**Standard Deviation - Temperatures**

In this activity, you will be looking at historical temperature data from Dayton Ohio and asked to analyze this year compared to previous years.

**Gathering the Data**

Go to www.wunderground.com and search for Dayton, OH. Click on the "History" tab under the ad. Click on Monthly and then choose January of the year that I give you then click view. Scroll down until you get to the section titled “Daily Observations”. Into a Google sheet, type the high (max) temperatures for the year I ask you for onto the Google sheet shared with you. The high temperature is the second column next to the date. Once I get everyone's data, I will compile it. Once I tell you to, make a copy of the spreadsheet for your own drive. To do this, go to File -> Make a copy. This will add a copy of this spreadsheet to your drive. You will need this spreadsheet for labs later on this year. At the end of this, you need the daily high temperature for January from the past displayed two ways. One way will be in a single column (column A of the Calculations tab) and the second way will be in multiple columns (on the Temperatures tab). 2019 will not be included in column A.

From here, on the Calculations tab, create a graph using all of your data in column A. You need to use a histogram which is found under the column options. Give your chart an appropriate title and label the axes. The vertical axis should be labeled as "Count" and the horizontal axis should be labeled as "High Temperature for January (1998-2017)". Under the Legend option, choose none. Under the Buckets option, type in 1 as the bucket size.

Once the chart is complete, filter your data. To do this, highlight all the data in column A. Then go to Data -> Turn on Filter. You can also click on the Filter Icon on the taskbar (it looks like a funnel). Then, click on the green upside-down triangle next to “Temperatures” and click Sort A-Z. This will filter your data from smallest to largest. Clicking on Sort Z-A will sort your data largest to smallest.

From here, please follow my instructions to calculate mean, standard deviation, and the range of acceptable data.

**Questions**

Describe your graph, including its overall shape and the general location of the data on the graph.

Based on your historical data, what is the range of high temperatures that are within two standard deviations of the mean?

How many days, based on your historical data, are above or below the normal temperatures for January?

Looking at 2019, how many days are above or below the normal temperatures for January?

Which year(s) including 2019, if any, are significantly colder or warmer than normal? Make sure you define what significantly means.