

Please take notes here but turn in a typed version. Staple the answers to the questions together with the sketch of your graph (page 2), your datasheet (page 3 or a different piece of paper), and a graph showing your final results. You don't have to redo the graph of your predictions or retype your datasheet.

**Due Monday, April 14**

41 pt.

## Follow-up Experiments on Isopod Choice

1. (2 pt.) What is the question that your group is investigating?
2. (2 pt.) What is your hypothesis?
3. (2 pt.) Explain what you know of the biology of isopods that makes your hypothesis reasonable to investigate.
4. (5 pt) Briefly explain the design of your new experiment. Include the number of trials that you plan, the number of isopods that you will test, and the number of minutes per trial. How will you determine whether an isopod has a preference? You can design a different datasheet than the one on page 3 to match your ideas better.

5. (5 pt.) Sketch a graph that shows the outcome you predict from your experiment. Remember to label axes.

Pilot study. Do a pilot study for your new experiment to test the methods.

Unless you are using a material like soil that will cover the bottom of a chamber, place moist filter paper in both chambers to keep the isopods healthy.

Drop your isopod between the chambers. Make initial observations on the behavior of your isopod.

Return isopod and save the filter paper on each side if you're using filter paper.

6. (2 pt) Does anything about your experiment need to be changed before you start?

7. (2 pt) What statistical test will you use to analyze the data? (Ask us. If you've had statistics before, try to figure out the answer yourself first.)

New Experiment:

(5 pt.) Fill in the table on the worksheet.

Repeat the trials, using a new isopod for each "run". Switch isopods with other groups.

Group data

Choice A:

Choice B:

Trial number	Isopod size (S,M,L)	Recently molted?	Data for Choice A	Data for Choice B
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
<b>Totals</b>				

8. (2 pt.) Summarize new observations on the isopod behaviors—not everything, just the highlights.

9. (2 pt.) Use graphpad.com statistics calculator <http://graphpad.com/quickcalcs/binomial1.cfm> or [Vassarstats.net](http://Vassarstats.net) to find the results of your experiment. Ask us for help.

10. (2 pt.) Was your hypothesis supported, strongly supported, not supported much, etc.? Use your p-value to choose the appropriate language. Remember that if  $p < 0.05$ , then there is evidence that the isopods have a preference.

11. (5 pt) Attach a graph showing the results of your experiment. You can draw the graph using Excel or by hand on graph paper. Remember to label the axes and give the graph a title.

11. (2 pt) Mention any ways that you could change the procedures/methods to make them better (to make them more standardized, for example, or to eliminate confounding factors). Do not use the idea “do more runs”.

12. (3 pt.) Work with your partner to come up with three more new questions that would be interesting to investigate as follow-up studies. Experiments testing these questions don't have to use choice chambers. For example, one group of students hypothesized that young (small) isopods might run faster than old (large) isopods because they are more vulnerable to predators. They used paper tubes to compare the running speeds.

a.

b.

c.