Name:_____ Hour: _____

How Cold Are the Dry Valleys?

After living in the Dry Valleys of Antarctica for three weeks I will admit that they are cold, but how cold are they? We set up a data logger on our front porch to take temperature readings every 6 hours to see how cold it was. Graph the temperature readings for our first week and our last week to see how the temperatures changed by hour and by day.

Table 1. Temperature readings for our first and last weeks in the dry valleys.

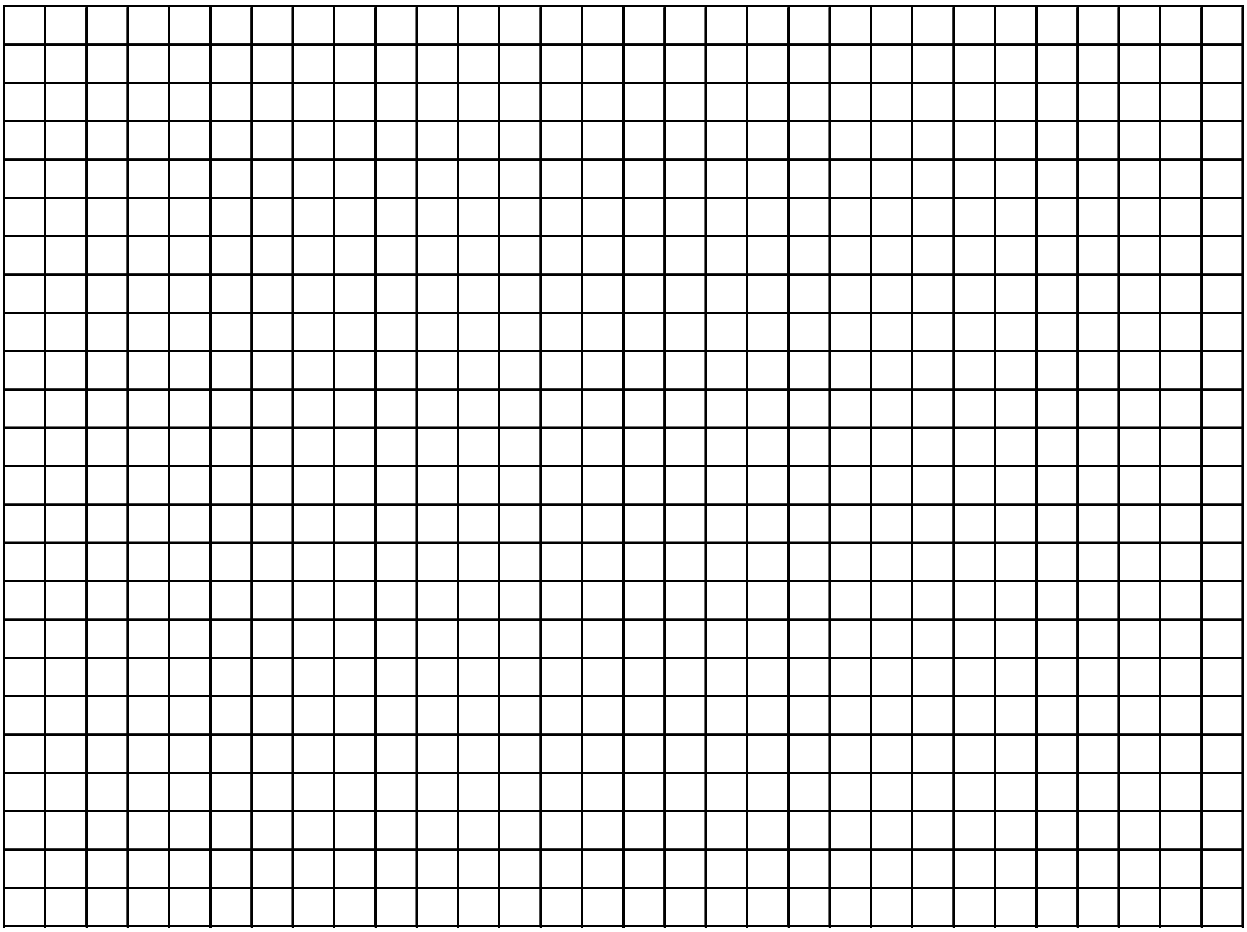
First Week		Last Week	
Date/Time	Temperature (°C)	Date/Time	Temperature (°C)
20/10/2009 03:00	-21	1/11/2009 3:00	-8
20/10/2009 09:00	-24	1/11/2009 9:00	-14.5
20/10/2009 15:00	-15	1/11/2009 15:00	-3.5
20/10/2009 21:00	-15	1/11/2009 21:00	-7
21/10/2009 03:00	-13	2/11/2009 3:00	-9
21/10/2009 09:00	-15	2/11/2009 9:00	-10.5
21/10/2009 15:00	-17	2/11/2009 15:00	1
21/10/2009 21:00	-14.5	2/11/2009 21:00	-4
22/10/2009 03:00	-13.5	3/11/2009 3:00	-6
22/10/2009 09:00	-21	3/11/2009 9:00	-10.5
22/10/2009 15:00	-4.5	3/11/2009 15:00	0
22/10/2009 21:00	-13.5	3/11/2009 21:00	-4.5
23/10/2009 03:00	-14	4/11/2009 3:00	-6.5
23/10/2009 09:00	-20	4/11/2009 9:00	-10
23/10/2009 15:00	-2.5	4/11/2009 15:00	-3.5
23/10/2009 21:00	-8	4/11/2009 21:00	-3
24/10/2009 03:00	-13.5	5/11/2009 3:00	-7.5
24/10/2009 09:00	-20.5	5/11/2009 9:00	-14
24/10/2009 15:00	-16.5	5/11/2009 15:00	2.5
24/10/2009 21:00	-13.5	5/11/2009 21:00	-4.5
25/10/2009 03:00	-14.5	6/11/2009 3:00	-7.5
25/10/2009 09:00	-19.5	6/11/2009 9:00	-12.5
25/10/2009 15:00	-14	6/11/2009 15:00	1.5
25/10/2009 21:00	-9	6/11/2009 21:00	-3
26/10/2009 03:00	-11.5	7/11/2009 3:00	-6.5
26/10/2009 09:00	-15	7/11/2009 9:00	-9
26/10/2009 15:00	-9.5	7/11/2009 15:00	-8
26/10/2009 21:00	-9	7/11/2009 21:00	-6

Quick Question…

You may have noticed that the times are based on a 24 hour clock or military time. To find out what the time would be on a 12 hour clock all you have to do is subtract 12. Knowing that, what time would 15:00 be? What time would 21:00 be?

Graphing: Graph the temperature data for the dates listed in table 1.

Dry Valley Temperatures



Analyzing the Data:

1. Using your graph, how did the temperatures in the first week compare with the temperatures in the last week?

2. Using your graph, how did the temperatures change every 24 hours? At what time was it usually the warmest? At what time was it usually the coldest?

3. What was the coldest temperature recorded °C?

4. Use the following equation to convert the coldest temperature into °F.

$$°F = °C \times \frac{9}{5} + 32$$

5. What was the warmest temperature recorded in °C?

6. What was the warmest temperature recorded in °F?

7. We get about 15 more minutes of sun every day, how do you think that affected our temperature readings?

8. The placement of the data logger may have had an effect on our results as well. What are some reasons that you can think of for how the location of the data logger may have affected our results?

9. Our readings also didn't include wind chill. Would wind chill make the actual temperature feel warmer or colder?

10. We also took measurements of the relative humidity throughout our stay in the Dry Valleys. Our calculated average relative humidity was 33% and the average relative humidity of the Sahara Desert is 25%. What does this and our temperature data tell us about the climate of the Dry Valleys?