Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_ MOD\_\_\_\_\_ Due date \_\_\_\_\_\_\_\_\_\_\_\_\_

**Weather Balloon Launch Scientific Poster**

On Thursday & Friday (10/10/13 & 10/11/13), our class had the opportunity to learn about and conduct basic research about how atmospheric properties vary with altitude. Through this assignment, you’ll have a chance to communicate our results the way scientists often do – by creating a scientific poster!

**Your team’s poster should include or meet each of the following:**

1. **SIZE:** The finished size should be 11”x17” or larger.
2. **TITLE:** It should include a descriptive title that’s visible from across the room.
3. **SCIENTIST’S NAMES:** This is you and everyone else on your launch team!
4. **DATA REPRESENTATION (GRAPHS)**: Your team’s poster should include a graph showing each of the following relationships:
	* Air pressure (mb) vs. Altitude (km) \*
	* Temperature (K) vs. Altitude (km)\*
	* Humidity(%) vs. Altitude (km)\* – if you have a team of 3, skip this one
	* Altitude (km) vs. Flight time (min.)

***\*NOTE: For these graphs, altitude will go on the VERTICAL axis.***

1. **RESULTS:** Write 1 – 2 paragraphs that answer each of the following questions. Be sure to cite specific data to make your point.

**Questions to answer:**

* + Based on our data, what happened to air temperature with increasing altitude? (cite AT LEAST 3 data points – with units)
	+ Based on our data, what happened to air pressure with increasing altitude? (cite AT LEAST 3 data points – with units)
	+ What was the highest altitude (km) our balloon reached? Highest layer? How do you know?
	+ If our balloon and cricket sensor had made it to the very outer edge of Earth’s atmosphere, what other layers would it have passed through and what would have happened to air temperature and air pressure along the way?
	+ Based on our data, when did the balloon pop? How do you know? WHY did the balloon pop? (cite AT LEAST 3 data points – with units)
1. **PICTURES:** Include at least 2, but no more than 4 pictures to help your audience better understand what we did.
2. **ACKNOWLEDGEMENTS:** Include recognition and thank you to our funding sources and technical advisors.

**How to create graphs in Excel**

1. Log in to the school’s network, open MS Office, and then Open MS Excel 2007. (If you’re at home, you can skip this step ☺)
2. Start in the cell in the upper left hand corner (A1) and type the column heading and units for your independent variable. This data is what you want plotted on your **x-axis**.
3. Move over one cell (B1) and type the column heading and units for your dependent variable. This data is what you want plotted on your **y-axis**.
4. Enter all of your data points taking care to be sure that the specific values are entered in the correct column.
5. When all your data is entered, highlight the columns by clicking with the mouse in the A1 box and dragging across and down until ALL of your data is included.
6. On the top tool bar, click on INSERT. This will bring up a new menu under the Tool Bar.
7. Click on the CHART box and select the type of graph you want to make
	* Choose the SCATTERPLOT option for line graphs
	* Choose the COLUMN graph for bar graphs
	* Select how you want your graph to look and click. Your graph will appear on the spreadsheet and new menu will show up under Tool Bar.
8. Click on the Chart Layouts option on the menu and it will bring up different options for making your graph “look pretty”. To add a title and label your axes, you need to select the 1st one (upper left corner) on the list.
9. Remove any unwanted data that may have been plotted by clicking on it with the mouse to highlight it. Then click, DELETE.
10. To title each axis, click on the “Axis Title” phrase that is along the axis with the mouse and change it to accurately describe what is plotted. Be sure to include units.
11. To add a title, click on what Excel inserted automatically as your title along the top of the graph with the mouse and change it to accurately describe your work (y axis vs. x axis).
12. If you want to change the axis scale or add gridlines, right click on the axis and a separate menu will appear.
	1. Grid lines are options on this menu, simply click on what type you’d like to add (Major, Minor or both)
	2. To change the scaling on the axis, click on FORMAT AXIS and a new window will appear where you can make the changes you’d like.

***BE SURE TO SAVE YOUR FINAL GRAPH WHERE DIRECTED!***

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_ MOD \_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Outstanding**  | **Well Done** | **Complete** |
| **Poster content****/20** | *Thoroughly and eloquently addresses all required sections and answers all questions.* *All graphs are neat and represent good graphing techniques.**Audience is left with a complete understanding of what we did, why we did it and what we learned (the results).*20 points | *Thoroughly addresses all required sections and accurately answers all questions.* *All graphs are neat and represent good graphing techniques.**Audience is left with a clear understanding of what we did and what we learned (the results).* *Some attempt is made to explain why we conducted the launch.*17 points | *Addresses each of the required sections and answers all questions.* *Graphs represent good graphing techniques.* *Audience is left with an understanding of what we did and what we learned (the results).*14 points |
| **Poster presentation****/10** | *Poster is superbly organized. The poster is exceptionally attractive or creative; use of color, fonts and images enhance the presented information. The poster shows advanced planning on the parts of the students.* 10 points | *Poster is thoughtfully organized throughout and shows that there was care and planning on the parts of the students. Sections are clearly defined.*8.5 points | *Poster content is organized and neat. Information is clearly presented in sections.*7 points |
| **Group Participation****/5** | Always made a meaningful contribution, worked well with other team members, focused on the activity, and arrived prepared.5 points | Most of the time made a meaningful contribution, worked well with other team members, focused on the activity, and arrived prepared.4 points | Some of the time made a meaningful contribution, worked well with other team members, focused on the activity, and arrived prepared.3 points |
| **Total****/35** |

*Please hand in this rubric with your poster!*

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Participation Rubric**

**How to use this rubric**

* Be fair, honest and consistent as you evaluate the effectiveness of each group member (**including yourself**) in the four categories below.
* Each category ranges in scale from 0 to 4.

0 - NEVER

2 - SOME OF THE TIME

3 – MOST OF THE TIME

4 - ALWAYS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name of Group Members** | **Contribution*****CHS EE 4.5: Contribution*** | **Working with Others:*****CHS EE 4.5: Contribution*** | **Focus*****CHS EE 4.3: Organization*** | **Preparedness*****CHS EE 4.3 Organization*** |
| Provided useful ideas and relevant information to the task/problem at hand | Listened, shared and worked well with *everyone* in the group | Stayed on task throughout the activity and completed work that needed to be done; successfully managed time in class | Brought or provided materials needed to complete the task and came ready to work |
| SELF- ASSESSMENT | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 |
|  | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 |
|  | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 |
|  | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 |
| Teacher use onlyYOUR AVERAGE SCORE (based on your teammates’ input:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 | 0 ….. 2 3 4 |