

Group Details

Yellow Group: Health

Group Summary:	Roles:	Assignment Summary:
<p>This group will monitor the frequency of asthma attacks at several schools within the school district. They will compare asthma attack trends with Air Quality ratings at the nearest tracking locations.</p>	<p>Assign roles.</p> <ol style="list-style-type: none">1. Health Tracker (number depends on how many schools participate)2. Ozone Tracker3. Carbon Monoxide Tracker4. Particulate Tracker (PM₁₀ & PM_{2.5})	<p>Each student will enter asthma or pollution data into a spreadsheet.</p>

COLLECT DATA: Set-up (1st time)

1. Decide on each of your roles (see above).
2. Decide on the location you are going to monitor (try to pick one close to your school)

Note: The Particulate tracker will need to monitor at Rose Elementary & Geronimo (to get both PM types), or Green Valley.

3. Go to the activity website (<http://www.airinonow.com/html/airexercise/materials.html>) and download the Excel Spreadsheet for the “Yellow Group: Health.”
4. Save the spreadsheet onto your disk or computer.

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5. Go back to the website and look at “The Nurse Form.”
6. Compose a letter or phone call dialogue to contact nurses to invite their participation in your research. Be sure to mention that they can use the website form to enter their data, or you can make other arrangements to get the data from the nurses.

COLLECT DATA: Everytime

Open the Excel spread sheet for “Yellow Group: Health”

1. Go to the activity web site, click “Pollution Tracker Data” to obtain air quality/pollution data.
2. Choose the date you need.
3. Click on “**view**” **PSI Report text/html**. You see the locations listed.
4. Enter the date you have chosen into the “Yellow Group: Health” spreadsheet.
5. Enter the data for your pollutant into the spreadsheet.

Health Trackers: When you receive the data from the nurses, enter it into the spreadsheet for the correct date and location.

6. Repeat until all of the data is entered.

Be sure to save your worksheet!

PRESENTATION PREP: Research

1. Do some research to add to your background knowledge. (Do this during the first two weeks while you wait for the nurses to respond).
2. Each group member should try to select a different activity. The information you gather will be shared as your 1st report.
 - a. Conduct research about asthma.

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- b. Research the number of people admitted to local emergency rooms for asthma attacks.
- c. Research the number of people with asthma nationally and locally.
- d. Interview someone with asthma.
- e. Pick a topic related to health and air pollution.

PRESENTATION PREP: Daily Data Graphs

1. Plot the data on a graph (pollutant level vs. time or asthma attacks vs. time).
2. Go to your spreadsheet and highlight the data for the first 2 weeks (or whatever time period you are reporting).

Note: Health trackers will highlight the "Total" column.
3. Click on the bar graph icon OR go to the "Insert" menu and select "Chart."
4. Select "Column" for chart type then select "Next."
5. Leave the data range alone and select "Series In: Columns."
6. Now click on the "Series" tab (top of gray box) "Category (x) axis labels", go back to your spreadsheet, and highlight the corresponding dates. (This will change the X-axis labels to the dates you want.)
7. Select "Next."
8. Enter a "Chart Title" such as "Asthma Incidence: Location" (or whatever your pollutant).
9. Enter a "Category (X) Axis" such as "Dates."
10. Enter a "Value (Y) Axis" such as "Asthma Incidents" (or whatever units go with what you track) then select "Next."
11. Select "Place Chart: As New Sheet" and enter a label such as "Asthma Graph 1."
12. Select "Finish."

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PRESENTATION PREP: Find Averages (monthly)

DO THIS AFTER EACH FULL MONTH OF DATA IS ENTERED (20 DAYS).

1. Find the average and standard deviation for each time at the end of each reporting period.
2. **HEALTH TRACKERS:** Because you need to combine your asthma data before you can average it, calculate the total number of asthma incidents. Days 1 & 2 are calculated for you. To get the total highlight the row you want to add including the square for the answer (e.g. C7, D7, E7, F7) and then type **=sum(C7:E7)** in the square F7.
3. **POLLUTION & HEALTH TRACKERS:** You will notice there are some squares with the words “#DIV/0!”. These squares already have the formula to find the average of your data. (Notice that the average changes as you enter the data.)
4. You will need to enter the formula for the average for the remaining squares. There are several ways to do this – try one of each of the ways.
 - a. Go to **INSERT** **FUNCTION** select **AVERAGE** enter the first and last cell numbers you want to average separated by a colon. In the next blank average box that would be (H5:H24).

OR
 - b. Type **=average(H5:H24)** then hit enter. You can also highlight/select the cells you want to include.

OR
 - c. Select a cell that already contains an average calculation. Copy the cell and paste the formula into the cell you want. Be sure to double check that the formula includes the correct cells you want the average of.
5. You will need to find the Standard Deviation (which tells you how variable your data is). There are several ways to do this – try one of each of the ways.
 - a. go to **INSERT** **FUNCTION** select **STDEV** enter the first and last cell numbers you want to average separated by a colon. In the third Standard Deviation box that would be (H5:H24)..

OR
 - b. Type **=stdev(H5:H24)** then hit enter. You can also highlight/select the cells you want to include.

OR
 - c. Select a cell that already contains a Standard Deviation calculation. Copy the cell and paste the formula into the cell you want. Be sure to double check that the formula includes the correct cells you want the Standard Deviation of.

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PRESENTATION PREP: Monthly Data Graphs

1. Graph the average monthly data only after at least 2 months' worth of data has been collected. Otherwise, create a graph that contains all of the days (see above "Daily Data" graphing instructions).
2. Go to your spreadsheet, hold down the "Control" button and highlight the average for each month (you do not need to highlight the daily data).
3. Click on the bar graph icon OR go to the "Insert" menu and select "Chart."
4. Select "Column" for chart type then select "Next."
5. Leave the data range alone and select "Series In: Columns" then select "Next."
6. Now click on the "Series" tab (top of gray box).
7. Click in the box "Category (X) axis labels" and then type in the date range for each month separated by commas (January 1-31, February 1-28).
8. Select "Next."
9. Enter a "Chart Title" such as "Monthly Asthma Attacks: Location" (or whatever your pollutant is for whatever location).
10. Enter a "Category (X) Axis" such as "Dates."
11. Enter a "Value (Y) Axis" such as "Number of Asthma Attacks" then select "Next."
12. Select "Place Chart: As New Sheet" and enter a label such as "Monthly Asthma Graph."
13. Select "Finish."

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PRESENTATION PREP: Find Trends

1. As a group, analyze trends in asthma incidents and individual air pollutants (ozone, carbon monoxide, PM₁₀, and PM_{2.5}.)

Consider the following:

- Are there increases in asthma attacks with increases in any of the pollutants you are monitoring (ozone, carbon monoxide, PM₁₀, and PM_{2.5})?
- Are there other factors to consider with each asthma attack (e.g. was it induced by exercise)?
- Are these trends consistent over the month, 2 months, 5 months?
- Develop one or more hypothesis to describe the trends. Be careful not to draw conclusions or overstate your data.

PRESENTATION

Present your data, graphs, hypothesis, and/or conclusions to your class.