Name _____ Date _____ Class _____

Data Analysis Worksheet

Identify a source of interest and **write a hypothesis** regarding how you expect sound levels will vary from the different measurement points.

Plot the data for the first data sampling as a **time series plot**. The sound measurements from each smart device most likely started and ended at different times. This difference will cause the x-axis to only report the time range for the first data selection. To remedy this, first create a scatter plot and then change the series chart type to a *line plot*. This maintains the correct x-axis values instead of scaling to the first series' x-axis values.

1. **What can you determine from the time series plot? For example, from where is the loudest noise coming? How does the noise differ from each measurement location?**

2. **Refer to your observation sheet to determine what may have impacted the data. For example, did a bus driving by the source increase the noise level? Did the noise level increase at the other locations as well?**

3. **Is the noise level unacceptable in any location? If yes, how can you remediate?**

Average sound exposure levels needed to reach the maximum allowable daily dose of 100%.

Time to reach 100% noise dose	Exposure level per NIOSH REL
8 hours	85 dB(A)
4 hours	88 dB(A)
2 hours	91 dB(A)
60 minutes	94 dB(A)
30 minutes	97 dB(A)
15 minutes	100 dB(A)
7.5 minutes	103 dB(A)
3 minutes 45 seconds	106 dB(A)
1 minute 52 seconds	109 dB(A)
56 seconds	112 dB(A)
28 seconds	115 dB(A)
14 seconds	118 dB(A)
7 seconds	121 dB(A)

Note: For every 3-dB decrease in noise level, the allowable exposure time is doubled.

Information sources:
EPA (1974) Information on levels of environmental noise requisite to protect public health and welfare with adequate margin of safety. EPA/ONAC 550/9-74-004.
http://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF
NIOSH (1998) Criteria for a recommended standard: occupational noise exposure. DHHS (NIOSH) Publication #98-126. https://www.cdc.gov/niosh/docs/98-126/