

Lesson Plan for *Just How Cold Will It Be in Antarctica?*
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"If it's 0 degrees today, and it's going to be twice as cold tomorrow... how cold will it be?"

Grade Level: 4-7

Overview: People frequently react to the news of my travels to Antarctica with the question, "How are you ever going to stand those extremely cold temperatures- especially in January?" In this lesson, students will use the Internet and Microsoft Excel to graph annual temperatures of their own city; Palmer Station Antarctica; and McMurdo Station, Antarctica. They will compare/contrast the temperatures of each of the cities and use Internet resources to explain the temperature of each in relation to proximity of the sun and longitudinal location.

Ohio Science Content Benchmarks

Grades 3-5: Earth and Space Sciences

Benchmark D: Analyze weather and changes that occur over a period of time.

- 4.4 Describe weather by measurable quantities such as temperature, wind direction, wind speed, precipitation and barometric pressure.
- 4.5 Record local weather information on a calendar or map and describe changes over a period of time.

Grades 6-8: Scientific Ways of Knowing

Benchmark A: Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description and explanation).

Grades 6-8: Earth and Space Sciences

Benchmark C: Describe interactions of matter and energy throughout the lithosphere, hydrosphere and atmosphere (e.g., water cycle, weather, and pollution).

- 7.5 Read a weather map to interpret local, regional and national weather.

Ohio Math Content Benchmarks

Grades 3-4: Data Analysis and Probability Standard

- 1. Collect and organize data from an experiment, such as recording and classifying observations or measurements, in response to a question posed.

Grades 5-7: Data Analysis and Probability Standard

- 4. Determine appropriate data to be collected to answer questions posed by students or teacher, collect and display data, and clearly communicate findings.

Ohio Technology Benchmarks

Benchmark A: Communicate information technologically and incorporate principals of design into creation of messages and communication products

Benchmark B: Develop, publish and present information in format that is appropriate for content and audience.

Grade 6: Publication

- 1. Create and publish information in printed form (e.g., use software to produce homework assignments, reports, flyers, newsletters).

2. Develop and publish information in electronic form (e.g., slide presentations, multimedia products, Web materials).

Grade 7: Productivity Tools

1. Select an appropriate software tool to create and publish print information (e.g., word processor for a report, desktop publishing tool for signs/calendars/newsletters).

Ohio Language Arts Benchmarks

Grades 5-7: Writing Conventions Standard

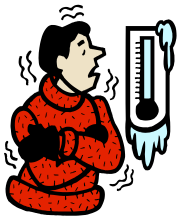
- Use correct spelling conventions.
- Use conventions of punctuation and capitalization in written work.
- Use grammatical structures to effectively communicate ideas in writing.

Materials needed:

- Computers with Microsoft Excel
- Internet access
- Student work pages for Windows users or Macintosh users
- Rubric

Procedure:

1. Pose students with the following question: “How are you ever going to stand the extremely cold temperatures in Antarctica – especially in January?” Discuss what average January temperatures are like in your city.
2. Have students go into the computer lab and complete the lab procedure outlined in student work pages and directions.
3. Assess using rubric provided.



Name _____

Just how cold will it be in Antarctica?

Directions for Windows Users

"If it's 0 degrees today, and it's going to be twice as cold tomorrow... how cold will it be?"

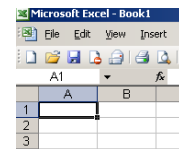
What do you think the average (mean) temperature is during the month of January where you live? _____

What do you think the temperature will be in January at Palmer Station? _____

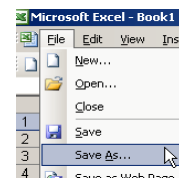
In January, do you think there will be much temperature difference between Palmer Station and McMurdo Polar Stations? _____

*You are going to create a chart comparing the temperature of your city, Palmer and McMurdo Polar Stations. Follow these directions carefully and if you have never used Microsoft Excel before, you might want to work with a partner. All items that you enter or type will be **red BOLD** font.*

1. Open a new spreadsheet page by clicking on the **Start** button on the lower left corner of your screen. Then select **Programs** and then **Microsoft Office** then **Microsoft Excel**.



2. You should now have a new spreadsheet. You want to save your document so select **File Save As** and open a new file and call it **Antarctica Weather Comparison Chart**.



3. You are going to enter the data now. Fill in the following cells with each of the months.

A1 **Month**

A2 **January**

A3 **April**

A4 **August**


A5 **November**

A6 **Overall Average**

B1 **Type in the name of your city**

C1 **Palmer Station**

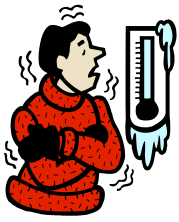
D1 **McMurdo**

4. Minimize the screen by selecting the button on the top right corner that looks like this: 

5. Open a new screen and go to the Internet. Go to this website and collect and record the mean (average) temperature for your city for January, April, August, and November of 2005 and enter the information in cells B2, B3, B4, and B5:

<http://www.weather.com>.

6. Go to this website and collect and record the mean temperature for Palmer Station, Antarctica and for January, April, August, and November of 2005 and enter the information in cells C2, C3, C4, and C5. <http://www.weatherunderground.com>. Make



Name _____

Just how cold will it be in Antarctica?

Directions for Macintosh Users

"If it's 0 degrees today, and it's going to be twice as cold tomorrow... how cold will it be?"

What do you think the average (mean) temperature is during the month of January where you live? _____

What do you think the temperature will be in January at Palmer Station? _____

In January, do you think there will be much temperature difference between Palmer Station and McMurdo Polar Stations? _____

*You are going to create a chart comparing the temperature of your city, Palmer and McMurdo Polar Stations. Follow these directions carefully and if you have never used Microsoft Excel before, you might want to work with a partner. All items that you enter or type will be **red BOLD** font.*

1. Open a new spreadsheet page by clicking on the **Appleworks** icon on your screen. Then select **Spreadsheet**.
2. You should now have a new spreadsheet. You want to save your document so select **File Save As**, then open a new file and call it **Antarctica Weather Comparison Chart**.
3. You are going to enter the data now. Fill in the following cells with each of the months.
A1 **Month**
A2 **January**
A3 **April**
A4 **August**
A5 **November**
A6 **Average Temperature**
B1 **Type in the name of your city**
C1 **Palmer Station**
D1 **McMurdo**
4. Select **Save** again to save the information that you have entered.
5. Open a new screen and go to the Internet. Go to this website and collect and record the mean (average) temperature for your city for January, April, August and November of 2005 and enter the information in cells B2, B3, B4, and B5:
<http://www.weather.com>.
6. Go to this website and collect and record the mean temperature for Palmer Station, Antarctica and for January, April, August and November of 2005 and enter the information in cells C2, C3, C4, and C5. <http://www.weatherunderground.com>. Make

Antarctica Temperature Comparison Rubric



Student Name _____

Spreadsheet to Chart

- 9 8 7 Spreadsheet contains no errors and all directions were followed
- 6 5 Few errors, most directions followed
- 4 3 2 1 Multiple errors

Paragraph

Organization

- 4 Information is exceptionally organized with well-constructed paragraph.
- 3 Information is organized with well-constructed paragraph.
- 2 Information is disorganized and paragraph is not constructed well.

Amount of Information

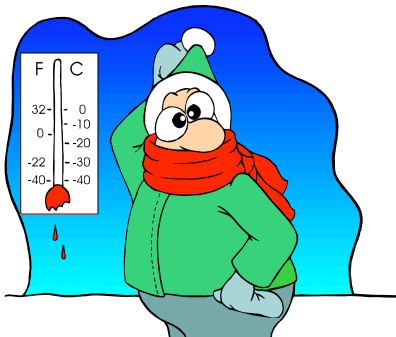
- 4 Topic is addressed and all questions thoroughly answered.
- 3 The topic is addressed and most questions are answered.
- 2 One or more topics are not addressed.

Paragraph Construction

- 4 Paragraph includes excellent introductory sentence, explanations or details, and concluding sentence.
- 3 Paragraph includes related information but was not constructed well.
- 2 Paragraphing structure is not clear and sentences typically are not related within the paragraphs.

Mechanics.

- 4 No grammatical, spelling or punctuation errors
- 3 Almost no grammatical, spelling or punctuation errors
- 2 A few grammatical, spelling, or punctuation errors
- 1 Many grammatical, spelling, or punctuation errors



Score _____/25

_____ %