

Deconstruct an Experiment – 15-year-old scares away garden-eating slugs

Carefully read the information about the experiment and then answer the questions:

A May 16, 2014, article at the ScienceNewsforStudents website of the Society for Science and the Public explains how 15 year-old Katie Gwalteny of Georgia tested her own idea of how to discourage grey garden slugs from eating her plants. Katie wanted a humane way to deter the slugs without harming the plants or soil in her backyard garden. Through researching slug behavior she realized that she might be able to take advantage of their territorial behavior. Here is a summary of her experiment:

First Katie collected many grey garden slugs from her garden. Then she bought 50 strawberry plants – a plant that these slugs are known to eat. She divided the plants into two groups. One group had plain water poured over them and the other group had slug-slimy water poured over them. Katie made slug-slimy water by having some of the slugs crawl all over filter paper; as the slugs move around they leave a slime trail on the paper. Then she poured water through the filter paper and collected the now slimy-slug water in a container. Next, Katie placed a slug in each pot. She recorded whether the slug moved toward or away from the strawberry plant. Her results were that around 50% of slugs moved towards the plain-water plants; however, only 5% of the slugs moved toward the slug-slimy-water plants.

1. Independent Variable (what was changed in the experiment)

2. Dependent Variable (what was measured in the experiment)

3. Is there a control group in this experiment? If yes, explain what it is:

4. Describe the experimental group.

5. How many trials were conducted? _____

6. Write an experimental question for this research – the question must include the independent and dependent variables.

7. After forming an experimental question it is time to construct a hypothesis about what you think could be the outcome of the experiment. A formal hypothesis shows the potential relationship between the dependent variable and the independent variable. Fill in the blanks to complete a plausible formal hypothesis for this experiment:

If the _____ is related to the _____, then slugs are more likely to avoid plants with _____ than plant with _____.

8. In order to be able to establish if there is a relationship between slug-slime on plant leaves and slug behavior many variables had to be held constant throughout the experiment. In the space provided, list 3 variables that would need to be held constant regarding the slugs and the plants.

Plants Constants

Slugs Constants

9. The article does not tell us for how long Katie waited after pouring slug-slime or plain water over the plants to test whether the slugs would move toward or away from the plant. Explain how the length of time between the two events could possibly affect the results.

10. Katie conducted 25 trials for each type of water poured over the plants. Look back at the percentages of slugs that did not move toward the strawberry plants. Imagine that she had only used 5 plants for the control group and experimental group. Do you think she would have collected reliable data to make any conclusions about the efficacy of her slug-slime water?

11. The article discusses how Katie would like to figure out how to use her results as a springboard for creating a commercial spray product. Think of two other things that she would need to figure out about the slug-slime in order for it to become a viable product.

1. _____

2. _____

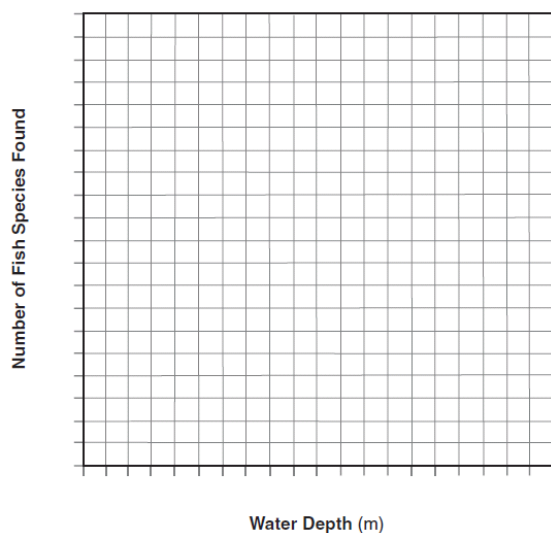
12. This technique seemed to work for grey garden slugs (*Deroceras reticulatum*), does this mean that the same technique could be used to deter all species of slug that are garden pests? Explain your answer.

Name _____

Date: _____

Directions: Examine each graph and identify the independent/dependent variables and create a title for each graph. Remember, the **independent variable** is graphed on the x-axis and the **dependent variable** is graphed on the y-axis; a good title should include both variables.

1.

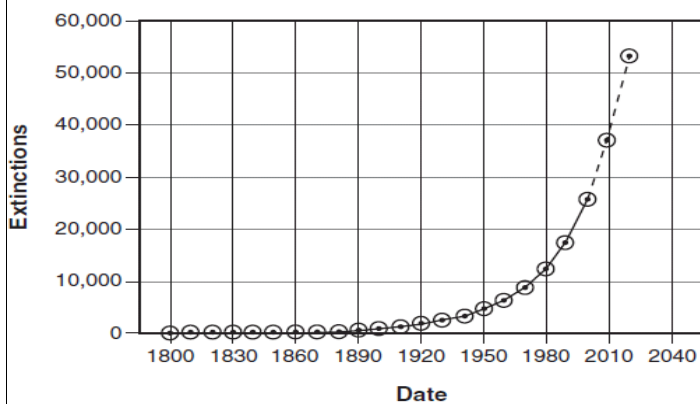


Independent variable:

Dependent variable:

Graph title:

2.

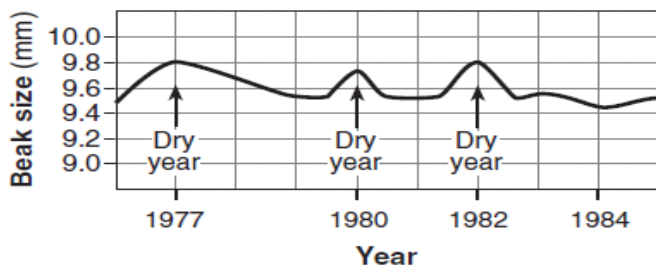


Independent variable:

Dependent variable:

Graph title:

3.

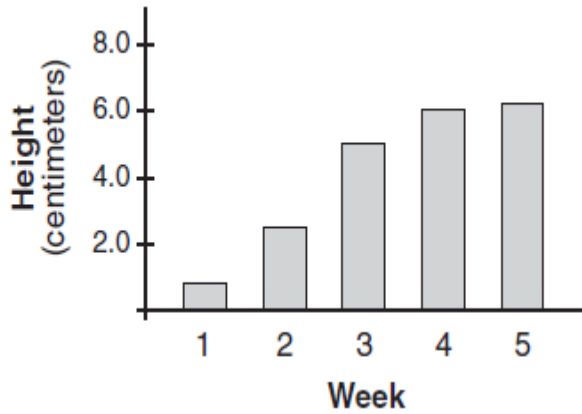


Independent variable:

Dependent variable:

Graph title:

4.

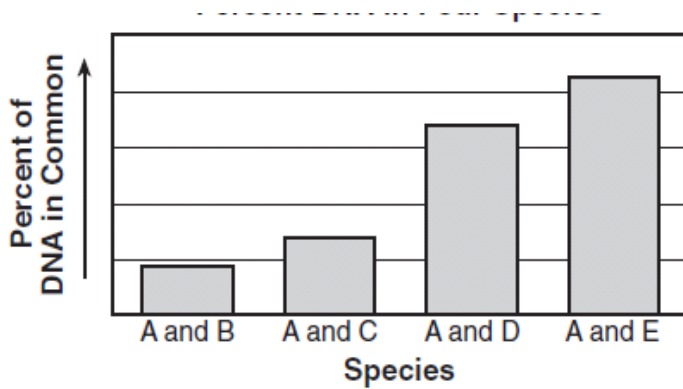


Independent variable:

Dependent variable:

Graph title:

5.

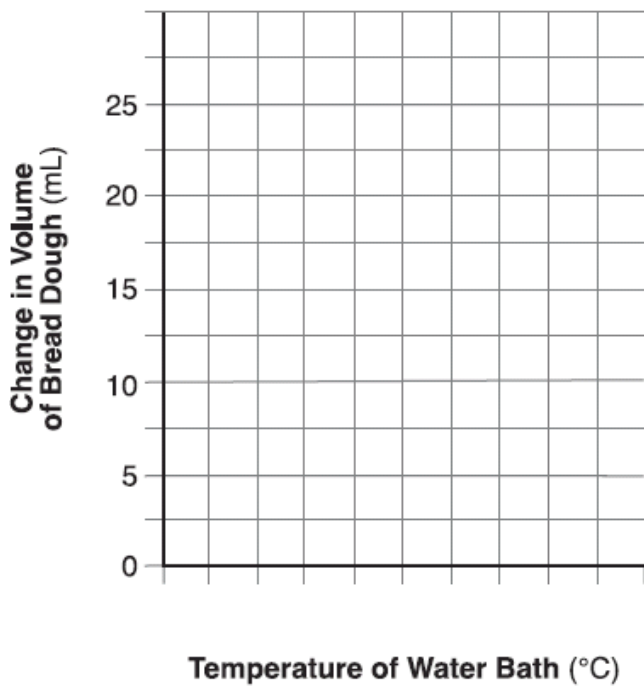


Independent variable:

Dependent variable:

Graph title:

6.

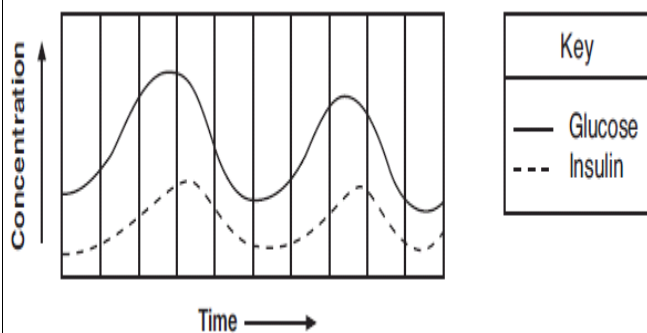


Independent variable:

Dependent variable:

Graph title:

7.

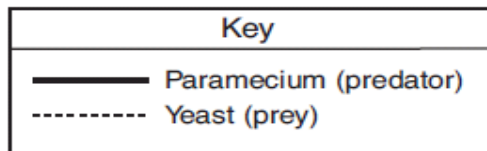
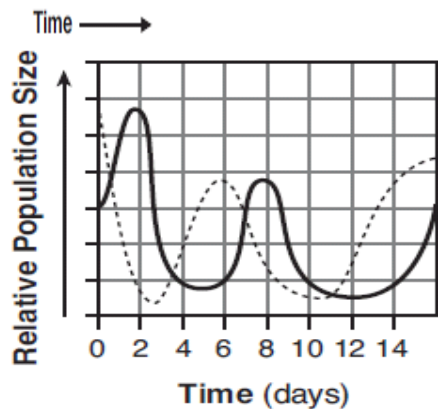


Independent variable:

Dependent variable:

Graph title:

8.

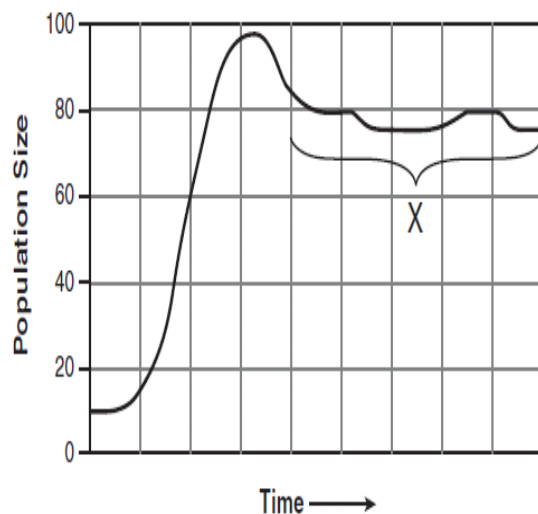


Independent variable:

Dependent variable:

Graph title:

9.

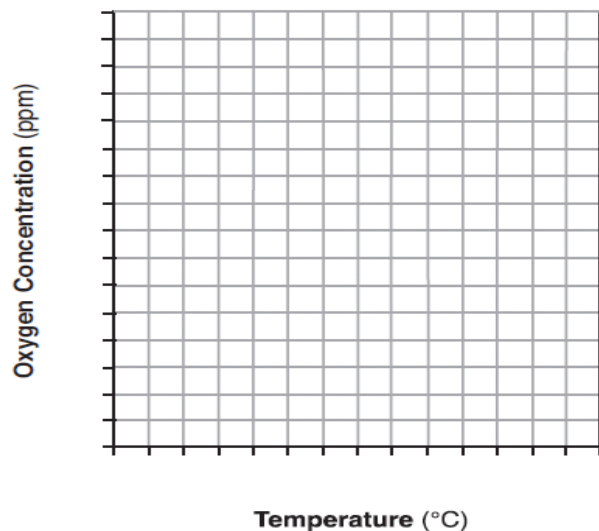


Independent variable:

Dependent variable:

Graph title:

10.

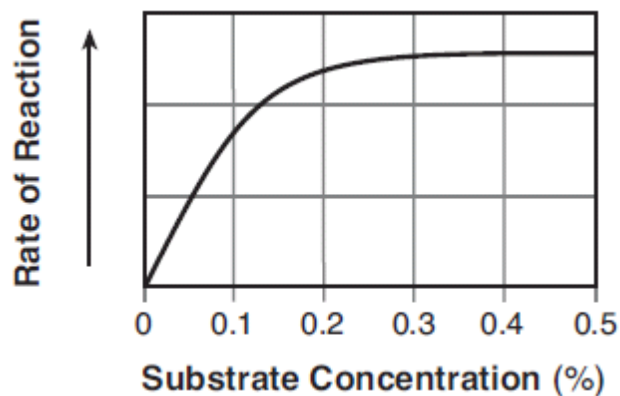


Independent variable:

Dependent variable:

Graph title:

11.



Independent variable:

Dependent variable:

Graph title:

12.

