usage of any digital device. You are creating the data with your own observations. Imagine you are wearing a white lab coat observing and recording a phenomenon. Do NOT 1) make up data 2) get data from a smart phone 3) get data from a software application 4) get data from a database 5) download a data file from the Internet. A 50% discount is applied to scenarios where data is not created by the student.

# **Examples in Practice**

Read the 3 examples in this section and use the approach as a model for your ideas and use this as a reference to answer the assignment questions for each scenario.

# *Science Phenomenon*

### Phenomena Description: Height reduction of a burning candle

# Record the phenomenon of lighting a 10 inch (diameter 0.25 inch) candle and measure the length of the candle at every 3 minute interval.

**Procedure with Photo**

* Take a candle, a lighter, a measuring tape/scale, and a stop watch
* Note initial dimension of candle
* Light the candle and let it burn for 3 minutes (use the stop watch to monitor time), after 3 minutes blow out the candle
* Measure and record its length using a measuring tape/scale
* Repeat this process for about 8 to 10 times and record the data

A picture containing ground, counter, plastic, sandy

Description automatically generated

**Data Measurements**

Table

Description automatically generated

**Data Visualization**

**Color Encoded Data Table**

Table

Description automatically generated

**Insights**

1. From the graph we can infer that there is a negative linear correlation between time and length of the candle
2. Data table shows that the average change in the length of the candle in 3 minutes interval is 0.86 inches
3. Maximum reduction in the length occurred at 12th minute which was observed to be 1.6 inches
4. Minimum reduction in the length of the candle in 3 minute interval was observed to be 0.4 inches

# *Business Phenomenon*

### Phenomena Description: Weekly Soda Sales

A restaurant owner wanted to calculate the number of sodas consumed every week to allow the next order to be planned. Record the number of fountain sodas sold every week in a restaurant defined by brand.

**Procedure with Photo**

1. Record the brand selection soda poured at the automatic fountain.
2. Count the number of soda servings with respect to the brand for each week.
3. Follow this process for 9 weeks.

A picture containing person

Description automatically generated

**Data Measurements**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Coke** | **Sprite** | **Pepsi** | **Total no of sodas sold in a week** |
| 1 | 120 | 90 | 40 | 250 |
| 2 | 110 | 130 | 94 | 334 |
| 3 | 104 | 122 | 83 | 309 |
| 4 | 115 | 105 | 96 | 316 |
| 5 | 90 | 142 | 120 | 352 |
| 6 | 230 | 98 | 30 | 358 |
| 7 | 110 | 145 | 70 | 325 |
| 8 | 135 | 145 | 90 | 370 |
| 9 | 95 | 172 | 100 | 367 |
| Average no of soda sold per week | | | | 331 |

**Data Visualization**

**Color Encoded Data Table**

|  |  |
| --- | --- |
| **Brand** | **Average no of soda sold (per week)** |
| **Coke** | 123 |
| **Sprite** | 128 |
| **Pepsi** | 80 |

**Insights**

1. From the data table it can be observed that average no. of sodas sold in a week is 331
2. From the graph we can see that maximum number of sodas sold by a specific brand to be 230, in week 6, which is the highest by a individual brand in 9 weeks.
3. From the color coded table we can infer that the highest number of sodas sold in 9 weeks is Sprite
4. From the color coded table we can infer that the lowest number of sodas sold by Pepsi.

# *General Phenomenon*

### Phenomena Description: Reading Emails

Count and manually record the number of emails received on a personal email account. Record how many emails were read from the account each day. (do not use the email software calculations)

**Procedure with Photo**

Record the number of emails received on personal email address for 10 consecutive days. Count and record the number of mails read each day.

Graphical user interface, text, application, chat or text message

Description automatically generated

**Data Measurements**

|  |  |  |
| --- | --- | --- |
| Date | Emails | Read |
| 27 Aug | 42 | 13 |
| 26 Aug | 21 | 7 |
| 25 Aug | 24 | 11 |
| 24 Aug | 14 | 3 |
| 23 Aug | 17 | 6 |
| 22 Aug | 15 | 4 |
| 21 Aug | 13 | 4 |
| 20 Aug | 16 | 4 |
| 19 Aug | 21 | 10 |
| 18 Aug | 16 | 5 |

**Data Visualization**

The following graph gives the total number of emails and the number of emails read per day.

Chart, bar chart

Description automatically generated

**Color Encoded Data Table**



**Insights**

* An average of 20 email per day was received
* An average of 7 emails everyday was read (i.e.) 32 % of my emails was read
* On 27th august, the highest number of emails was recorded and I read the maximum number of emails also on the same day.
* I was most efficient on 19th august when I read 48% of my emails.

**Assignment Procedure**

**Step 1: First Phenomena**

Observe one phenomenon for each of the following three categories using the examples above as a reference. Your phenomena should be different from these examples.

1. Science
2. Business
3. General Observation (neither science nor business)

Based on your observations answer the following questions for **each of the 3 types of phenomena**. (refer to the model examples above for answering the following questions)

1. Describe the phenomenon and procedure in your own words. Adding a photo of your phenomena is **mandatory**. This establishes that you know what the data is measuring.
2. Capture the creation of your data for the phenomenon using excel. There should be minimum of 6 observations in your data table. Paste a screen shot of your excel data table including the date and time stamp on your screen.
3. Create a visualization of your phenomena using an excel chart. Use a chart that is appropriate for your data. Please ensure your chart has a title and meaningful labels for the X axis and the Y axis. Paste a screen shot of your visualization including the date and time stamp on your screen.
4. Create a color encoded data table. Highlight the insight using the color coding.
5. Provide a bullet point list of insights identified in the data set you created.

**Step 2: Second Phenomena**

1. Describe the phenomenon and procedure in your own words. Adding a photo of your phenomena is **mandatory**. This establishes that you know what the data is measuring.
2. Capture the creation of your data for the phenomenon using excel. There should be minimum of 6 observations in your data table. Paste a screen shot of your excel data table including the date and time stamp on your screen.
3. Create a visualization of your phenomena using an excel chart. Use a chart that is appropriate for your data. Please ensure your chart has a title and meaningful labels for the X axis and the Y axis. Paste a screen shot of your visualization including the date and time stamp on your screen.
4. Create a color encoded data table. Highlight the insight using the color coding.
5. Provide a bullet point list of insights identified in the data set you created.

**Step 3: Third Phenomena**

1. Describe the phenomenon and procedure in your own words. Adding a photo of your phenomena is **mandatory**. This establishes that you know what the data is measuring.
2. Capture the creation of your data for the phenomenon using excel. There should be minimum of 6 observations in your data table. Paste a screen shot of your excel data table including the date and time stamp on your screen.
3. Create a visualization of your phenomena using an excel chart. Use a chart that is appropriate for your data. Please ensure your chart has a title and meaningful labels for the X axis and the Y axis. Paste a screen shot of your visualization including the date and time stamp on your screen.
4. Create a color encoded data table. Highlight the insight using the color coding.
5. Provide a bullet point list of insights identified in the data set you created.

**Step 4: Submission**

Submit your assignment documented in Microsoft Word in eLearning.