

Scientific Method

Purpose

- To practice the steps of the Scientific Method
- To learn how to use an OnLine Lab simulation
- To determine which environmental variables influence how fast a cricket chirps
- To practice constructing data charts and graphs.

Hypothesis:

Cricket chirps are affected by _____

Materials:

Lab report template
OnLine Scientific Method Website

Procedure:

1. Go to https://glacier.gc.maricopa.edu/biology/scientific_method/index.cfm
2. Follow instructions [below](#) to get into the site
 - a. Click Continue (Do NOT put in user name and password)
 - b. On the next page, enter First and Last Name and click Continue
 - c. You will get to the tutorial
3. Do the tutorial on scientific method if your teacher requests that you do so (or for review!)
4. Follow the instructions for investigating the role of environmental variables on cricket chirps.
5. Construct data charts similar to those below in your lab notebook
Values in red (typed in) are control values
For your investigation, choose values that are higher and lower than those indicated in red.
You may add rows to the data chart as needed.
You need to record as you go because this OnLine site does not work well if you use the back button!
6. Graph your results
Hint: Cricket Chirp Rate is the dependent variable and will be on the y-axis on all graphs!
 - a. Construct one graph for each data chart!

Results: [\(Data charts are below\)](#)

Discussion:

(Summarize what you did, describe your results, indicate whether or not you met your purpose or supported your hypothesis, indicate sources of error, and suggest improvements in the experimental design.)

Conclusion:

(One sentence testable statement about your what variables affect cricket chirps and how they affect the chirp rate.)

Reflection:

(Personal commentary about what you learned from the lab activity, simulation)



Results:

Data Chart A: Effect of Wind Speed on Cricket Chirp Rate	
Wind Speed (m/sec)	Chirp Rate (chirps/min)
2	148

Data Chart B: Effect of # of Nearby Crickets on Cricket Chirp Rate	
# nearby Crickets	Chirp Rate (chirps/min)
5	148

Data Chart C: Effect of Temperature on Cricket Chirp Rate	
Temperature (°C)	Chirp Rate (chirps/min)
25	148

Data Chart D: Effect of Atmospheric Pressure on Cricket Chirp Rate	
Atmospheric Pressure (mm Hg)	Chirp Rate (chirps/min)
760	148

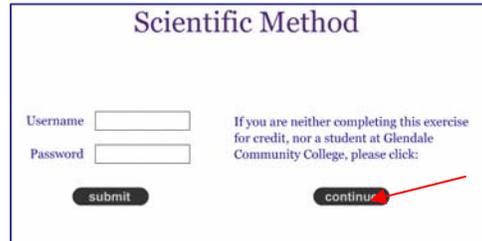
Data Chart E: Effect of Humidity on Cricket Chirp Rate	
Humidity (%)	Chirp Rate (chirps/min)
15	148



How to Use the Scientific Method OnLine Lab

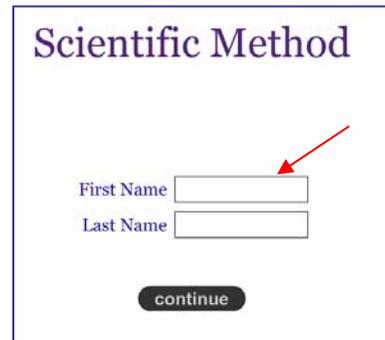
This is a two part website: the first part is a tutorial on the scientific method. The second part is a simulation of an experiment on crickets. You will actually get to design your experiment and collect data. You will want to have a pencil and paper ready to record data or an open Word Document where you can write down your results. You will get an opportunity to test several different variables and determine if they affect how fast or slow a cricket chirps.

You will see the screen to the right when you log on. You DO NOT need to log in with a user name or password, just click on the *continue* button to get to the next page.



The next page has a place where you can input your name.

Do so, click continue, and then you will get the actual start page, where you can follow the instructions for the tutorial and for the cricket experiment.



Do the tutorial first (if your teacher requests this) and then the Cricket Experiment. You will be able to input your results in the data charts above.

